Syn'X 2

User Manual

www.xils-lab.com

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1 Introduction

Thank you for choosing the **Syn'X** !

The **Syn'X** is a virtual instrument based on the architecture of one of the most iconic of all vintage polyphonic synthesizers. So revered that it is still in use today by some of the most well known synthesizer gurus.

We at XILS Labs do our best to create authentic recreations of the great synthesizers we emulate and then take it even further. What can be done with today's computers allows us to take these emulations beyond what was feasible when these products were first created. Our goal is to be true to the original in sound and modulation routings and then add features that were just not before possible.

Ring Modulation, Cross Pulse Width Modulation and Hard Synchronization between the oscillator and a special powerful glide circuit allow the recreation of all the well known Arp lasers and chorused strings that made this synthesizer the icon of it's age.

If you 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 the **Syn'X** 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

2 Features

The **Syn'X 2** is a multitimbral synthesizer and offers 8 Layers (full independent synthesizers) witch share a global polyphony of 16 Voices, and can be freely assigned to any of the two Keyboards

A Dual GUI/UI Environment (GUI/UI) offers you the choice to program and edit the sounds with an Easy Mode (Identical to MiniSyn'X One Page fast and intuitive programming environment, but with access to additional envelopes, LFOs and Mod Matrixes), and an Advanced Mode, giving you access to 8 fully programmable synthesizers that you can combine in all kind of structures.

2.1 *Per Keyboard Parameters (Up to 2 Keyboards)*

- 1 Monophonic/Polyphonic Arpeggio
- 8 mono/polyphonic Play Modes + Guitar Mode (1 Midi Channel per Layer)
- Up to 8 Layers and 16 Voices Polyphony per Keyboard
- Mono/Unison/Poly playing mode with up to 16 voices of polyphony
- Keyboard Range (Low and Hi Note)

2.2 *Per Layer Parameters (Up to 8 Layers)*

2.2.1 Oscillators

- 2 aliasing-free oscillators with cumulative Waveforms (Saw/DoubleSaw/Triangle/Sine/Pulse/Square)
- Ring-Modulation, Pulse-Width Cross Modulation between the two oscillators
- Exclusive new 0df PWM/Hard Sync algorithm
- Hard synchronization between the two oscillators
- Advanced Glide/Portamento module

2.2.2 Filters

- One multi-mode analog modeled 0df filter (12/24 low pass, 6/12 band pass, 12 high pass filter)
- Self Oscillating Filter in all modes
- Pre/Post Drive Module
-

2.2.3 Modulators

- 4 freely assignable envelope generators (DADSR) with syncable Lag.
- 2 Multi Waveform syncable polyphonic LFO (with their own Mod Matrix)
- 1 exclusive Chaotic LFO (with its own Mod Matrix)
- 1 exclusive Rhythm LFO with its own Mod Matrix
- 6 Slots Modulation Matrix with more then 15 sources and 30 destinations

2.3 ***Per Patch Global Parameters and Effects***

- Dual Programming environment (Easy And Advanced Edit Modes)
- 128 steps polysequencer (4 Lines)
- 1 Global Sine monophonic LFO (Joystick)
- Analog Chorus, Phaser, Delay and EQ.
- Analog Spray Knob
- All parameters are MIDI controllable via embedded Midi Map

The **Syn'X 2** is available in the following formats:

- **Mac OSX 10.4 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.

The **Syn'X 2** 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

XILS-Lab offers you the choice of using **eLicenser** or **iLok**. This first section describes the process for authorization for eLicense.

3.1 eLicenser drivers

The **Syn'X** uses an eLicenser dongle. You must have this dongle connected to a USB port on your computer to make the **Syn'X** work.

Important : Please take care of your dongle: you need it to run the Syn'X and it carries your license!

3.1.1 If you already own a eLicenser

Please Note: Even if you have already installed the eLicenser drivers for a previous product, please install the latest version of the eLicenser License Control.

To download the latest eLicenser Control Center (eLC), please go to:

http://www.elicenser.net/en/latest_downloads.html

You need a Syn'X Activation Code to load your license onto the dongle:

First, plug your dongle into a USB port of your computer. Then launch the License Control Center. Launch the **Enter authorization code**. Enter your **Activation Code** in the reserved field, and press Next.

Wait for the license to be downloaded and then check to see if the license is correctly loaded on the dongle in the main section of the License Control Center.

3.1.2 If you have received a eLicenser dongle from XILS-lab

You must first install the eLicenser drivers (eLicenser Control Center, eLC).
To download the latest eLC please go to:
http://www.elicenser.net/en/latest_downloads.html

Then plug your dongle into any free USB port on your computer. Then launch the License Control Center and enter the authorization code you received as explained above.

3.2 iLok drivers

With the iLok version of the **Syn'X**, you need to plug an iLok USB key into your computer or use the Soft-iLok (computer base location)
After downloading and installing the latest PACE drivers, please Launch the iLok License manager, login, and select "redeem iLok code" to create your licenser.
Then drag your license to the location you want (iLok USB key or computer).

To download the latest PACE drivers, please go to:
https://www.ilok.com/#!license-manager

3.3 *Windows (XP, VISTA, Windows 7)*

To install the **Syn'X 2** on Windows XP, Vista or Windows 7, launch the **Syn'X 2** installer file Please download the latest version from the XILS-lab website.

http://www.xils-lab.com/pages/Syn'X_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 the **Syn'X** 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

3.4 *Mac (OSX 10.5 and later)*

To install the **Syn'X 2** on a computer equipped with Mac OSX 10.5 or later, download the latest version of either the iLok or eLicenser versions from the XILS-lab website to make sure you have the latest version of the software.

http://www.xils-lab.com/pages/Syn'X_Download-Installer.html

Then launch the install program, Syn'X.pkg, and follow the instructions.
Warning: the install program will ask you for your system password.
The various files of the Syn'X will be copied into the following directories:

Library/Application Support/Digidesign/Plug-Ins
Library/Audio/Plug-Ins/Components
Library/Audio/Plug-Ins/VST
Library/Application Support/Documentation/XILS-lab/Syn'X

..users/username/Library/Preferences/XILS-lab/Syn'X

4 Quick Start

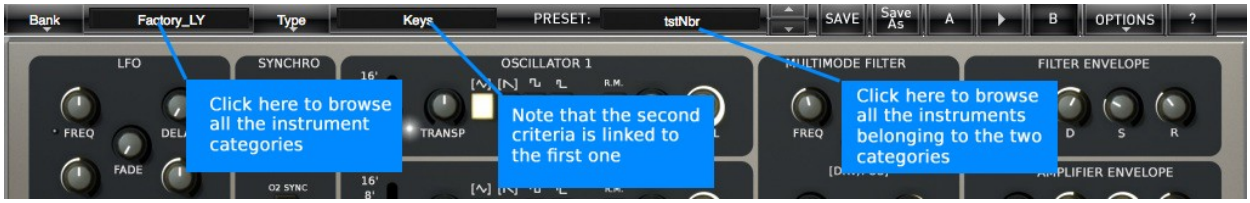
4.1 *Launch, Play*

When you open the **Syn'X** 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 this preset, a simple, or load one of the 250 factory presets provided.

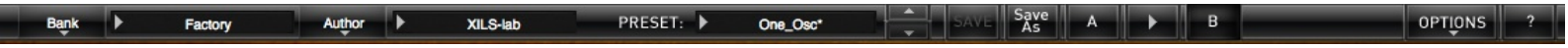
To browse the factory-preset library, just select a category of instruments, using the bank drop down menu at the left of the **Syn'X** Tool Bar. (See Picture Below)

You can then use the up and down arrows located at the right of the preset name, or open the whole bank list by clicking on the triangle located at the left of the preset name (See Picture Below)



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 allows you to load or save presets, make a comparison between settings A and B, or modify the options. These functions are described in detail later in this manual.

Click on the **PRESET arrow** to show the available presets in the current sorted group. Please note that selecting a new preset without saving your current settings will erase any changes you have made to those settings.

Click on the **sort arrow** button to display the current sorted group and to choose the preset within it.

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

Please note that the Syn'X will display presets by instruments categories (Type) by default.

Click on the sorting label over the sorted group name, to sort your preset according to your preferences.

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

4.3 *Adjusting the instruments parameters (Knobs, switches)*

On the Syn'X, 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 the Syn'X 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.

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).

Keyboard shortcuts

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.

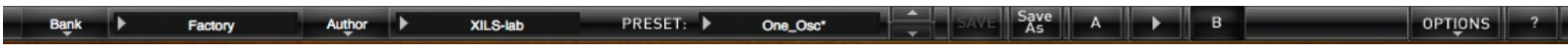
Note: Other GUI elements and controls, like the LED Switches, or the dropdown menus, will be described in the following sections of this manual, when you'll need to use them.

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 buttons, displaying the category name (Bank, Author, Type, Style, Feeling or Project), which open the sort management menus.

The two first text fields show the current sorting group and the third shows the current preset.

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

Note: When a parameter is modified, the name of the preset is followed by a *****, indicating that the current settings of the Syn'X no longer matches the stored preset.

