Oxium
Performance Synthesizer

User Manual

www.xils-lab.com

Table of contents

1   Introduction

Thank you for choosing **Oxium**!

Oxium is a performance oriented based on a new architecture, new ergonomic and musical approach, adding a new Le Masque sequencer modulator and Formant filter, as well as a flexible two filters parallel/serial audio path.

We, at XILS-lab, do our best to create authentic synthesizers, recreation or new concepts, but always with the same goal: being a complete musical instrument, easy to use, easy to insert in mixes, with a rich, clear and warm sound.

If you have not yet developed your skills as a sound designer, we have included hundreds of presets from famous sound designers and artists. So you can fuel your synthesizer dreams as soon as you load **Oxium** into your DAW.

Please enjoy this very powerful sound creation tool. We love what we do and we want you to get the most enjoyment you possibly can from our labors. We want to hear from you.

So "like" us on Facebook http://www.facebook.com/XILSLabs and join in the conversation

Note : We plan to release a lot of tutorial videos to help you to get the most of Oxium. When available, you will be able to see these videos on our YouTube Channel http://www.youtube.lcom/user/xilslab

Note 2: If you have a question about Oxium, we strongly encourage you to join, then post on the Xils-Lab forum: http://www.xils-lab.com/xo_phpBB/. Posting on our forum is the fastest way to get an answer if you experienced some trouble with Oxium, need info about a precise subject, or want to exchange ideas, new patches with other Xilsonauts, and to be connected to the Xils-Lab world.

2   Features

2.1   *Core Modules*

- 2 Cumulative analog modeled Oscillators (up to 8 wave forms per patch). PWM for all waveforms (Aliasing-free Saw, Triangle and Pulse) . Advanced Glide/Portamento mode per Oscillator/ Hard Sync and Ring modulation between Oscillators.

- 3rd Generation 0-Delay-Feedback filters, self resonance for all modes (LP 24/12, BP6/12, HP) Additional second filter to choose between Formant Filter, LP , BP, HP with emphasis or articulation parameter.

- Flexible Double Mixer architecture (one per filter) with fully configurable serial or parallel modes

2.2   *Modulators*

- 3 freely assignable Dsync ADSR envelopes. AR mode.

- 3 Multi-Waveforms LFOs with Mono/Poly mode, Midi Sync-able, Delay, Fade in, and note retrig parameters

- Exclusive 2nd generation Le Masque controller modulator, with 16 freely draw-able zones (masks). Each mask has two level parameters, can trig envelopes, or be envelope controlled, the grid has vertical and horizontal snap modes. Patterns can be saved, loaded. 3 Trigger modes.

- Central Modulation Environment: 6 freely assignable pairs of source/target parameters, 3 additional prewired pairs for common musical gestures (Vibrato, Tremolo, Auto-Wah), 6 hardwired slots for real time controllers (Mod Wheel, Pitch Bend, After-touch, Breath Controller. All parameters are Midi Controllable.

2.3   *Music Playing*

- Advanced PolyOne Arpeggio, with fully configurable note order, Gate and swing parameters

- 8 Play Modes (5 Poly/3 Mono) allowing multiple keyboard playing techniques

- Deep integration and interaction between Play modes, Arpeggio modes, modulations and per voice core sound engine for organic and expressive instruments.

- Up to 8 voices Unison with Tune spray parameter, Oscillator drift and Output Vintage parameters to model several aspects of analog hardware synthesizer, unique Modulation randomizer : Use these 4 parameters to customize big as life patches

2.4   *Effects*

- New Stereo Delay with Cross Feedback and Damp feedback, exclusive BBD Vintage chorus, Phaser, and Double EQ with emphasis

2.5   *GUI and UI*

- IVF UI Concept based on exclusive Flower Design of Oscillators , LFOs, Filters and Glide blocks for Instant Visual Feedback of synthesizer modules.

- Exclusive Intelligent Feedback Pane : You'll find here all the information useful to understand, then modify or adapt a preset to context.

- Adaptive UI.

- Database : Double Criteria Search Engine : Find the right patch for your tracks in seconds, build your own favorites sound banks, project, CD or Live sound banks, and export them with a single click. Cross platform preset format.

- A/B compare slots

Oxium is available in the following formats:

- **Mac OSX 10.4 (32 bits), 10.6 (32&64bits) and later**: VST, Audio Unit, RTAS (Pro Tools 7.0 and later)
- **Windows 7, XP and Vista**: VST, RTAS (Pro Tools 7.0 and later)

Minimum system requirements: 1 Gigabyte of RAM and a 2 GHz processor.

Oxium is a plug-in and is not available as a standalone application

Notice: The screen resolution must be set at least to 1024 pixels width.

3 Installation

3.1 Serial number

Oxium uses a simple serial number based proprietary protection.

When launching **Oxium** for the first time, it will ask for this number.
After submitting, you must close and re-launch it once to complete the registration. This serial number will never be asked for again, even when installing updates.

Tip: It is always a good idea to back up this serial number, or to print it, in case you should have to reinstall **Oxium** (i.e. if you encountered a HD crash for example, or have to reinstall your OS).

3.2 Windows (XP, VISTA, Windows 7)

To install Oxium on Windows XP, Vista or Windows 7, launch Oxium installer file Please download the latest version from the XILS-lab website.

http://www.xils-lab.com/pages/Oxium_Download-Installer.html

Once you have accepted the license agreement, you will be asked to select the installation directory. A destination directory is provided as a default. Presets and various files, like this manual, used by Oxium will be stored in this directory. Please note that this location is different from the VST install directory, which you will need to specify in the next step of the installer.

Once the installation directory is specified, you will be asked to select the VST plug-in directory, with a suggested default location. Keep this default directory if you do not use the VST version.

Important notice for Vista or Windows 7: be sure to use a folder write enable and owned by the user (do not use "c:/program files" for instance). Otherwise you will have to run your music application with "administrator rights".

The RTAS plug-in and its table control management Pro-Tools are directly copied into the following directory:
C:\Program Files\Common Files\Digidesign\DAE\Plug-Ins

3.3 Mac (OSX 10.4 and later)

To install Oxium on a computer equipped with Mac OSX 10.4 or later, download the latest version from the XILS-lab website to make sure you have the latest version of the software.

http://www.xils-lab.com/pages/Oxium_Download-Installer.html

Then launch the install program, Oxium.pkg, and follow the instructions.
Warning: the install program will ask you for your system password.
The various files of Oxium will be copied into the following directories:
Library/Application Support/Digidesign/Plug-Ins
Library/Audio/Plug-Ins/Components
Library/Audio/Plug-Ins/VST/XILS-lab (32)
Library/Audio/Plug-Ins/VST/XILS-lab (64)
Library/Application Support/Documentation/XILS-lab/Oxium
..users/username/Library/Preferences/XILS-lab/Oxium

4   Quick Start

4.1   Launch, Play

When you launch **Oxium** in your host, an Init preset is loaded.
It is a simple two-oscillators sound, which can be seen as a basis for your sound design.

You can directly use or modify this preset, or load one of the 250 factory presets.

