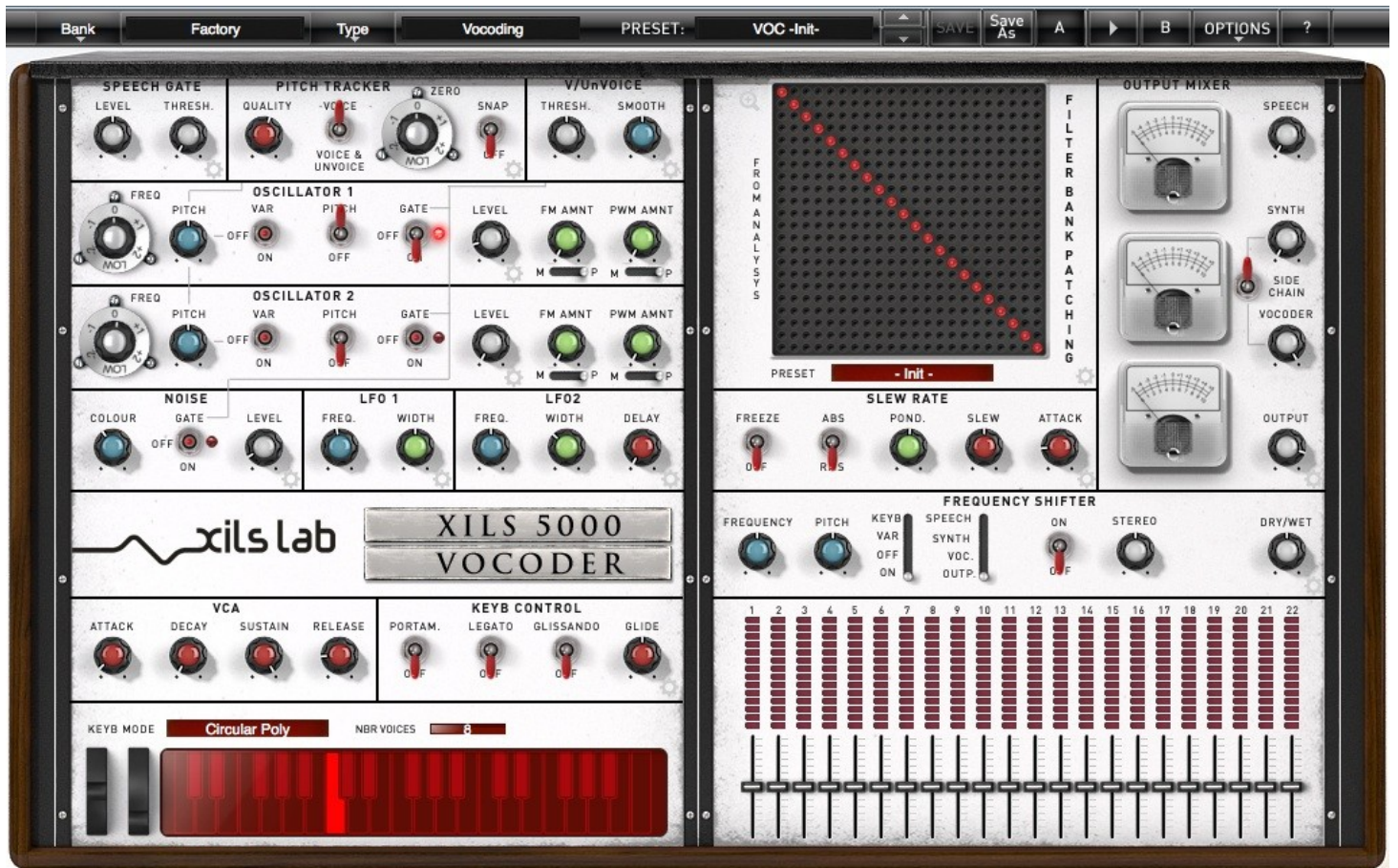


XILS Vocoder 5000



User Manual

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1 Introduction

Thank you for choosing the **XILS Vocoder 5000**!

The **XILS Vocoder 5000** is a virtual effect based on the architecture of one of the coolest vintage effect out there.

One of the best vocoder ever built, the **XILS Vocoder 5000** can bring you back some years ago when sound was so important for the great artists who began the electronic music.

We at **XILS-lab** do our best to create authentic recreations of the great synthesizers and machines 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.

If you not yet developed your skills as a sound designer, we have included a lot of presets from famous sound designers and artists. So you can fuel your synthesizer or robot voices dreams as soon as you load the **XILS Vocoder 5000** 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 1: We plan to release a series of tutorial videos to help you to get the most out of **XILS Vocoder 5000**.

When available, you will be able to view these videos on our YouTube channel.

Please visit: <http://www.youtube.com/user/xilslab>

Note 2: If you have a question about the **XILS Vocoder 5000**, 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 experience some trouble with XILS Vocoder 5000.

If you also need information about a specific subject, or want to exchange ideas or patches with other Xilsonauts, it is the best way to get connected to the Xils-lab world.