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

In order to prevent you from erasing them, the Factory presets cannot be modified. When you edit a Factory preset, the **Save** button will be grayed, and you will have to use the Save As function to save it in another bank.

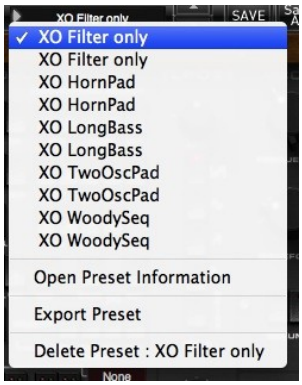
If you edit any other preset than a Factory one, the Save and Save As function will both be available.

The main difference is that the Save function will save the preset under its current name, and with its current tags, overwriting the previous incarnation of the preset, while the Save as function opens a dialog box where you can modify the name of the preset, the bank in which it will be stored, and all its tags

The settings of the Syn'X are then saved in the currently displayed preset, and the ***** disappears. Click on the **Save As** button to save this preset with another name and/or to other sorting groups.

5.2 Preset menu

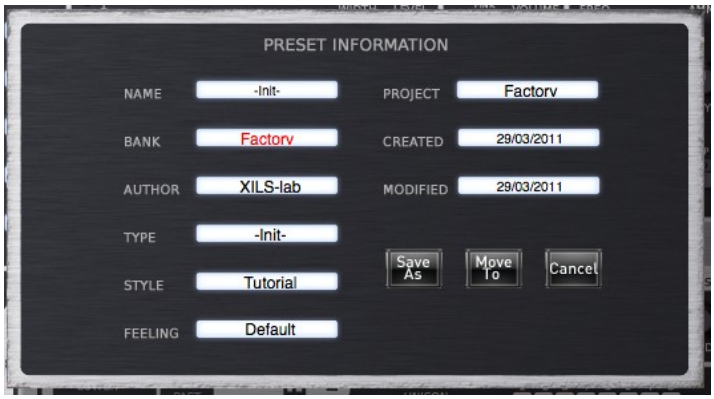
Click the **Preset arrow** button to open the preset menu. Here you can choose and load another preset from the current sort groups into the Syn'X.



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 (.epsx 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, specify the **Bank** in which the preset will be saved, and also enter information 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) and finally
- **Project** (My Song, My_Live_Project).

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

To modify a preset name, click in the preset field and enter the new preset name this will also save all the current settings.

To change presets information, click on the display, this will open a menu when you can select one of the existing items.

Note: You can add a new item in any category, and therefore create custom banks, custom styles, Projects, categories of instruments etc.

To add a new item in any filed, select "**New….**". Which appears at the bottom of the list.

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

A Pop Up window opens when you can enter the new name. The current preset will then be associated to this new item.

Note: Please be aware that creating to many categories can also have its drawbacks, making browsing go from difficult and painful to nearly impossible. Should you create around 200 different custom instrument categories, it would become very difficult to browse the library using the Style sorting.

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 saving the current preset in another location. 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 Syn'X 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)

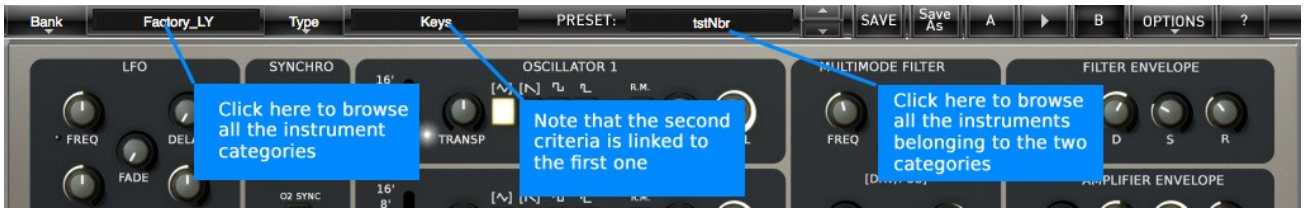
There are indeed a lot of possibilities, and we're confident that you'll find the best way to customize it to your personal needs.

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. IMPORTANT: Use this function with 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 the Syn'X'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 a Syn'X bank.

These two choices are not available from the second **sort** menu.

This menu provides also the possibility to change the size of the interface. This feature is the same that the one provided in the **Option** menu.

5.4 A/B comparison

You can store two different settings at the same time and instantly switch from one to the other to compare their settings. These two settings are stored in the **A** and **B** memories.

When you launch the Syn'X, 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, contains the same init patch loaded in the A memory when you first launch the Syn'X.

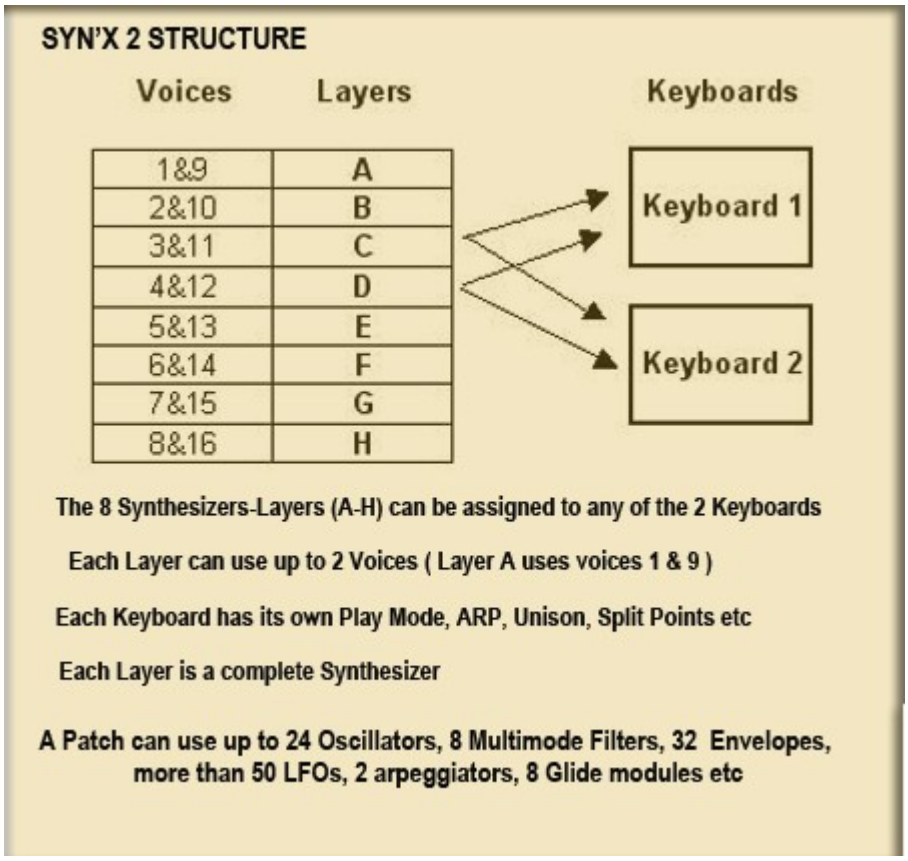
6 Syn'X Architecture

The **Syn'X** architecture has been inspired by hardware synthesizers like the Oberheim Matrix 12. In these synthesizers, a certain number of hardware Cards, each carrying its own oscillators etc, can

receive independent modulations, and be stacked, or sprayed, across the –physical- Keyboard into several zones.

6.1 ***Keyboards, Layers & Voices***

At the top of the Syn'X 2 hierarchy you'll find two **KEYBOARDS**. You can see a Keyboard as a zone on your keyboard, allowing you to make Split, Stacked or Single Patches. Keyboards have their specific parameters, like an independent Arpeggio, Play Mode, Unison, Split Points etc.



Each **KEYBOARD** can use up to **8 LAYERS**. You can see a Layer as a complete independent synthesizer, with its own oscillators, filters, envelopes, Lfos, Modulation Matrixes etc. You can freely assign any of the 8 Layers to any of the 2 two keyboards, and change your mind later to reassign, recombine them. It is very Flexible. All these operations are handled in the **ADVANCED PANEL**, located at the bottom of the **Syn'X** 2. (Please consult the ADVANCED PANEL chapter of this manual for more information)

Each **LAYER** can use up to **TWO VOICES** of polyphony. As there are 8 Layers, the maximum polyphony of the **Syn'X** 2 is 16 Voices.