To browse the factory-preset library, just select a category of instruments, using the **BANK** drop down menu found at the left of Oxium Tool Bar. (See Picture Below)

You can then use the up and down arrows located at the right of the preset name, or open the bank drop down list by clicking in the **PRESET NAME AREA**

Note: We have also provided different Init Patches, which can be seen as a good basis to begin to design new presets.

4.2   Toolbar
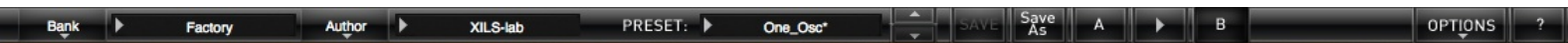
Note: The toolbar at the top of the interface lets you load or save presets, as well as **BANKS** of presets, make a comparison between two different versions of the current preset A & B, or modify the options. These functions are described in detail later in this manual.

Selecting a preset : Click on the **PRESET NAME AREA** to display the list of the available presets in the current sorted group.

Warning : Please note that selecting a new preset without saving your current settings will erase any changes you have made to those settings.

Selecting a group of presets : Click on one on the two CRITERIA buttons to change criteria and define a group of presets that will match the two filtering criteria.

You can sort presets by: **Author, Feeling, Type, Style, Bank or Projects**.

Info : Please note that **Oxium** will display presets sorted by instruments Categories (Type = Bass, Keys, Leads etc) or the Factory Library Bank by default.

Please note that the **Odium's** powerful Preset management is fully detailed in chapter 6 of this manual.

4.3   Adjusting the instruments parameters (Knobs, switches)

On **Oxium**, most sound parameters, like the pitch of an oscillator, or the filter's Cut-Off frequency are controlled using Knobs.

To adjust the parameters of **Oxium** with the mouse, you have two axes : horizontal and vertical, which will give the same results.

To increase a parameters value, click and drag the knob to the right or to the top

To decrease a parameter value, click and drag the knob to the left or to the bottom.

Fine adjustments : If you **right-click** on a parameter, or if you **hold shift while clicking**, you can adjust the parameter with fine precision (the ? button of the toolbar displays a panel summarizing these shortcuts).

<u>Keyboard shortcuts</u>

In addition we have provided some soft keys combination to perform several very useful tasks:

Windows:

- CTRL+left click: reset parameter to its default value.
- CTRL+right click or CTRL+Shift+left click: initialize the default value of the parameter.
- Win+Alt+CTRL + click: open the MIDI Control panel, with the parameter already selected.

OSX:

- Apple+left click: reset parameter to its default value.
- Apple+Shift+left click: initialise the default value of the parameter
- Apple+Alt+CTRL + click: open the MIDI Control panel, with the parameter already selected.

Note: Other GUI elements and controls, like the Switches, or the dropdown menus, will be described in the following sections of this manual, when you'll need to use them.
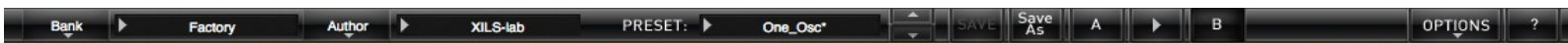
The switches are simpler: just left click to change their state. A right click will change the state only while the button is pressed, and return to the previous state when it is released.

When a parameter is chosen via a drop down menu, just click on the button or label and select the item.

5 Preset Management

5.1 Main Toolbar

In the toolbar you can find two Criteria buttons, displaying the CRITERIA name (Bank, Author, Type, Style, Feeling or Project), which open the sort management menus.

The first two text fields show the current sorting criteria, and the third shows the chosen preset in the resulting selected group of presets.

Clicking on the arrow on the left of the category or preset names opens the corresponding menus.

Info: Once one parameter of a preset has been modified, the name of the preset is followed by a *****, indicating that the current settings of **Oxium** no longer matches the stored preset.

When you want to save a modified preset, click on the **Save** or **Save As** button.

The **SAVE** function will overwrite the current preset with all the edits you have made. The **Save As** function gives you the opportunity to save your preset under another name, in a different bank, and with different tags.

Factory Preset Protection: In order to prevent you from erasing them, the Factory presets cannot be overwritten using the **SAVE** function. When you edit a Factory preset, the **Save** button will therefore be grayed, and you MUST use the "**Save As**" function to save it in another bank.

If you edit any other preset than a Factory one, the **Save** and **Save As** functions will both be available.

As soon as an edited preset has been saved, the ***** will disappears. Until you eventually begin to edit it again.

5.2 Preset menu

Click in the **Preset Name Area** to display the preset list. Here you can choose and load another preset from the current selected group of presets into **Oxium**.
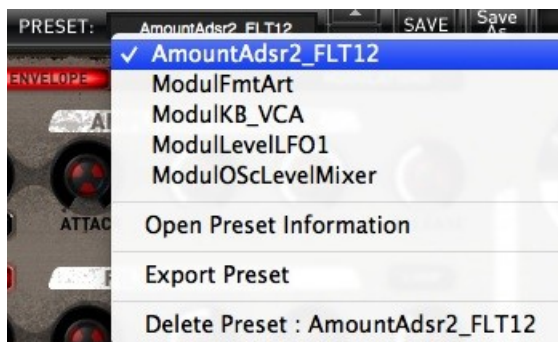
In this menu, other actions are also available:

Delete Preset: use this to delete the current preset (a popup confirmation window appears). This option is only available if the current preset is not a factory one.
Export Preset: Use this function to export the current preset in an external file (???? format). This file can be imported later as a new bank. It always makes sense to back up your presets on external media.

Open preset Information (or click on SAVE AS): opens the following preset information window where the name and all other information related to the current preset can be displayed or changed.

In this window you can modify the **Name** of the preset before saving it, or moving it to a NEW LOCATION (Bank) specify the **Bank** in which the preset will be saved, or create a **NEW BANK**, and also enter **TAGS**, or create your **OWN CUSTOM NEW TAG** in the other fields:

- **AUTHOR (**Your name, mostly used by Sound Designers for factory presets**),**
- **Type** (Category of the instrument like Keys, Leads, Basses, also)
- **Style** (Musical Genre),
- **Feeling** (Cold, warm, soft, Sweep,) and finally
- **Project** (My Favorites, My Song, My_Live_Project, Patches for my next CD).

You can also see its creation date and the last update date.

To modify a preset name, click in the preset **NAME** field; and enter the new preset name.

To change the preset location, click on the **BANK** display, this will open a menu when you can select one of the existing sound-banks, or create a NEW BANK.

Note: You can add a new item in any category, and therefore create custom banks (My Sound-bank), custom styles (Musical genres), categories of instruments, and custom projects etc.

Creating custom tags and sound-banks: To add a new item in any field, click in this field, then instead of using an existing item, select "**New....**", which will appears at the bottom of the list. This will open a separate window in which you can write the name of the new item. Click OK to confirm this, name and the newly created tag will now be active, and selected for the current preset.

Note (You may have to browse until the end of the list in order to select "new" depending on its length.)

TIP: How to create a Favorite Sound-bank:

Two possibilities:

1/ Just create a bank, named My Favorite, and save all the interesting patches in this sound-bank. To browse all your favorites just set the first criteria to **BANK**, then select My Favorite (you can still use the second criteria to filter results by categories of instruments to browse all your favorite basses for example) This method is fast, but will duplicate your patches.