Below are a few examples of typical configurations made possible by the flexible **Syn'X 2** architecture :

	Keyboard 1	Keyboard 2
Layers	8 Layers	0 Layers
Polyphony	16 Voices	0
Arpeggiator	OFF	OFF
Unison	OFF	OFF
Zone (Range)	Whole Keyboard	n.a
Play Mode	A Polyphonic Mode	n.a
Typical Use	**Standard Polyphonic Analog Patch**	

	Keyboard 1	Keyboard 2
Layers	1 Layer	Up to 7 Layers
Polyphony	1 Voice	Up to 14 Voices
Arpeggiator	OFF	OFF
Unison	OFF	OFF
Zone (Range)	Up to B2	C3 to C6
Play Mode	A Mono Mode	A Polyphonic Mode
Typical Use	**Split Mono Bass/Poly Pad-Keys-Stabs**	

	Keyboard 1	Keyboard 2
Layers	6 Layers	0 Layers
Polyphony	6 Voices	0
Arpeggiator	OFF	OFF
Unison	6	OFF
Zone (Range)	Whole Keyboard	n.a
Play Mode	A Monophonic Mode	n.a
Typical Use	**Huge stack of 6 different Lead synths**	

	Keyboard 1	Keyboard 2
Layers	1 Layer	1 Layer
Polyphony	1 Voice	1 Voice
Arpeggiator	ON	ON
Unison	2	2
Zone (Range)	Whole Keyboard	Whole Keyboard
Play Mode	A Mono Mode	A Mono Mode
Typical Use	**2 Leads Stack with their own Arpegiattor**	

	Keyboard 1	Keyboard 2
Layers	4 Layers	4 Layers
Polyphony	4 Voices	8 Voices
Arpeggiator	OFF	OFF
Unison	0	0
Zone (Range)	Up to B2	From C3
Play Mode	PolyCircular Mode	PolyReset Mode
Typical Use	**Pad KB1 + Random FX on KB2**	

	Keyboard 1	Keyboard 2
Layers	1 Layer	1 Layer
Polyphony	1 Voice	1 Voice
Arpeggiator	OFF	ON
Unison	0	3
Zone (Range)	To C2	From C3
Play Mode	A Mono Mode	A Mono Mode
Typical Use	**Split Free Bass + Arpeggiated Unison Lead**	

	Keyboard 1	Keyboard 2
Layers	4 Layers	4 Layers
Polyphony	8 Voices	8 Voices
Arpeggiator	OFF	OFF
Unison	0	0
Zone (Range)	Whole Keyboard	Whole Keyboard
Play Mode	A Polyphonic Mode	PolyReset Mode
Typical Use	**Stack of 2 Pads/Keys/Synths**	

	Keyboard 1	Keyboard 2
Layers	6 Layers	1 Layer
Polyphony	12 Voices	1 Voice
Arpeggiator	OFF	ON
Unison	0	0
Zone (Range)	Whole Keyboard	From C3
Play Mode	A Polyphonic Mode	A Mono Mode
Typical Use	**Pad/Keys + ARP on KB Hi Range only**	

Important Note : How to assign Voices to Layers, and Layers to Keyboards (Advanced Edit Mode) ?
Just open the Advanced Panel, and click on the Voices of each Layer (Layers A to H) in any of the two Keyboards to activate them. To deactivate a Voice, just click on it again. Reminder : Each Layer can use two Voices : Layer A can use Voices 1 & 9 , Layer B can use Voices 2 & 10, and so on.

Important Note 2 : In the Easy Edit mode, standard configurations (Single Sound, Split and Double – 2 layers) are already hardcoded, and you don't have to bother assigning Voices to layers, layers to voices etc. Everything is transparent for you. You are however still able to manage the Polyphony for each of the 2 Layers (Lower and Upper)

For more information on this subject please consult Chapter X of this Manual : The Advanced Panel.

7 Sound Design and Sound Edit with the Syn'X 2 : The Easy And Advanced Editors

Syn'X 2 provides a dual programming environment to create, or edit, sounds : The MiniSyn'X Mode (aka Legacy/Easy Mode) , and the Advanced Mode (Aka Syn'X2 Mode)

The MiniSyn'X Mode (Easy Mode) : presents a clear and easy to operate one Panel GUI identical to the MiniSyn'X one. So if you come from the MiniSyn'X world, you'll be able to operate the **Syn'X 2** within a minute.

The Advanced Mode (Syn'X 2 Mode) : adds incredible power and depth to programming : You have access to up to 8 different layers, can combine them with different play modes, and each layer has additional envelopes, plethora of LFOs, Matrix Modulations, and still its own set of filters and oscillator.

And finally … You can switch between the Advanced Mode and MiniSyn'Xmode at any moment. Because you need more power when you're in Easy Mode, or want to benefit from the very fast and streamlined workflow of the Easy page, when you modify or create a preset in the Advanced Mode.

7.1 To switch from Easy Mode to Advanced Mode

Simply click on the EASY or ADVANCED tab to switch between the EASY and ADVANCED Edit Modes

***The Easy Mode** : 2 Synthesizers that can be combined into Single (Lower or Upper), Double or Split Mode. (Here in Single-Upper configuration)*

***The Advanced Mode** : 8 Synthesizers (A to H) that can be freely combined into any topology (Here the Synthesizer/Layer D is selected fot edition)*

7.2 The differences between the Easy and Advanced Edit modes

The following functions are only available in the Advanced Edit Mode :

1 Access to 8 different synthesizer engines (Easy mode only offer access to 2 different synthesizer engines)
2 Access to the 8 different Monophonic and Polyphonic Play Modes (The two Keyboards of the Easy Mode are assigned to PolyCircular Mode 1 by default)
3 Access to the Unison settings for each Keyboard
4 Access to the full Voices/Layers/Keyboards assignation process
5 Access to the **Guitar** Multimbral Mode (One midi Channel per Layer assignation)
6 Access to the Mute/Solo/MultiSelection/GangEdit/CopyPaste Layer Functions
7 Access to the Magic Load Function, witch compliments the Smart Load function
8 Access to the custom assignation of upper and lower split points for each keyboard
9 Access to freely assignable Midi Channel for each of the 2 Keyboards.

7.3 Here are some guide lines to help you decide which Edit Mode you should use to create, or edit sounds.

1/ You don't need more than two layers (ie 2 different synthesizers arranged into simple configurations like Single, Double, or Split) to create your sound

You should choose the Easy Edit Mode. You'll experience a full duotimbral polyphonic synthesizer, witch is already more powerful than what can be found in numerous single engine synthesizers, and operate it like you would operate an hardware synthesizer like a Duotimbral Elka Synthex on steroids.

2/ You already know that you will need one of the following features :

1 Sounds using more than 2 different layers (Huge Stack Leads, Complex Pads etc)
2 Custom Unison for each keyboard
3 Specific Play Modes for Upper or Lower Keyboard
4 Different Midi Channels for each Keyboard
5 Sequencer preset requiring different synthesizers per line

You should use the Advanced/Syn'X 2 mode

Of course you can begin a preset in Easy Mode, then switch to Advanced mode if more programming depth becomes needed. (Note : Please read about the Update Layer function in this manual)

3/ If a preset has been created in Advanced Mode, you should edit it in Advanced Mode. If a preset has been created in Easy/MiniSyn'X mode, you should first edit it in this mode.

4/ Warning : If you switch from Advanced Mode to Easy mode, there are good chances that your sound will be changed, due to missing Layers information. This can lead to very good surprises, but also might not be at all what you desired. In this case just switch again to the advanced mode to recover the preset as it was, including the last edits you made in this mode.

Here are some standard programming/editing cases, and the editor we recommend to use to reach the final point as fast and as easy as possible :

1	Standard Polyphonic Analog Patch	Easy Mode Editor
2	Standard Polyphonic Analog Patch w extended modulations*	Advanced Mode Editor
3	Split Mono Bass/Poly Pad-Keys-Stabs	Easy Mode Editor
4	Split Mono Bass/Poly Pad-Keys-Stabs w extended modulations*	Advanced Mode Editor
5	Huge stack of 6 different Lead synths	Advanced Mode Editor
6	2 Leads Stack with their own Arpegiattor	Easy Mode Editor
7	2 Leads Stack with their own Arpegiattor w extended modulations*	Advanced Mode Editor
8	Pad KB1 + Random FX on KB2	Advanced Mode Editor
9	Split Free Bass + Arpeggiated Unison Lead	Easy Mode Editor
10	Stack of 2 Pads/Keys/Synths	Easy Mode Editor
11	Stack of 2 Pads/Keys/Synths w extended modulations*	Advanced Mode Editor
12	Stack of 3 or more Pads/Keys/Synths	Advanced Mode Editor
13	Pad/Keys + ARP on KB Hi Range only	Easy Mode Editor
14	Pad/Keys + ARP on KB Hi Range only w extended modulations*	Advanced Mode Editor

8 The Easy Edit Mode

The Easy Mode uses a similar simple and intuitive workflow witch is part of the success of the MiniSyn'X Synthesizer.

In this mode the major part of the Voices/Layers/Keyboard assignations has been hardwired so that you don't have to bother organising and defining them. You have access to the 3 typical and most common configurations : Single, Double and Split.

Single Sounds : Here you can use either of the two keyboards, Upper and Lower, and program your patch on a single panel, where all the parameters are instantaneously available, and visible. So you have only one synthesizer to manage, and its polyphony can use up to 8 voices.

Double : In this mode you can layer two different synthesizers (or Layers) , one is automatically alloced to the Lower Keyboard, and the other one is automatically assigned to the Upper Keyboard. The two synthesizer are 'stacked', so each Note On event will trigger both. Use this mode if you need to make a stack of two completely different synthesizers, similar to what you coud get by assigning two different synths to a single midi part in your Daw

Split : The Split mode is similar to the Double Mode, and also make use of two different synths engines, except that in this case, you can define a Split Point so that the Lower Keyboard will only play in the lower octaves, and the Upper Keyboard on the Octaves beyond the Split Point. Use this mode if you want to create a patch with a separate Mono Bass on the Lower Keyboard, and a Pad, some Keys or a Lead on the Upper Keyboard.

This patch uses the Single Mode (Split and Double beeing disengaged), and uses the UPPER Keyboard

Polyphony : Whatever the current configuration (Single, Double or Split), you can specify the polyphony of each of the two keyboard. Just click in the Number of Voices Area located under each keyboard to set the polyphony. In the Picture above the Polyphony of the Lower Keyboard have been set to 1, while the Polyphony of the Upper Keyboard have been set to 8.

Copy Function : To copy a Keyboard to the other one, just click on the Arrows located under and above the Copy Label. Tip : The Copy Function is very useful in Double Mode if you want to create a patch where the 2 Keyboards are just slightly different to get a thicker or more organic sound.

Upper and Lower Switch : These 2 switches are exclusive, and have different functions depending on the current mode (Single, Double, Split) In all cases they however specify witch of the two synthesizers you're currently editing, whose parameters are 'visible'

- In Single Mode : The selected Keyboard will be the one you hear. And can edit and modify
- In Double Mode : Specifies the Keyboard you're currently editing (Whose parameters are visible)
- In Split Mode : Specifies the Keyboard you're currently editing (Whose parameters are visible)

Split and Double Switches : Clicking on one of these buttons engage the Split or Double Modes. Both Keyboards will be heard when you play (Unless the Solo Diode has been activated) The Keyboard you're editing, Lower or Upper, is the one selected (Lit selection square control) Note : How to return to the Single Mode when Split or Double are selected : Just click again on the Split or Double button to disengage it.

Split Point : In Split mode, you can define the Split Point between the Lower and Upper Keyboards. The Split point is graphically represented by a black Triangle a the top of the **Syn'X 2** Virtual Keyboard. Just move with the mouse this triangle to the left or to the right to set the split point to the desired value (Note). Please note that the split point is only visible when the Split Mode is engaged.

Solo Diodes : These diodes will only show when the Split or Double Modes have been selected. As their name implies they solo the Upper or Lower Keyboard, and are especially useful in the Double Mode when

you wan to hear clearly the result of your edits on one of the two Keyboards, without the sonic mask of the other Keyboard)

Update Layers : This button is only available in the Easy Mode Layer panel : You should only use it if you intend to switch from Easy to Advanced Edit Mode. In this case when you click on the Update Layer button THEN switch to the Advanced Edit mode, this will ensure that the result in the Advanced Mode will be identical to the one you had programmed in the Easy Mode.

Important Note on the Update Layers button : Please be aware that the action of this button CAN'T be cancelled. It WILL modify some of the 8 Layers found in the Advanced Mode. This has ZERO consequences if you come from a patch made in the Easy mode. But in case you have switched many times from the Advanced to the Easy mode, the different layers that you might have programmed in the Advanced Mode, and which have been preserved (In a cache) when you have switched from Advanced to Easy Mode, to allow you to return to the Advanced mode without loosing any data, will be LOST definitely if you click on the Update Layers buttons in easy mode.

9 The Advanced Edit Mode

Please note that : All Layers/Synthesizer parameter sets are IDENTICAL in both Advanced and Easy Edit Modes. Only the way you can combine, manage and arrange the layers and voices are different. To learn more about the synthesis engine of each synthesizer, please read chapter **12** of this manual, where all parameters (Oscillators, envelopes, LFO etc) are detailed

9.1 To Display the Advanced Edit Mode

Just click on the Layer Tab in the Central Layer Area

Figure 1 Advanced Mode. Layer D is selected for edition

The Advanced Edit exclusive functions are located in two areas : The Central Layer Area, where you can also select the Layer(s) you wish to modify, and the Advanced Panel, which will only be available if the Advanced Mode is engaged. The Central Layer Area will always be visible, but you'll might have to click on the Advanced Tab to open the Advanced panel, which will then replace the Virtual Keyboard, or Sequencer active displays at the bottom of the **Syn'X 2** GUI.

We'll now detail the exclusive functions of the Advanced Edit Mode

9.2 Layer Management : The Advanced Panel

Voices allocation : In the Advanced Edit Mode you can assign any of the 16 **Syn'X 2** voices to any of the 8 Layers (Synthesizer Engines), and any of the two keyboards. Each Layer (A to H) can use up to TWO VOICES.

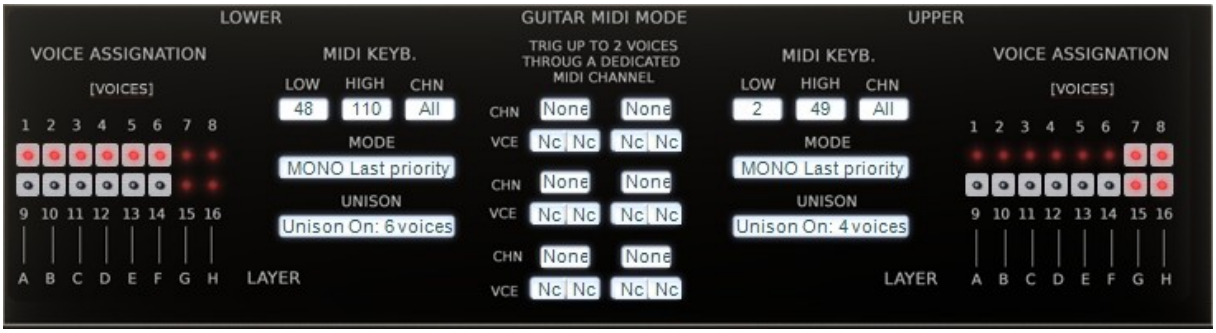
These two operations, assigning voices to layers AND assigning Layers to Keyboards are performed simultaneously with simple clicks, because Layer's Voices are already prepositioned and ready to be activated for each Keyboard.

9.2.1 How to assign a Voice to a Layer and to a Keyboard ?

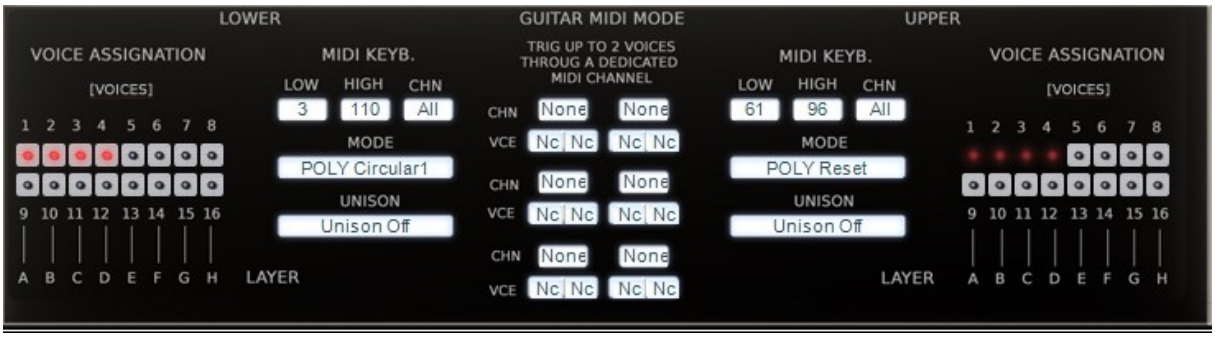
Open the Advanced Panel if it's not already open. You can see that the 16 voices and the 8 layers are ready to be activated/deactivated for EACH keyboard

To activate a Voice for a Layer for a Keyboard, you must activate its **VOICES** (Each Layer can use up to 2 polyphony Voices) Just click on the Layer's Voices diodes to activate it for the Keyboard 1 or 2

To deactivate a Layer, click again on its voice(s) to deselect/deactivate them



In this example, Voices 1 to 6 are assigned to Layers A to F on the Lower Keyboard, while the Upper Keyboard uses the Voices 7 & 15 for the Layer G, and 8 and 16 for the Layer H. Voices 9 to 14 are inactive and not assigned to any Keyboard.



In this example only Voices 1 to 4 are activated in the Lower Keyboard.

Voices Led Status : Please note that the Voices Diodes status reflect their current state

- Red Diode : The Voice is selected for Keyboard Lower (or Upper)
- Green Diode : The Voice is activated AND playing
- Grey/Unlit Diode : The voice is not selected in any of the two Keyboards
- Missing Square : The Voice is selected in the other Keyboard

9.2.2 Keyboard Range and Midi Channel

You can specify the playable range (Low and high split points) (ref C3 = 60) and the Midi Channel of each keyboard.

Tip : Therefore ; if your physical Midi device can transmit on at least two different midi channels with different zones arrangements you don't even need to specify the split points precisely, as each keyboard will only play on the selected range specified on your physical Midi Keyboard.

Tip Hi and low split points are also especially useful if you have a Keyboard that can transmit on several midi channels corresponding to several keyboard zones. You could for example play a **Syn'X 2** bass on the C0/C1 octaves, a lead on the Octaves C 3 & 4, and still be able to play some percussions Live on a drum Machine whose pads would be assigned in the C2 octave, and a pad from another synth (or a second **Syn'X 2** instance) in the upper octaves C5/6.