2/ Just create a new tag in the **Project** field, and name it My Favorite, then just resave (using **SAVE AS**) any interesting patch with this tag. To browse your favorite, just choose this tag in the project field as first criteria. This method is maybe more interesting because you can reverse it: Should you decide a particular patch doesn't deserve no more to be honored by its Fav tag, just remove the tag and resave it.

Note: Please be aware that creating to many categories can also have its drawbacks, making browsing go from slightly difficult to very cumbersome. Should you create around 200 different custom instrument categories, it would become very difficult to browse the library using the Style (Category) sorting. So use these possibilities wisely.

Once you have filled all the desired/required fields:

SAVE AS: Will save the current preset in the chosen Bank, with its new (or unchanged) Name, and tagged with all the fields you filled in.

MOVE TO: Allows transferring the current preset in another location (Bank). This is handy to gather a lot of preset into a single location, or User Bank, which you can export in a single file containing all the presets you created or edited for a given project.

CANCEL: Will just cancel all operations and return to the standard **Oxium** GUI.

5.3 Sort menus
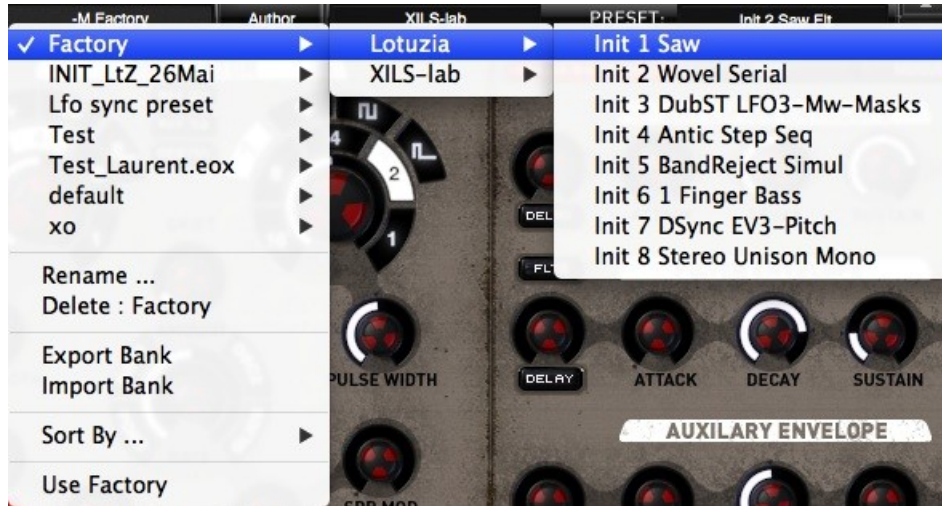
The sorting menus are unique and a powerful tool. Allowing you to perform sophisticated tasks, such as displaying the preset list organized in a variety of different ways:

- All the Basses of your Sound Library
- All the Basses tagged with a given musical genre
- All the Pads made by a given Sound Designers
- All instruments for a musical genre like Electronica, or Funk
- All instruments that were recently imported in a bank (like additional sound-sets from Xils-Lab or 3rd party vendors)

There are indeed a lot of possibilities, and we're confident that you'll find the best way to customize it to your personal needs.

In order to perform such selections, all you have to do is to select an item in the first sort menu. This represents the first and main criteria for the search engine.

- **AUTHOR** (Your name, or a Sound Designer name for factory presets**)**,
- **Type** (Category of the instrument like Keys, Leads, Basses, etc)
- **Style** (Musical Genre),
- **Feeling** (Cold, warm, soft) and finally
- **Project** (My Song, My_Live_Project).
- **ALL** (this item is not used for sorting the preset)

These primary results can then also be filtered according to second criteria. Which can be chosen from a similar list in the secondary sort menu.

Sometimes a picture is better than a lot of text, so you'll find below an example where you can find out how to select all the basses designed by a given Sound Designer.

Please note that, once you are familiar with this system, you can also perform some operations in a single click, by using the Sub Groups to choose a preset:

In the picture below the primary sort menu is used to browse the different banks. Then in a factory bank, the author Xils-Lab is selected, and finally the Preset XO Bass. In this example the preset is selected in a single click

operation, and the presets available in the preset list will be all the Xils-Lab presets available in the entire Factory Sound Library.
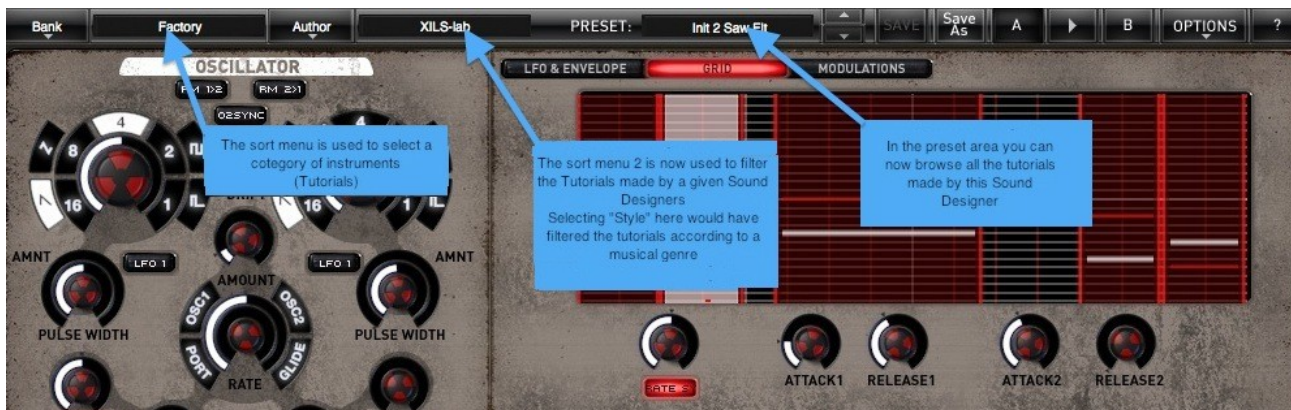
Click on the **row** of the sorting button to open the menu used to manage this sorting group (or sub group). Here you can directly select and load any preset from any group or subgroup.

5.3.1 Sorting Menu: Additional Functions

In this menu, other actions are also available:

Delete: deletes all of the **presets of the current group that are not factory ones.**

WARNING: Use this function with EXTREME care: If the bank does not contain any factory presets, ALL PRESETS IN THIS BANK WILL BE PERMANENTLY DELETED.