9.2.3 Keyboard Play Mode and Unison

You can specify the Play Mode and Unison settings independently for the Lower and Upper Keyboards

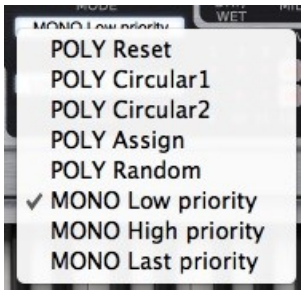
9.2.4 Play Modes

You can specify a different Play Mode for each Keyboard. A very simple use of this feature is to choose one of the Monophonic mode for a Bass played on the Lower Keyboard, while setting one of the Polyphonic Play Modes for the Upper Keyboard to play chords, pads, or just any chordal instrument.

Any combination is possible, and it really open new dimensions for Live Playing or Daw sequenced lines.

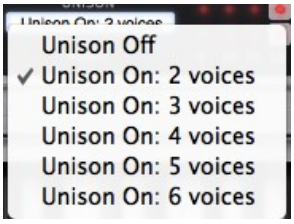
There 8 different Play Modes in the **Syn'x 2** :

POLY circular 1: polyphonic, each voices are selected one after each other
POLY circular 2: polyphonic, each voices are selected one after each other but trying to keep a non circular cycle;
POLY reset: polyphonic mode, each 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 mode)
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)



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).



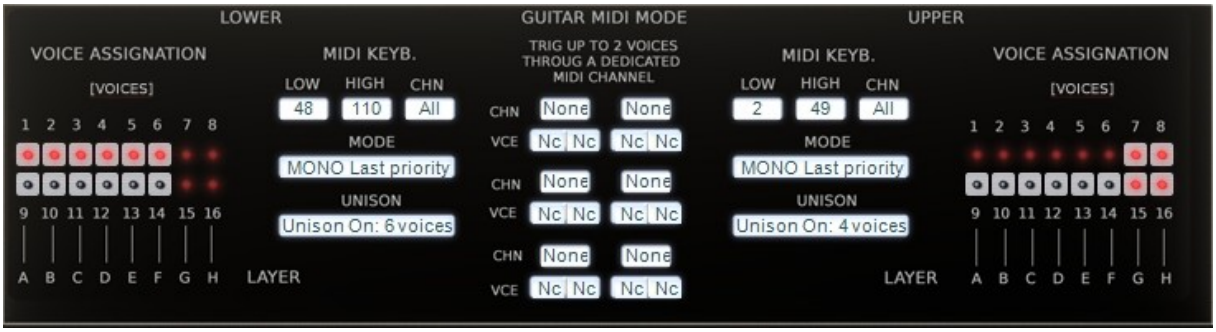
Warning: This setting, added to long release and a high available voice number is very CPU intensive.

[VOICES]: Clicking on this label opens a popup (see image below) where the order in which the voices will be assigned can be set. By default, the order is the numeric order: 1,2 3,4,5, …16. That means that in the Circular1 playing mode for instance, voices are chosen related to this order. When unison is used, then the second voice is always the number that follows the first.

Now, in the text editor VOICES ORDER ASSIGNATION if you enter a different order: 1,3,5,7 for instance (no need to enter all the voices, the numeric order is used to complete the setting). In this case, the voices are assigned following this new order. For instance, if unison 2 is chosen, then voices 1&3, 5&7 will be played together (instead of 1&2, 5&6 in the case of the numeric order).

Since voices 1&9, 2&10,3&11 … are using the same layer this feature is very useful in managing complex sounds.

Tip : Due to the **Syn'X 2** multitimbral architecture, and as you can have synthesizers with totally different settings in the different Layers, the Unison Mode is the preferential Mode to make HUGE stacks of different sounds.



In this example, the Lower Keyboard Unison has been set to 6 voices spread amongst 6 Layers. Each note triggers 6 different synthesizers for a huge Bass patch. The Upper Keyboard has been set to Unison 4 voices, but it uses 2 Layers

9.2.5 The Guitar Mode (aka Midi Polytimbral Mode)

In this mode you can assign up to 6 different midi Channels to any **Syn'X 2** Voices. As you choose Voices instead of Layers, you can really achieve some complex and wild stacks in this mode, because the assigned Voices don't need to belong to the same layer.
The Midi Mode was conceived with the use of Midi Guitars or Wind/Drums Controllers in mind :Each String of the guitar controlled can send midi data to the **Syn'X 2** on a different channel, and therefore, you can play/link a different stack of voices linked to each physical string of your guitar.

To use the Guitar Mode : Just select a Midi Channel, then assign the voices for this particular channel. Repeat this process for each *string*. You can define up to 6 *strings*.

Tip : When you use a Midi Guitar controller which can send separate Midi Dat for each string, it's very rewarding to first build a patch that is more or less globally desired, then tweak each layer so that it is a bit different than its neighbor. For example, Voices attached to the high string could have more brilliance/harmonics, and a shorter release, like on a real guitar. This way you'll have a really organic and *living* sound to play with

9.3 ***Advanced Mode : Layer Management and multiselection techniques***

9.3.1 The Central Multi Layer Area

In this area, you can choose which Layer(s) you edit, and how you will edit it, or them (Absolute/Relative way), as well as perform tasks like Solo/Mute or Copy/Paste Layers, or use our exclusive Smart Load Intelligent Easy Sound Design tool.

You can only see the settings for one Layer/Synthesizer at a time. The selected layer is the one you edit in case you wish to edit a single layer

In this example, you edit Layer D

9.3.2 Editing a single Layer

To select the layer to edit, just click on its button, it will be highlighted in white and have a red square around it

You can also edit several layers simultaneously, by selecting as many layers as you wish to edit. The edit mode can be absolute, or relative (Gang Mode)

9.3.3 Layers Multiselections techniques

Select all Layers : Click on the **Select All** button in the Advanced Editor (Absolute Mode Edit) The edits you make on the visible Layer will be identical in all Layers

Select different Discontinuous Layers (Control Key) : Hold the Control Key and select all the layers you wish to edit. The Red Square around the Layer icon indicates that the Layer is added to the multiselection pool. (The edits will be absolute, ie all the edits made on the visible Layer will be replicated 100% identical in all the selected Layers, unless you engage the Gang Edit Mode)

Select several continuous Layers (Shift KEY) : Just select the first Layers, then, while holding the SHIFT KEY, select the last Layer.

Layers A, C, D, E are selected and ready to be edited. To perform this selection you can either select the Layer A, then C, then D, then E while holding the Control Key, or Select C, then E while holding the Shift Key, then add Layer A by holding the Control Key

The Toggle button : Will deselect currently selected layers and select layers that were not selected : If Layers A to D are selected, when you press the toggle button the selection will be Layers E to F

The Gang Edit Mode (Relative Edit Mode) In case of Multi Selections, the default Edit Mode is Absolute. This means that if you set the value of the filter Cut OFF to n in the visible layer, all the selected layers will have their Filter Cut-off value set exactly to n, regardless of what were theirs settings before this operation was performed.

In **GANG MODE** , the editing will be relative : If you increase the cut off value of the visible layer by +x, all the selected Layers will have their cut off augmented by +x. In other words, the GANG MODE PRESERVES the differences that could exist between the different Layers prior to the editing process.

To engage the Gang Mode Edit : Just click on the GANG button, which become highlighted in white. To disengage it, and return to the Absolute Edit Mode, just click on it again.

After you clicked on the Select All button, the 8 layers are selected and ready to be edited in Gang Mode (Relative edit)

Tips : The Gang Edit Mode is obviously very useful if you want to raise the volume of all oscillators in a multiselection, while preserving their relative balance for example, or increase the perceived brilliance of a part of a stack sound, where all layers use LPF filters, by augmenting the Cut-Off value : In short, every time you wish to edit a parameter of a multi selection of layers and wish to preserve the existing balance between the layers, the Gang Mode should be preferred.

Tip : However, if you wish to set the same values for certain parameters to the multiselection, Absolute (default) edit mode should be preferred. This is especially true for the very common case where you would want a lot of voices assigned to a certain number of identical layers, to make a single sound homogeneous with a big polyphony

Tip : Its not rare that you'll have to mary both techniques when creating some complex patches, using Absolute Mode at a certain point, then engage Gang Mode, then switch to Absolute Mode etc.

10 Patch Creation : Step by step practical case studies

10.1 How to create a patch with extended modules/modulations , but only need one Layer (Synthesizer) and one Keyboard

(Similar to a MiniSyn'X Single Patch but with much more synthesis possibilities and modules)

1/ Switch to Easy Edit Mode
2/ Select the Upper (or Lower) Keyboard and don't engage Split or Double Mode
3/ Set the polyphony for the Keyboard you selected :
4/ Edit the visible Layer/Synthesizer

10.2 How to to create a split patch combining a Layered Pad with 2 stacked sounds, and a monophonic Bass in the lower octaves

1/ Switch to Advanced Edit Mode
2/ Open the Advanced Tab
3/ Assign Layers A to the Lower Keyboard1, then Layers B-H to the Upper Keyboard
4/ Set the upper split point of the Lower Keyboard to 48, and the lowest split point of the Upper Keyboard to 49
5/ Set the Play Mode of the Lower Keyboard to a Monophonic Mode, like Priority Last Note
6/ Set the Play Mode of the Upper Keyboard to a Polyphonic Mode
7/ To Edit the Mono Bass just select the A layer
8/ To work on the Upper Keyboard sound, just press the Toggle Button (it will select layers B-H) or, multiselect the Layer B-H (First click on Layer E to select it and make it visible, then while holding the Shift Key click on Layer H : Layers E-H are now selected)

10.3 How to create a HUGE Lead patch with a stack of 3 to 8 different synthesizers

1/ Switch to Advanced Edit Mode
2/ Open the Advanced Tab if its not already opened
3/ Assign as much layers as you want to the Lower Keyboard, and set it to one of the Monophonic Modes
4/ Set the Unison number of voices so that it is equivalent to the number of layers in the patch
5/ Select Layer A and Solo it to hear it in isolation. Edit until you're satisfied
6/ Repeat these operations with the other layers until you're satisfied, while checking from time to time how the Layers play together (disengage the solo mode)
7/ When the result is nearly completed, don't forget that you can use the GANG mode edit to change for example the release of all layers IN A RELATIVE WAY (This will preserve their relative differences), or to adjust the overall Volume of the patch by editing the Oscillators Gain (In case the global gain volume knob would not give you a large enough range) (Example Patch SY Multiple Cards,)

10.4 How to create a Monophonic * Analog Wave Sequence * Patch

This patch is rather similar to the case study C, except that this time, instead of triggering all synths simultaneously, a note on event (ie a note played on your keyboard) will only trigger ONE OF THE SYNTHS, in a predictable, or random, way.

1/ Switch to Advanced Edit Mode
2/ Open the Advanced Tab if its not already opened
3/ Assign as much layers as you want to the Lower Keyboard, and set it to one of the Polyphonic Modes
4/ Don't use the Unison
5/ Select Layer A and Solo it to hear it in isolation. Edit until you're satisfied
6/ Repeat these operations with the other layers until you're satisfied, while checking from time to time how the Layers play together (disengage the solo mode) (Example Patch : SY Wave Seq F)

Tip : These wave sequences could be driven by the Arpeggio, or the Sequencer.

10.5 How to create a standard PAD PATCH stacked with Random FX/Textures/NonTonal Elements appearing here or there

1/ Switch to Advanced Edit Mode
2/ Open the Advanced Tab if its not already opened

3/ Assign Layers A-D to the Lower Keyboard, and set it to one of the Polyphonic Modes (This will represent the Standard PAD part of the Patch, with a polyphony of up to 8 voices
4/ Assign at least two of the remaining layers to the upper Keyboard, and set it to polyphonic Random Play Mode (This will represent the 'Random Elements' of the patch).
5/ Make sure that both Keyboards cover the entire Keyboard range, until you want the random elements to appear only if notes in a certain range/octaves are played
6/ Edit the different Layers as usual, and when working on the Pad part don't forget to use multiselection techniques to select the A-D layers to ensure it is consistent.
7/ Tweak until the patch is completed. (Example Patches : PA Polyphème, PA Saw + Random)

Tip : Don't forget that you can at any time mute or solo any Layer. It's very useful when you work on complex patches and want to hear clearly your edits !

Once you'll have mastered these 5 simple examples, the **Syn'X 2** architecture won't have anymore any secret for you. You'll be able to create many variations of them, and the most complex patches with the **Syn'X 2**.

There are indeed a lot of possible variations, and a lot to invent

11 Patch Creation : Layer Management Functions (Copy/Paste/Load/Smart Load etc)

As the **Syn'X 2** allows you to arrange many different synthesizers sounds in plenty of manners, the temptation will be great to use some already existing sonic material (Already defined Layers) in your existing **Syn'X 2** presets database, instead of sometimes reinventing the wheel.

This can be done with the following functions : Load Layer, Random Load Layer, and the Smart Load functions.

Sometimes, in the Advanced Edit Mode, you'll also need to simply Cut, Paste or Exchange Layers. This will save you a lot of time.

Let's detail these 6 functions in the Advanced Edit Mode

Load Layer : Will let you load any Layer in any patch of your **Syn'X 2** sound Library to replace the current selected Layer(s). When you click on this button, a Drop Down list will appear, filtered by instrument category, and displaying all the presets in this category. Once you have chosen a certain preset, you can specify which Layer of that preset you want to load. This layer will replace the current selected Layer. Please note that if more than one layer is selected (Layers Multiselection), ALL THE LAYERS belonging to this MultiSelection will be replaced by the chosen layer.

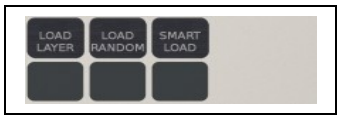
Load Random : Is a one click function for the most adventurous sound designers : It will replace all the layers currently selected by a random layer automatically selected in your **Syn'X 2** sound database. If you want to be surprised with a single click, just try this function

Smart Load (The Easy Intelligent Patch Creation Tool) : While *Load Layer* will does exactly what you want, but takes times to operate, and requires a very good knowledge of your existing patches, and *Load Random* will always surprise you, but sometimes not in the best way, **Smart Load** is an exclusive and unique AI assisted function that will surprise you with a very big percentage of brilliant and useful new sounds. In short Smart Load attempts to predict what kind of patch you desire, and very often, will give you from outstanding to at least useful and pleasurable new patches, at the cost of a single Click on a button. Just try it, and you'll see, and hear by yourself. On a side note : The most different patches you'll have in your Syn'X 2 library, and the

more and more intelligent an useful Smart Load will be. In other words, it's usefulness grows in parallel with the size of your Library.

Copy, Paste and Exchange : These functions are self explanatory. Use them to Copy and Paste Layers. Or Exchange them. Note that Copy/Paste will save you a lot of times if you want to increase the polyphony played by a certain partial/part of a patch : Just copy the source layer and copy it to as many layers as you need to obtain the desired polyphony.

Differences between the Advanced and Easy Mode : As the Copy/Paste Functions are already implemented in the Layer Panel in the Easy Mode, you won't find them in the Easy Edit Mode. Only the 3 first functions are implemented in this area : Load Layer, Load Random, and Smart Load



The three functions work in an identical way : they will replace the sound in the current Keyboard (Upper or Lower) by the one selected, or triggered, by one of these functions

12 Syn'X modules description

The **Syn'X 2** contains three main sections: the first one is dedicated to the synthesis part, applied to each voice of polyphony, the second is dedicated to the well know **Syn'X 2** joystick with its own LFO settings, and the third cabinet is dedicated to the voice management and playing mode.

12.1 ***Synthesis***

12.1.1 Oscillators

16'8'...1': Octave Select Buttons

TRANSP: Transpose 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 can be very fine, using the right click.

LED TRANSP: When on the keyboard tracking is connected to the oscillator.

Switches: Waveform Select Buttons (Triangle, Sawtooth, Square, Pulse)

PWM: Pulse Width Cross-Modulation (from the other Oscillator) select button. When ON, the width is controlled by the waveform of the other oscillator. This results in a very rapid change in harmonics, close to the ring modulation effect. If no other wave form are selected, when ON, this button let the oscillator to output a width controlled pulse with the same algorithm than the Synthex.

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

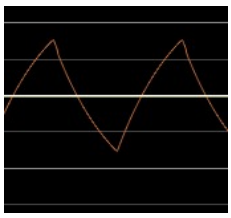
WIDTH: Pulse Width Control (for the pulse but also the triangle or the sawtooth wave form depending on these latter settings). This knob controls the pulse width of the pulse waveform, but also the triangle leading edge or the double pulse of the sawtooth, depending on which waveform, triangle or sawtooth you have selected.

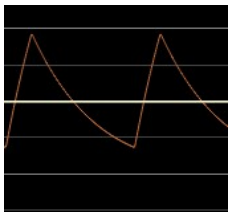
LEVEL: Individual Oscillator Volume Control (before the filter)

Sawtooth Label: Select a pulse width sawtooth waveform (a double edge according to the width is generated)
Triangle Label: Select a pulse width triangle waveform (the leading edge of the triangle is dependent on the pulse width)

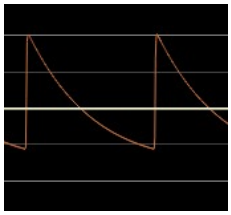
Below is a view of the various available waveforms

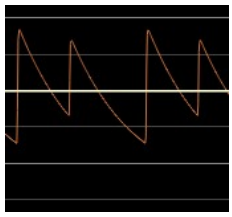
Triangle-Triangle using Pulse Width



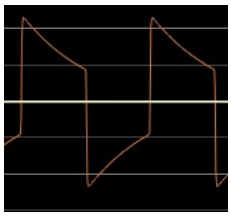


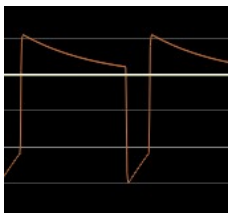
Saw- Saw using Pulse Width





Square - Pulse





12.1.2Oscillators synchronization

O2 SYNC: 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)

DRIFT: This knob sets the accuracy of the oscillator pitch and the filter frequency cutoff as a function of time. Turning clockwise makes the oscillators unstable. This is useful for phasing effect between the two oscillators or to get a more realistic "analog" feeling.