Rename: modifies the current group name. Selecting this choice will open a window where the new name will be entered.
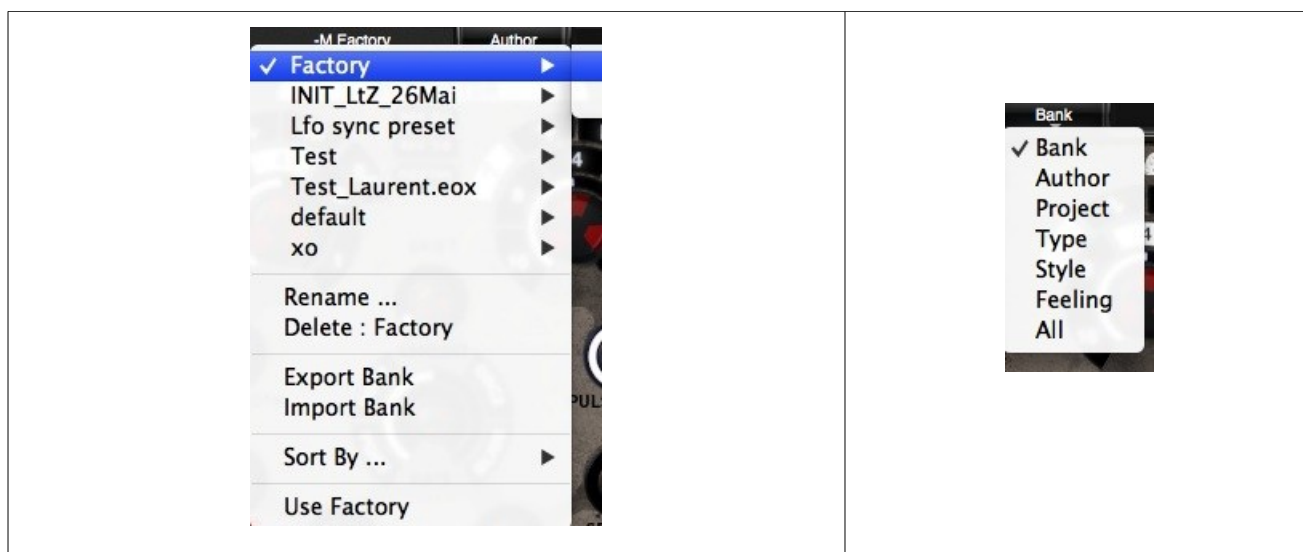
Use Factory: enables or disables the display of factory presets.
Sort By: This function sorts the presets according to bank, author, project, or shows all presets (**Bank Name**, **Author Name**, **Project Name**, **All Presets**). The preset menu will show presets of the same category (same author, same project or same bank).

Export Bank: This function exports a bank in **Oxium's** proprietary cross platform format, (Mac and PC). The selected bank (i.e. the bank which contains the currently active preset) will be exported to a user specified location on your hard drive.

Import Bank: This Function allows you to browse your hard drives to select a file and imports an **Oxium** bank.

Please note: These last two functions (Import, Export) are not available from the second **sort** menu.

5.4 **A/B comparison**

You can store two different versions of a patch simultaneously in the two A and B NON PERMANENT memory slots and instantly switch from one to the other to compare their settings.

When you launch **Oxium**, the default-activated memory is A. When you load or modify a preset, this memory – A- is also modified in real time according to your edits. You can switch to B memory by clicking on the B button.

To copy the current active memory content to the other memory slot, just press the button labeled -> or <-, according to the current active memory.

With this A/B comparison system, you can easily have two settings and compare them in a convenient way.

Note: Please note that by default, the B memory slot, until you copy settings into it or until loading a other preset within the other memory slot, is populated with the init patch loaded in the A memory when you first start **Oxium**.

6   Keyboard Arppeggiator

Oxium has a simple yet very powerful arpeggiator.

When ON, this module reads the note hold on the keyboard and instead of playing them at the same time, it will play each note after the other, according to the specified clock rate settings.

Four easy modes are available thru simple switches: **Up**, the notes are played from the lower to the higher. **Down**, the note are played from the higher to the lower and **Up/Down** for which they are played backward and forward. 4th mode? If none of these there modes are selected, then the notes are played in a **Random** order.

Octaves: The cycle can also play through other octaves before restarting when the **Oct** switch is selected.

Selecting the Polyphonic mode allows chord to be played according to a specific sequence, which can be modified easily by the user in the "Arpeggiator Advanced Edit Mode" located in the same panel than the preset information.

ON: enables the arpeggiator (When Lit)
POLY: enable the polyphonic mode
UP: play notes ascending mode
DOWN: play notes descending mode
OCT: enable octave cycles before restart.
SWING: set a swing value to the arpeggio. Turn right to get no swing, turn left to get maximum swing. A 66% value gives you typical jazz swing.
GATE: set the time a note (or a chord) is held by the arpeggiator, from zero to the clock period.
RATE: set the clock frequency of the arpeggio
MIDI Sync: Synchronizes the clock rate to the application host tempo.

Selecting "Information" above the keyboard: opens the information panel where you will also find the Arpeggio Advanced Edit Mode where the other parameters of the arpeggiator can be set (see image below)
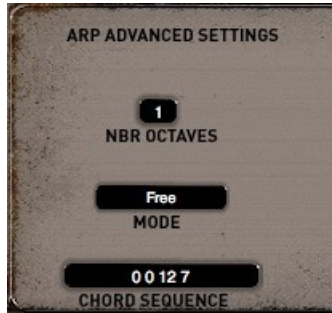
ARP NBR OCTAVES: selects the number of octaves applied when the switch **Oct.** is ON

ARP MODE: selects the way the new notes are managed. **Free** updates the arpeggiator immediately, but you can also choose "After Each Note" or "After Each Cycle".

ARP CHORD SEQUENCE: The chord sequences transposition played in polyphonic mode can be edited there. Each number, from 0 to 12 stands for the base of the chord, and must be separated by a space, comma or semi-colon.(0 0 12 7 = 0.0.12.7) Up to 32 successive numbers can be entered.

7   Oxium modules description

Oxium GUI is divided into logical areas, most of them are always visible, while two areas are switchable and will expose different elements depending on your selection : the first switchable area is located at the top left of the GUI, and will display the LFO/Envelopes block, or Le Masque 2 block, or the Central Modulation page. The second switchable area is located at the bottom of the synth, and will display the Keyboard, or the Effects Blocks, or the Info/Advanced Arp settings block.

7.1   *Synthesis*

7.1.1   Oscillators

Two warm, aliasing free multi waveform oscillators are available. Tuning them is very simple thanks to a new ergonomic approach Flower Design oriented GUI, featuring three concentric circles: waveform selection, Octave range and fine-tuning.

Tune: The inner circle is dedicated to the tuning knob (in semi-tones up to +/- 12). Clockwise rotation of this knob increases the pitch of the oscillator up to 12 semitones; counter clockwise rotation decreases the pitch. Using the **ALT keyboard modifier allows snap to semitone**; otherwise, the settings are continuous and you can enter Fine Tuning mode by holding the Shift Key and turning the knob.

Octave Range: Middle side selecting ring. Just click one ring, or move the mouse up or down, will set the Octave range of the oscillator (from 16' to 1')

Waveform labels and Switches: When on (lighten) the corresponding waveform is selected and active. Please note that you can stack several waveforms for each of the oscillators.

R.M labels: Ring Modulation circuit select button. This modulation can be used to produce metallic or bells sounds, depending on the waveform selected.