12.1.3Multimode Filter

The Syn'X's filter is an accurate dynamic multimode 4 pole self-oscillating filter.

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. That means that it outputs 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. The setting can be positive or negative, allowing a direct or inverse effect.
AMNT: Set the amount of the filter envelope applied to the Cut-Off modulation. The setting can be positive or negative, allowing a direct or inverse effect.
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 where the driving stage will stand, before or after the filter.

Mode of Filter Operation select Buttons:

LP12: select a Lowpass 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

12.1.4Envelope Generators

The Syn'X features four envelope generators (EG). The first one is dedicated to the control of filter's Cut Off value, while the second is hardwired to control the output level stage (VCA). The two other can be used freely thanks to the modulation matrix (see below).

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). The Syn'X adds a fifth part; a delay that is can be synced via Midi before the Attack step.

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 step.
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)

Release: set the time the output decrease to zero after the note is released.

Clicking on the tab allows the editing of envelope 3 or 4.

12.1.5Noise Generator

WHITE/PINK: Allows you to select either white or pink noise to be added to the oscillators in the mix going to the filter. White noise contains all the audible frequencies at equal level, while pink noise contains all the audible frequencies at equal energy, meaning the more the frequency increases, the more the level decreases.

VOLUME: This controls the level of the noise adding to the oscillators.

12.1.6LFO1/2

The Syn'X proposes two Low Frequency Oscillators, which can be used as modulation sources. To switch between the two LFOs, just click on the label LFO1 or LFO2.

FREQ: Controls the speed of the modulation effect.

DEPTH A, DEPTH B: Regulates the different amounts of the modulation, Depth A, for the oscillator Modulations, Depth B for the Filter and Output Amplifier modulation.

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.

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.

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.

Reset LED (close to DELAY): Reset the LFO waveform when the Note is ON.
Midi Synchro LED (close to FREQ.): 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)
Routing Select Buttons: Using these buttons the modulation setup on Depth A can be routed simultaneously to the pitch and/or pulse width of the oscillator 1 and/or 2, and on Depth B to the Filter frequency and/or the output level amplifier.

In this picture, you're editing the LFO 1, as indicated by the top label To switch to LFO 2, just click on this label. The LFO1 now uses a blend of sine and saw tooth waveforms, as both these waveforms are selected (LEDs on). This signal is routed to the Oscillator 1 pitch and to the filter frequency, the first with the amount DEPTH A, and the second with the amount DEPTH B. The LFO waveform will be reset after each note ON, and the action of the modulation will be delayed.	

12.1.7Chaox

This exclusive module allows the addition of wonderful modulation like an LFO does, but without the repetitive sound standard cycle waveforms can give. The idea behind this module is to mimic reality. It's not exactly random, but without a repetitive cycle, just chaos!
The modulation stands in a 2-dimension plane where the X and the Y-axis are used as the two sources.
Looking at the space helps to see what sort of modulation you will get. The chaos algorithm can be chosen from the middle dropdown menu between four different effects:

Flying Fly: quite random like the flight of a fly
Bow Tie: a random take on the shape a bow tie.
Rainbow: a random walk on a rainbow.
Butterfly: the modulation point follows unpredictable circles on a map that looks like a butterfly.

RATE: Controls the speed of the modulation effect. It controls either the time between each jump, or the time between each step depending on which algorithm is chosen. **MIDI S LED:** synchronize the RATE to the application host Tempo **DELAY:** set the delay time between a note ON and the beginning of the effect. **DEPTH A:** Set the amount of the modulation to the above destination. A dropdown menu allows the selection of a wide range of destinations. The source is the X-axis of the modulation. **DEPTH B:** Set the amount of the modulation to the above destination. A dropdown menu allows the selection of a wide range of destinations. The source is the Y-axis of the modulation. **SMOOTH slider:** Smooth the modulation. **Chaos slider:** Increase the chaos, from quite stable cycle to quite random effect.	

12.1.8 Rhythm LFO

This exclusive module allows powerful and musical rhythm modulation as well as the possibility to work in a very fun way with the multi layer feature of the Syn'X.

During the cycle of this LFO, the waveform is null excepted during the last period of the 8th or 16th step. Depending on the algorithm, it will output a pulse or a ramp train.
Each algorithm has it own drop-down menu to choose the destination of the modulation as well as its own amount setting knob.

RATE: set the speed of this modulation. **MIDI S. LED:** synchronize the RATE with the application host tempo. **DELAY:** set the delay before the modulation occurs. **TRIG LED:** when on, the rhythm LFO is trigged with the MIDI keyboard. **PHASE:** set the phase where the cycle begins when the rhythm LFO is trigged. **OCTO:** a pulse at the 8th step **HEXA:** a pulse at the 6th step **TERNA:** a pulse at the **HOOVER:** a ramp at the 8th step **STUTTER:** a ramp train at the 16th step	

12.1.9 Glide/Portamento

FLT O1 O2 buttons: These buttons route the glide or the portamento, which has been set up to the filter frequency or/and the oscillators pitch.

GLD: This glide select button enables the glide function for the selected glide/portamento destination.

PORT: This glide select button enables the portamento function for the selected glide/portamento destination.

SPEED: This knob sets the rate at which the glide or the portamento effect takes place.

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.

12.1.10 Level/Balance/Tune

These parameters control the global level, the stereo balance and the tune of the voice. These settings are independent of the global level or global tune of the Syn'X and are applied only on the current layer (see Multi layering section)

[STE]/[BAL]: This control allows the change between the stereo algorithm from the standard stereo algorithm to the exclusive XILS-lab stereo algorithm. Tuning the knob allows the voice to be placed right or left in the stereo field. The XILS-lab stereo algorithm is far more realistic, but can't

be used to make specific electronic effects like ping-pong. For this, the standard panoramic stereo effect should be used.

TUNE: Set the tune of the voice. This setting is saved within the preset and is separate from the global tuning of the Syn'X.

LEVEL: Set the level of the voice. This setting is independent of the global level. Which takes into account the whole synthesizer including this effects part.

12.1.11 The Drop Down Matrix Modulation

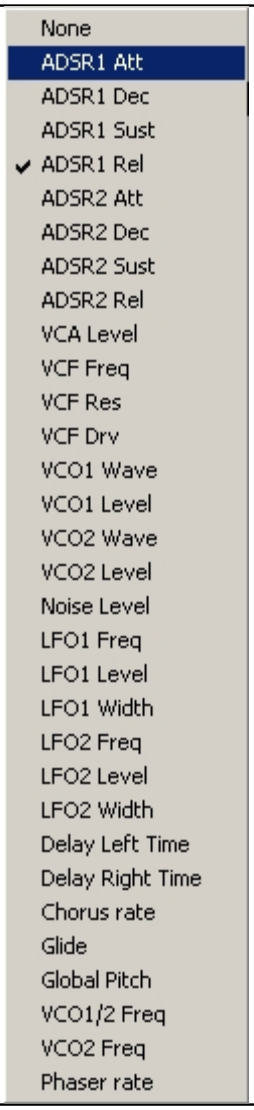
This drop down modulation matrix offers six freely assignable sources and modulations.

As stated before this particular Modulation Matrix allows both custom sources and destinations, making it a very powerful sound design tool. Lets see how it works in detail: Two user selectable sources are available. **Source Menu**: allows selecting 6 different sources 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.	

Available Modulation Sources:

Most sources like ADSR 1, 2, Velocity, Pressure (After-touch), LFO1 and 2, or Mod Wheel are self-explanatory. Seq Pitch means that the pitch of the note played by the PolySequencer will determine the modulation. The Higher the note, the more modulation. Same with Sequencer Velocity. LFO 1 & 2 M means that you can use the LFO 1 and 2 in a Monophonic mode. In such a mode the LFOs are the same for all the voices played, as opposed to a Polyphonic LFO, where each note played triggers a new instance of the LFO. Please note that you can combine Mono and Poly incarnations of a LFO in the SAME patch, allowing both very subtle and more straightforward LFO modulations simultaneously.	

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	

12.1.12 Joystick (Bend/LFO3)

The Syn'X offers an advanced joystick feature used with a monophonic independent sine LFO.

LFO 3 sliders: These allow coarse and fine tune of the monophonic low frequency oscillator.

TO OSC sliders: This sets the amount of the modulation sent to the oscillators (1 and 2) when the joystick is moved vertically (**BEND**) or horizontally to the right (**LFO**)

TO FILTER sliders: This sets the amount of the modulation sent to the Filter frequency cutoff when the joystick is moved vertically (**BEND**) or horizontally to the right (**LFO**)

WHEEL LEDs: Connect the standard modulation wheel to the horizontal left and/or right movement of the joystick.

UPPER/BOTH/LOWER Switch: This switch allows the joystick to control just the voices attached to the upper or to the lower, or both split keyboards (see Split section)

12.1.13 Main level

MASTER: This knob controls the general output level of the Syn'X.