WIDTH: Pulse Width Control (This settings affects all waveforms: The pulse, but also the triangle or the sawtooth waveform depending on these latter settings). This knob controls the pulse width of the pulse waveform, but also the triangle leading edge or the double pulse of the sawtooth, depending on which waveform, triangle or sawtooth you have selected.
The External Ring sets the Pulse width modulation amount related to the LFO selected by the LFO switch that toggles through the three available LFOs.

SYNC label: Forces oscillator 2 to start a new cycle whenever oscillator 1 does. This means that oscillator 2 can only play harmonics of oscillator 1. This is very useful when Oscillator 2 is modulated with an LFO, an envelope, or used through the glide (see below)

Triangle using Pulse Width
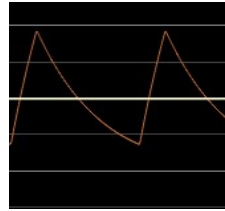
Saw using Pulse Width

Square

Pulse

7.1.2 Multimode Filter

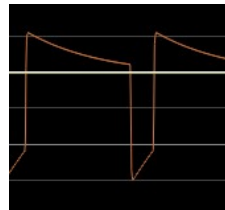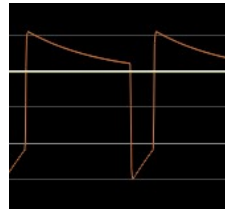Oxium's filter is an accurate dynamic multimode 4-pole self-oscillating filter based on our proprietary zero-delay-Feedback filter algorithm for an authentic analog sound.

FREQ: This knob sets the cut-off frequency of the filter.

RES: This knob sets the resonance (or quality factor) of the filter. When set to the maximum the filter self oscillates, it will output a kind of sine wave even without any audio signal feeding its input. (I.e. even if both Oscillators are muted). This knob is sometimes called "emphasis" or "Q".

KEYB: set the amount of the keyboard follow Cut Off modulation. This knob is centered and the modulation can be positive or negative, when centered there is no modulation occurring.

AMNT: Set the amount of the filter envelope applied to the Cut- Off modulation. This knob is centered and the modulation can be positive or negative, when centered there is no modulation occurring to the cut off.

Drive: Set the level of the overdrive emulation circuit. Turning totally left disables it while turning totally clockwise gives a strong driving effect. Depending where this stage is placed, pre or post filtering you can get a subtle low-end enhancement or a sort of saturation effect.

DRV Pre/Post: Clicking on the label [DRV PRE or DRV POST selects if the driving stage will be applied before or after the filter stage.

Mode of Filter Operation selects Buttons:

LP12: select a Low-pass 12 db/Octave, meaning that the frequencies above the cut-off point are attenuate at a rate of 12 db/octave
LP24: select a low pass 24 db/octave
BP6: select a band pass 6 db/octave
BP12: select a band pass 12 db/octave
HP12: select a high pass 12 db/octave

7.1.3 Additional 12db and Formant Filter

Oxium provides one additional filter: You can select a simple 12db Low-pass, High-pass and band pass filter or a formant like dedicated filter.
Like Oxium main filter, the auxiliary filter benefits of its own mixer. You can therefore adjust in a very precise way the levels of the different oscillators feeding the filter input.

To select the desired filter type, just select it in the following dropdown menu. Please note that when none is selected, no second filter is active and that you'll save some CPU.

FRQ/VOWEL: set either the cutoff frequency, either the vowel, depending on the filter selected **RES/ART**: set either the resonance (or emphasis) either the articulation (how the vowel is articulate), from low to high.	

7.1.4 Envelope Generators

Oxium features three envelope generators (EG). The first one is hardwired to control the output level stage (VCA) while the second is dedicated to the control of analog Multimode filter's Cut Off value. The last and third one can be used freely in the modulation matrix (see below).

Tip: Please note that all these three envelopes are available as sources in the Modulation Matrix.

Clicking on the "**FLT2**" label allows the second envelope to also modulate the 12db/Formant filter as well as the Analog Multimode filter

An envelope generator is a classic electronic module that outputs a command signal, built on four parts: ADSR (Attack-**D**ecay-**S**ustain-**R**elease). Oxium adds a fifth part; a sync-able to Midi delay time, before the Attack step.

DADSR : When the envelope is trigged (generally by hitting a note on the keyboard, or from the output of a sequencer or an arpeggiator) it begins with the "Delay" part, and when the time reaches the delay value, goes to the "Attack" part: From zero to the maximum level, the EG outputs a signal which increases in a time depending on the **Attack** setting. Then follows the "Decay" part, while the output decreases to a level specified by the **Sustain** setting, during a time specified by the **Decay** setting. It stays on this "sustain" level as long as the EG is gated (i.e. as long as the note is held). Then when the note in off, it goes into the "release" stage, while the output continuously decreases to zero, depending on the **Release** setting.

DELAY: set the time before the envelope enters the attack stage.
MIDI Sync LED: When ON, the delay time is set according to the Tempo of the application host.
Attack: set the time over which the output increases.
Decay: set the time the output decreases to the sustain level.
Sustain: set the sustain level, maintains while the EG is gated (the note is held, i.e. sustained)
Release: set the time the output decrease to zero after the note is released.
FLT2 : Allow the Filter envelope to modulate the second filter (12db/Frmt)
LOOP : Allows the envelope to loop through all its cycle.

7.1.5 LFO1/2/3

Oxium proposes three Low Frequency Oscillators, which can be used as modulation sources in the Modulation Matrix, and in the three-hardwired musical gestures knobs (Vibrato, Tremolo, Auto-Wah). You can cumulate different waveforms for each LFO

Tip: This is especially handy if you wish to add some subtle movements and modulations to an instrument. Adding several waveforms to an LFO will avoid the repetitive feel of the LFO

<table>
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In this picture you can see the three LFOs. Each one can be tuned with the following controls :

FREQ: Controls the speed of the modulation effect.

DELAY: set the delay time between a note ON and the beginning of the fade in.
FADE: set the time for the output to rise from zero to the maximum level.
RETRIGG : Reset the LFO waveform when the Note is ON.
Midi Sync : Click on this led to synchronize the LFO rate to the tempo of the application host. Please note that the rates will be displayed in musical notation if the sync is engaged. (LED On)
**Waveforms Buttons:** The various switches select the different available LFO waveform(s). Sine, Triangle, Saw, Ramp, Square, Random (S&H).
Please note that you can select different waveform simultaneously, and can therefore build unusual and very complex LFO waveforms when combining several waveforms.
MONO : The corresponding LFO is no more polyphonic, meaning the same modulation is applied to all the activated voices.

</td>
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</table>

Notice : Reset and Mono can be autonomic (which note is resetting the LFO ? The first one after a blank, every new note ?) . So you can get the first case when using either a Mono playing mode, either reset polyphonic playing mode (see below).

7.1.6 Glide/Portamento Master
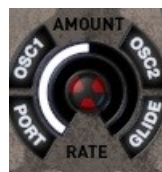
O1 O2 labels: Click on the oscillators symbols or buttons to route the glide or the portamento to them.
GLD label: Click on the glide symbol or button enables the glide function.

PORT label: This portamento select button enables the portamento function for the selected glide/portamento destinations (Oscillator 1, 2, both).

SPEED: This knob sets the rate of the glide and/or the portamento effects
AMOUNT: This knob sets the amount, +/- 32 semitones, of the glide effect. Each time a note is triggered, the pitch of the selected destination begins from the actual note played +/- the amount of the glide and return to the correct pitch in a time according to the speed knob.

TUNE : set the global tune (including all the keyboard follower) of **Oxium**. It is not saved within the preset and is used to adapt the tune of the synthesizer to the other instruments. Of course it is saved within your music application project.

MASTER : set the global level (including the effects) of **Oxium**.

VINTAGE : This knob controls how the settings are applied to the various voices. When turned left, the settings are applied identically to all the voices, when turned right, they are applied with some an exclusive analog feeling indetermination.

The following drop-down menu set the playing mode, unison and number of voices of polyphony (from 1 to 16)

POLY circular 1: polyphonic, voices are selected one after each other

POLY circular 2: polyphonic, voices are selected one after each other but trying to keep a non circular cycle;

POLY reset: polyphonic mode, voices are selected from the voice number 1.

POLY reassign: polyphonic mode, each voices are selected trying to keep a previous note (useful in some case, for the portamento effect).

POLY random: polyphonic mode, each voices are selected randomly.

MONO low priority: Monophonic mode with low priority (when two notes are ON at the same time, the lower is played) (Emulates the Moog Synthesizers behavior)

MONO high priority: Monophonic with high priority (when two notes are ON at the same time, the higher is played)

MONO last priority: Monophonic with last priority (when two notes are ON at the same time the first which was activated is played)

MONO Legato (Low, High, Last priority) : same than the three above, but the envelopes are not trigged when the notes are played legato.

UNISON: set the number unison voices.
This means that each time a note is triggered (from a MIDI message or from the virtual keyboard) the corresponding number of voices will be trigged. Of course, for a correct use of this setting, the available number of voices must be greater than the number specified in the Unison settings (an available number of voice multiple of the unison number should be the correct value).

Warning: This setting, added to long release and a high available voice number is very CPU intensive.
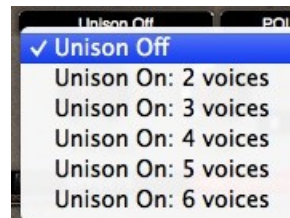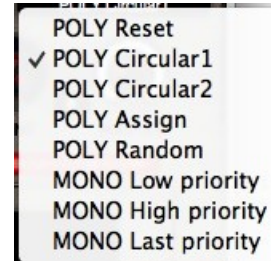
7.1.7 The Drop Down Matrix Modulation

The Modulation Matrix offers six freely assignable sources and modulations pairs.

You select the source of modulation in the left field drop down list, and the destination, or the amount knob can specify target, into the right field, while the amount of modulation.

So for example if you want to modulate the filter resonance with a LFO, just choose one of the 3 available LFOs in the source drop down menu, and Filter resonance in the destinations dropdown list. Then move the amount knob until you get the desired effect

Important : Please note that by default the amount knob, which is centered, is set to 0 position, and therefore no modulation will occur before you set it to a value different than zero. You MUST set it to another value than zero to actually modulate the target with the source.

Source Menu: allows selecting 6 different sources (one per line) via a drop down menu. The sources can be chosen within a wide range of modules.

Destination Menu: select which parameter the source will modulate. The available destinations can again be chosen from a wide range of modules.

AMNT: specifies the amount of the modulation. Each knob is centered and bipolar, In center and default neutral position, no modulation will occur.   Turning the knob clockwise from neutral position will give positive modulation, while turning it anticlockwise will give negative modulations

Available Modulation Sources:

Most sources like ADSR 1, 2, Velocity, Pressure (After-touch), LFO1 and 2, or Mod Wheel are self-explanatory.
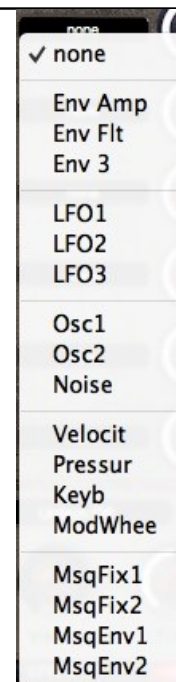
Available Modulation Destinations:

All these target parameters are detailed in the other sections of this manual

A few tips and tricks:

You can choose to modulate the Decay of the envelopes in arpeggios; this will give similar results as controlling the gate parameter of the Arpeggiator.

The envelopes can be used for inverted modulations, which is not the case in the main panel. You can use it to emulate some famous vintage patches like those of the legendary Jupiter Synth.

The VCO2 only modulation option is very helpful for Synced sounds. Try it with the mod wheel while the OSC 2 sync is engaged.

Slight modulation of the Chorus or Phaser rate will provide very subtle modulations, and might prove to be very useful for all ensemble, symphonic, or heavy chorus effects.
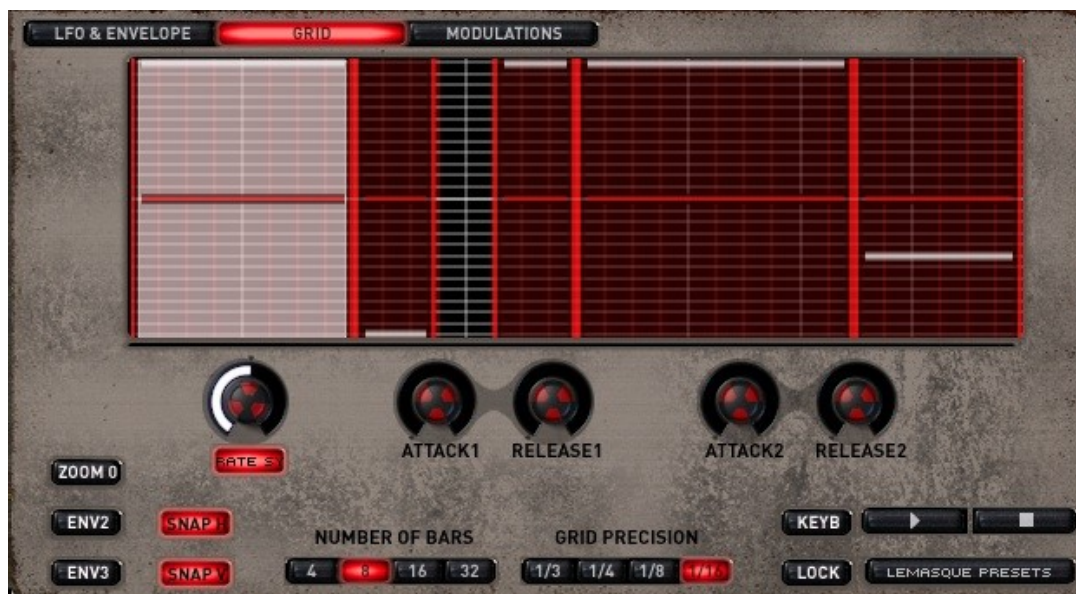
Modulating the Glide parameter will provide crazy TeeBee patches for example.