TUNE: This knob controls the global tune of the Syn'X. 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.

SPRAID: 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.

12.2 Sequencer

The Syn'X has a powerful polyphonic sequencer that can help you to create complex sequences and incredible special effects.

The first thing to know is that this sequencer is polyphonic. That means that you can record/play up to 4 voices with different sequences. The **TRACK** switches allow you to choose which voices will be recorded or played.
The sequences must be programmed monophonically but can be played back together in sync.

RECORD with the MIDI Keyboard: To record a sequence, simply push the REC button and then the number of the track you wish to write. You must also select a voice for this track. The sequencer is now waiting to record the notes you play. Each entered note will be assigned to a new step. To leave a gap, press NXT button, to make a note that lasts two steps or longer, press the NXT button while keeping the note pressed.

As the sequence is recorded monophonically, it is possible to program "legato": holding down the last note while you play the next one gives legato phrasing.

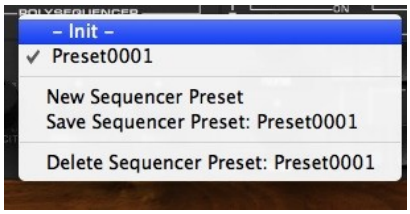
When you have finished writing the sequence, push REC again leave the record mode.
If you made a mistake, the DEL button erase the current step, but in that case, modify the sequence directly on the sequencer edit panel is far away more easy (see below)

PLAY the sequence: Once you have written your sequences, if you press PLAY, the sequencer begins to playback the track selected. If TRIG is ON, then it will begin only if a note is play on the keyboard. If TUNE is ON, then the sequences are tune accordingly to the lower note played on the keyboard.

FREQ: Set the frequency of the internal sequencer clock
MIDI S. LED: synchronizes the frequency to the application host tempo
GATE: set the time the sequencer will sustain the connected envelopes.
TRACKS: select the voices to be recorded or played.
SEL. VOICE: Assign a voice to the sequencer track. Up to 2 voices can be assigned, letting play the track with a sort of 2 voices unison.
1SHT: When on, this switch allows the one shot mode for the sequencer, meaning that after trigged, the sequence will be played only one time.
TRIG: When on, this switch will start the sequencer (in play mode only) when a note is held. It stops when the note in released.
TUNE: When on, this switch allows the tuning of the sequences according to the lowest note played on the keyboard.
REC: Record the selected track.
NXT: go to the next step
DEL: delete the current step of the voices selected. Be careful, there is no confirmation panel.
PLAY: When on, this switch allows the sequencer to run.

To help with your creative workflow, independent sequencer presets can be saved and recalled.

[SEQUENCER]: This clickable label opens a menu that shows you the available sequencer presets for recall:



12.2.1Sequencer display module

The Syn'X's sequencer display panel makes it easy to create, verify and modify your sequences.

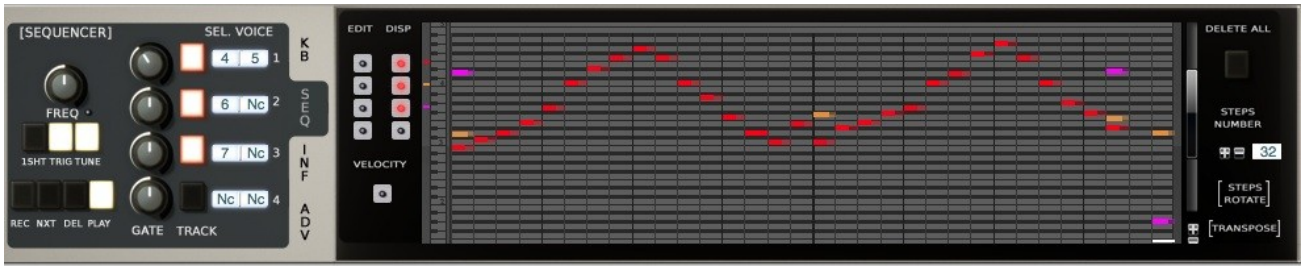
Three zoom modes can be used to display the internal values, selected by the '+' and '–' buttons. Zoom 1 shows the entire range of values, useful when using the sequencer to modulate parameters such as filter frequency, oscillator level or shape. Zoom 2 and Zoom 3 show four and two octaves respectively. The slider allows you to move the displayed part inside the whole range.

The current time slot is shown as a white cursor line at the bottom of the view.

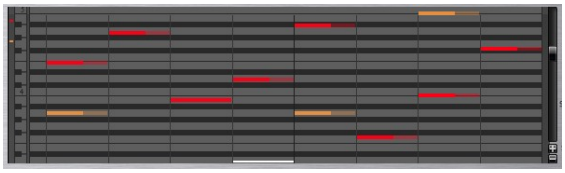
Each of the current sequences is displayed in a different color. The sequences can be highlighted or hidden by checking or un-checking the corresponding colored boxes to the left of the event display.

You can also modify the sequencer with the mouse: select the sequence you want to adjust (**Ed** check boxes) with the left button, click on the panel to add or modify a step, with the right button, click to erase a step.

Using CTRL+Click allows linking a step to another for a legato effect.
Using ALT+Click allows tuning the entered note to the exact pitch.



In the above view, there is one recorded sequence, track 1, which is assigned to voice 4 and 12 (so playing the sound of Layer 4 with 2 unison). Track 2 is selected too, assigned to voice 5, but not yet recorded. The TRIG button is pressed, so the sequence will be played as soon as a note if played on the keyboard.
You can also notice that the note on the third step is long enough to play legato with the next one. The highlighted part of the note informs about the gate width.



DELETE ALL: Pressing this button will delete all the tracks after you agree in a confirmation pop-up.
STEPS NUMBER: Increase or decrease the number of the sequencer steps (up to 128)
STEPS ROTATE: Clicking the "+" changes the step that the sequence starts on.
For example , in a 4 step sequence that started on step 1 the playback would go 1,2,3,4
Clicking "+" would cause the sequence to play 2,3,4,1. Clicking plus again would cause the sequence to play the 4 steps in this order 3,4,1,2. Clicking "-" will do the inverse.

The sequencer memorizes the pitch but also the velocity of the entered note.

So not only can use the sequencer for creating pitched sequences, but using the velocity (or the pitch) through the modulation section gives you endless design possibilities.

To display or edit the velocity instead of the recorded pitch click into the check box **Velocity.**

12.3 ***Virtual keyboard***

The Syn'X's keyboard lets you play notes that are sent to synthesizer. The keyboard also highlights the MIDI note information that the Syn'X receives.

12.4 ***Effects modules***

By clicking on the labels, the corresponding effect is displayed. Four LED switches are provided to enable or disable each of these effects, without changing the current view.

12.4.1Delay

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)

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

12.4.2Chorus

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

MODE: select the type of the algorithm. When ON, the dual brigade delays, used in the Synthex chorus are emulated, creating a warmer and bigger sound. But these "analog" digital components bring some aliasing, distortion and modulation noise.
In this mode, to get the standard Synthex chorus:

- Speed must be set at 0.44Hz.
- Amount at 50%.
- Stereo at 0%, for simulated the Synthex MONO mode) or 100%, for simulated the STERO SPLIT mode.
- Dry/Wet at 50%, for Type 2 and 3, and 65% for Type 1.

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

AMOUNT: Sets the amount of the effect.

TYPE: Selects from three different chorus types.

12.4.3Phaser

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.

12.4.4EQ

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.

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: enables the filter.

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

13 Option menu

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

13.1.1Main

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

Syn'X About: displays information about the Syn'X (version, build date and credits).

Open MIDI settings panel: Opens a popup where you can assign MIDI controllers for each of the Syn'X'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. The Syn'X 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 Syn'X parameter.

13.1.2Display

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.

13.1.3Misc

Init settings from current settings: initializes the default values of the Syn'X 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).

Layer locked when loaded: When this option is checked, the layer are locked (not writeable) when a multi-later is loaded.

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.

14 Credits

Thanks to the artists and musician who really helped us during the Syn'X development:

Mario Maggi, Paul Wiffen, Boris Djurdjevic, Stéphane Bonvallet, Luigi Felici.

The presets were done by:

Paul Wiffen, Lotuzia, Soundsdivine, Tzadi. Kelvin Ford, Vivolator, Ingo Weidner, Kire, Cliff Douse, Peter Schelfhout, Xavier Oudin.

The graphical user interface was created by:

Yannick Bonnefoy and Xavier Oudin, assisted by Laurent Bourgeon for the ergonomic aspect.

This manual was written by

Xavier Oudin, 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 Chaox LFO, SPRAY parameters concept, Morphable triangle and sawtooth oscillators, emulation of the Chorus based on the Dual Bucket Brigade Delay component, multilayering and multi keyboard concept, are licensed by Xavier Oudin to XILS Lab for exclusive use in the Syn'X virtual synthesizer.

Rhythm LFOs and DsyncADRS are licensed by Laurent Bourgeon to XILS-lab for exclusive use in the Syn'X virtual synthesizer. The DsyncADSR is an extension of the DADSR found in old vintage synthesizers.