Finally, modulating the delay times can lead to glorious Spring Reverb like ambiances

Oxium provide a new, powerful, easy to use advanced sequencer modulator, brought from Le Masque: Delay Xils-Lab effect, and adapted to the synthesizer specific modulations.

On the Grid you can perform the following tasks: create, delete and edit the different Masks, specify the length of the grid, quantize locators, swap between mask and non masked areas, and specify the background quantization of the Grid itself, horizontal wise but also vertical wise.

7.2.1 Creating, Deleting, and editing the Masks

Masks are the light blue zones visible on the Grid. If the Grid has only its black background, then no mask is present.

Creating a Mask: To create a new mask, just Left click in any black part of the grid, or in other words, somewhere else than in another Mask.

 If you only left click in the grid a new mask with a standard length will be created. You can always change the length of the mask later. If you want to specify the length of a mask at once while creating it, you'll have to click and drag: Just left click to define the place of the left locator, and while keeping the left click on, drag the mouse until you reach the desired end of the Mask.

You can create up to 16 different Masks.

Deleting a Mask: Just Right Click in a Mask area, i.e. between its two locators, to delete it.

Editing Mask's Locators: Just click and drag the left or right locator of a Mask to change their position in the Grid. The Locators can also be quantized. (See Below)

The Mask Levels Parameter: Within in each Mask you can see two little white and yellow horizontal bars (A freshly created Mask will inherit two default one located at mid height) this are the Levels Parameter. This is not a standard level parameter, but a **modulation source**, which can be used to further modulate some **Oxium** parameters, like the Filter Cut Off, or the LFO rate, in the Modulation Matrix. (Please, see the Modulation section of the manual for more details about this)

To increase, or decrease, the levels of each Mask by click-Drag the white or yellow bar.

TIP : When the white and yellow bars have the same value, only the white level is visible (the yellow bar is under the white one) Moving the white bar will allow you to see the yellow one. Using ALT modifier will allow you to move the yellow bar instead of the white one, regardless if it's visible or hidden.

7.2.2 Global Mask Controls

Under the grid, you can find various parameters

ATTACK/RELEASE 1 and 2 : two pairs of attack/release parameters, one for each of the internal locator parameter, are available. Le Masque, as a source of modulation, offers either the fix level of its internal value, either the output of an attack/release envelope, fed with these levels.
When the current cursor is inside a locator, Le Masque output the level. When it is outside, it outputs a zero (no modulation).

Grid display : The grid can be off 4, 8 16 or 32 bars, each bar divided in 1/3 (for triplets), ¼ (for quarter notes) 1/8 or 1/16. You can easily place a locator on the grid thanks to the horizontal and vertical "**SNAP**" switches.

Lock Function : Locking the grid by clicking on the "**Lock**" label avoid to change your settings by error.

Number of bars: Specifies the length of the Grid loop in bars. The choices are 1/2/3/4 bars.
Please note that the existing Masks will be preserved if you change the number of bars on the fly. Use the **Snap** Mode to quantize locators and align them according to the GRID PRECISION settings.

Grid Precision: Displays green vertical bars based on a musical division of the bar and beat. These vertical bars are just indicators, which help you, define, create and edit the Masks with the best possible precision.

However, please note that, when the SNAP function is enabled, the quantized locators will be positioned according to the Grid Precision settings.

Trigger Modes : Le Masque can be started either freely by clicking on the Start/button, either when your DAW is playing, either when a Note On message is received by Oxium. You can choose between these three modes thanks to the 3-position selector.

RATE : set the rate of Le Masque. The rate can be free, or synced to the current tempo of your DAW.

ENV 2 and 3 Toggles : Allows the envelope 2 and/or envelope 3 to be retrigged each time the LEFT locator of a Masque is reached.

ZOOM : Le Masque provides two zoom level. By clicking on this label, you can get the full masque, zoom1 (x4) or zoom2 (x8). When zooming move the view by moving the slider just above the Grid.

Le Masque Presets : opens a menu to save the current settings of Le Masque as a template, or load a factory or previously saved template.

We have paid a lot of attention so that **Oxium** would be very straightforward, fast and easy as possible to use, and we included some common musical gestures, like vibrato, tremolo or auto-wash in a prewired form in the Central Modulation Page, so that you can add Vibrato, Tremolo or Auto-Wah by simply turning a knob.

The same spirit lead us to offer some prewired modulation slots for all the real time midi events like Velocity, Modulation wheel, positive or negative pitch bend, polyphonic or monophonic aftertouch, and finally the breath controller.

Important : Please note that Oxium will receive and react to polyphonic Aftertouch.

The 2-D Pad shows how the pitch bend but also the modulation wheel and the expression (Aftertouch or Breath controller) are received by **Oxium**. The Joystick is separated in two, one for the modulation wheel, (From center to top on vertical Axis), and the other one for the expression. (From bottom to center on the vertical axis)

This way, you can easily check how these controllers are modulating your sound by moving one or the other art with the mouse. Expression is the sum of the following components : PolyMono Aftertouch, Breath control.

For each source controller, two-destination drop down menus are provided, allowing fully controllable and expressive patches for real live performances, or studio works.

TREMOLO, **AUTOWAH**, **VIBRATO amount Knobs** : These knobs set the amount of their corresponding modulation (Oscillator pitch for vibrato, VCA level for tremolo and cutoff frequency for Auto-Wah). The internal knob set the rate of the corresponding LFO.

The 3 positions selector above these knobs select which LFO is used for a given music gesture.

Please note that by default on all patches : LFO1 is prewired for Vibrato, LFO2 for tremolo, and LFO3 for Auto-Wah, so that you can find easily with LFO you have to modify to change one of these musical effects. Of course you can change that and freely assign these LFOs for other tasks, or use the same LFO for two effects.

7.4   *Balance, Tune and Modulation knobs*

Oxium offers several easy and simples ways of spreading the settings Balance, Tune and modulation amount over the various voices. Getting a fat sound with unison, a wide stereo space pad or slightly various differences between voices are now very easy.

BALANCE Knob : set how the sound is put in the stereo scene, either using our proprietary stereo-izer engine, either using a standard pan parameter .

PAN Label : set which algorithm is used for the balance, panoramic or stereo-izer.

SPR STEREO Knob : Let you specify the amount of stereo spread between the different voices. This effect depends on the number of available voices (number of polyphony) because the stereo settings are dispatched over the available voices.

TUNE Knob : Let you specify the amount of detune spread between the different voices when, and ONLY WHEN, the Unison engine uses MORE THAN ONE VOICE. How does it differ from the Drift parameter you can find on the oscillator level ? It's a different special algorithm, especially designed to get fat and thick sounds. So you can use both in a patch.

MODULATION Knob : When the value of this knob is different than zero, all the modulations found in the Modulation Matrix will go thru some chaotic functions, which will generate some real time true random variations. The most clockwise this Knob will be, the most chaotic you instrument will be so you're warned : After a certain point things might become more chaotic than you'd have wished for. This effect depends on the number of available voices (number of polyphony) because the amounts are dispatched over the available voices.

7.5   *Mixer Area*

The Mixer area includes two flexible mixers are provided so that you can set the oscillator's balance before they feed the input of the two filters.

The left mixer, will feed the Main filter, while the right mixer will feed the input of the Auxiliary Filter

Oscillator Level : is set in each mixer according to its fader's level. Here you can balance the level of the oscillators 1 & 2, and of the Noise Oscillator. The toggle Switch **WHITE**/**PINK** lets you select between pink and white noise.

Note : Use Alt+click to link Osc1,Osc2 and Noise levels (when they are not null).

In addition you can put the filters in serial or in parallel, using the center fader, and its associated controls.

Parallel structure : when the centre fader is set to zero, the structure is parallel. (Default Mode)

Serial structure : the centre fader is sending the output of one filter into the input of the second. You can choose which one, by clicking on the top tab, where the arrow indicates the signal path, and which filter feeds the other. Clicking on the **Mute** switch mutes the output of the first filter, getting a full serial structure. You can use this to solo the other filter

7.6 *Virtual keyboard*

The keyboard lets you play notes, by clicking on its keys that are sent to Oxium. The keyboard also reflects the MIDI note ON information that **Oxium** receives, triggered by an external keyboard controller, or your DAW.

7.7 *Effects modules*

7.7.1 Delay

DRY/WET: Sets the mix level between the initial signal and the processed signal
DELAY: set the time delay (right or left)

FEED B: Sets the amount of the delayed signal which is reused (left and right)

CROSS RIGHT/LEFT: Sets the amount of the delayed signal, which is reused from the left to the right or from the right to the left.

DAMP : set the amount of high frequencies that are discarded during the feedback.

MIDI S: Sets the time delay according to the tempo (the time will change each time the current tempo of the host application changes)

Note : Use Alt+click to link Left and Right controls.

7.7.2 Chorus

DRY/WET: Sets the mix level between the initial signal and the processed signal

SPEED: Sets the rate of the internal low frequency oscillator of the chorus.

AMOUNT: Sets the amount of the effect.

TYPE: Toggle through the three available types

7.7.3 Phaser

DRY/WET: Sets the mix level between the initial signal and the processed signal

SPEED: Sets the rate of the internal low frequency oscillator of the phaser.

AMOUNT: Sets the amount of the effect, meaning how deep the sweep of the internal filter will be.

SWEEP: Sets the middle frequency around which the sweep is done.

RES: Sets the amount of the internal audio feedback.

STEREO: Sets the phase difference between the right and the left channel.

7.7.4 Equalization

The EQ section provides two High/Low shelf filters, designed to avoid any artifacts near the Nyquist frequency, allowing an analog feeling and a very clear sound.

EQ On/Off led : When lit the EQ is active.

FREQ: Sets the cutoff frequency.

RES: Sets the quality on the filter.

GAIN: Sets the level of the shelf. (Centered knob, turning it clockwise will increase the frequency content specified, while turning it anti clockwise will lower the specified frequency content)

ON LED: This diode is located at the bottom right of each frequency knob, and enables the low and/or hi EQs

Please note that to be active, both the EQ switch diode and at least one of the two EQs ON diodes should be lit AND at least one of the two Gain knobs should have a value different than center.

Note : You can use the on/off diodes of each EQ to bypass it and compare the signal with and without EQ low or hi.

8   Option menu

This menu allows to choosing the global settings. These settings are defined for all the instances of Oxium. Each time an option is changed, the related option file is saved.

8.1.1 Main

In the toolbar, the **Options** button opens a menu for selecting various options for Oxium.
This menu shows the following options settings:

Oxium About: displays information about Oxium (version, build date and credits).

Open MIDI settings panel: Opens a popup where you can assign MIDI controllers for each of Oxium's parameters. Click on the parameter label to select the parameter you want assign, then enter the MIDI controller number (from 0 to 127), or switch on the learning switch and send a MIDI command with the correct MIDI controller number. Oxium will memorize it. This setting popup can also be opened by CTRL+ALT+Apple+Left-click (Mac) or CTRL+Win+ALT+Left-click (Win) on the desired Oxium parameter.

8.1.2 Display

Display low frequency as BPM: Allows displaying the low frequency (LFO, oscillator 2 in low mode, clock rate in BPM instead of Hz)

GUI follows presets: When checked, this option allows the GUI to follow the presets. That means that the special display modules are refreshed following the preset settings. Otherwise it keeps the same view.

Output level follows presets: When checked, this option allows the output level to follow the presets. That means that the output level is programmed with the value saved in the preset.   Otherwise it keeps its value.

Popup On: shows a popup window while modifying the value of a knob.

Popup Over On: shows a popup window when the mouse is over a switch.

Popup Name On: the name of the current modified parameter is displayed.

GUI update: low: slow refresh rate for the GUI. Useful when it is necessary to save CPU power.

GUI update: middle: standard refresh rate for GUI.

GUI update: fast: fast refresh rate for GUI. Useful when it is necessary to precisely follow the sequencer's led for instance.

Change Skin : select the second skin. The plug-in has to be re-launched to display the new graphics.

Change Knob : select the other style for the knobs. The plug-in has to be re-launched to display the new graphics.

8.1.3 Misc

Init settings from current settings: initializes the default values of **Oxium** from the current settings. All the new presets will be created from these settings, when the **init settings** choice is selected. These parameters will also be used when setting a control to its default value. (Win: CTRL+click, OSX: ALT+Apple+Click).

Wheel Incr: 0.01: parameter increment of 0.01 when using of the mouse wheel.

Wheel Incr: 0.05: parameter increment of 0.05 when using of the mouse wheel.

Wheel Incr: 0.1: parameter increment of 0.1 when using of the mouse wheel.

9   Credits

Thanks to the artists and musician who really helped us during Oxium development:

The presets were done by:

Laurent Bourgeon (Lotuzia), Simon Ball (Soundsdivine), Nori Ubukata, Pascal Laigle (Tzadi), Kelvin Ford, Ingo Weidner, Sami Rabia (AiynZahev), Michael Cavallo, Xavier Oudin.

The graphical user interface was created by:

Yannick Bonnefoy and Xavier Oudin, assisted by Laurent Bourgeon for the ergonomic aspect and original Flower Design concepts.

This manual was written by

Xavier Oudin and Laurent Bourgeon

And proofread and corrected by:

Michael Logue

The plug-in design, algorithm and Digital Signal Processing was done by:

Xavier Oudin

Modules licenses:

The SPRAY parameters concept, Morphable triangle and sawtooth oscillators, emulation of the Chorus unit based on the Dual Bucket Brigade Delay component, analog zero-delay Multimode Filter, formant Filter, the cumulative waveform LFOs design are licensed by Xavier Oudin to XILS Lab for exclusive use in Oxium virtual synthesizer.

Le Masque concept is licensed by Laurent Bourgeon to XILS-lab for exclusive use in Oxium virtual synthesizer. Le Masque concept, originally done for the Le Masque: Delay effect plug-in, was adapted for Synthesizer by Xavier Oudin.
IVF (Instant Visual Feedback) concept and flower Design Oscillators, Filters, LFOs and Glide are licensed by Laurent Bourgeon to Xils-Lab for exclusive use in Oxium virtual synthesizer.