2 Features

The **XILS Vocoder 5000** offers:

- Two Synthesizer cores.
- Two oscillators per core, modeled from the EMS VCS3 oscillators.
- One noise per core.
- Two LFOs per core.
- One VCA-ADSR per core.
- One 22 bands filter vocoder.
- One 20 bands filter vocoder.
- Stereo analysis and synthesis available.
- Side chain for adding external audio source to the carrier.
- A virtual keyboard, which can be saved within your presets.
- A finely tweak analog-like pitch tracker.
- An input gate for reducing the noise.
- A Voice/unVoice detector.
- A huge Frequency Shifter.
- A full output mixed applied on any internal audio path.
- All parameters are MIDI controllable.

The **XILS Vocoder 5000** is available in the following formats:

- **Mac OSX 10.5 and later:** VST2.4, VST3, Audio Unit, RTAS (Pro Tools 7.0 and later), AAX
- **Windows 7, XP and Vista:** VST2.4, VST3, RTAS (Pro Tools 7.0 and later), AAX



AAX

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

The **XILS Vocoder 5000** 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.

3.1 *eLicenser drivers*

The **XILS Vocoder 5000** uses an USB-eLicenser dongle. You must have this dongle connected to a USB port on your computer to make the XILS Vocoder 5000 work.

Important : Please take care of your dongle: you need it to run the XILS Vocoder 5000 and it carries your license!

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 **XILS Vocoder 5000** 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.

3.2 *iLok drivers*

With the iLok version of the **XILS Vocoder 5000**, you need to plug an iLok USB key into your computer or uses the so called “computer-based” authorization.

After downloading and installing the latest PACE drivers, please launch the iLok License manager and sign in to your iLok account. Then Redeem the iLok code you received to get your license listed.

Simply drag your **XILS Vocoder 5000** license into your iLok USB key or into your computer.

To download the latest PACE drivers, please go to:

<http://www.ilok.com/download-ilok-software.html>

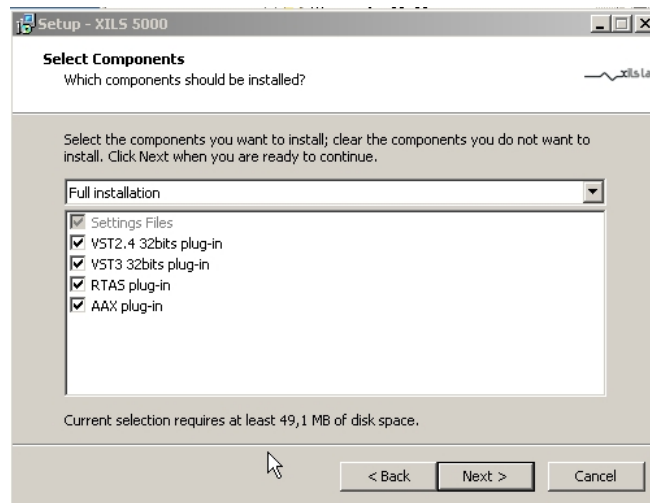
3.3 Windows (XP, VISTA, Windows 7)

To install the XILS Vocoder 5000 on Windows XP, Vista or Windows 7, launch the XILS Vocoder 5000 installer file. Please download the latest version from the XILS-lab website.

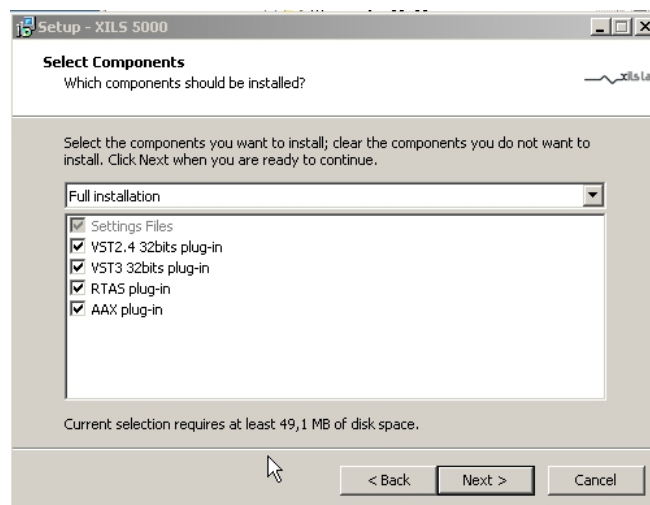
http://www.xils-lab.com/pages/XILS_Vocoder_5000_Download.html

Once you have accepted the license agreement, you will be asked to select the components to be installed :

32 bits windows XP :



64 bits windows (Vista, 7 or 8) :



You can choose which format to be installed between RTAS, AAX, VST2.4 (32 and 64 bits) and VST3 (of course you can install of them). Then you will be asked to select various install directories.

A destination directory is provided as a default. Presets and various files, like this manual, used by the XILS Vocoder 5000 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. Make sure that the path for the 32 bits plug-in differs than for the 64 bits plug-in (as the default path does)

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

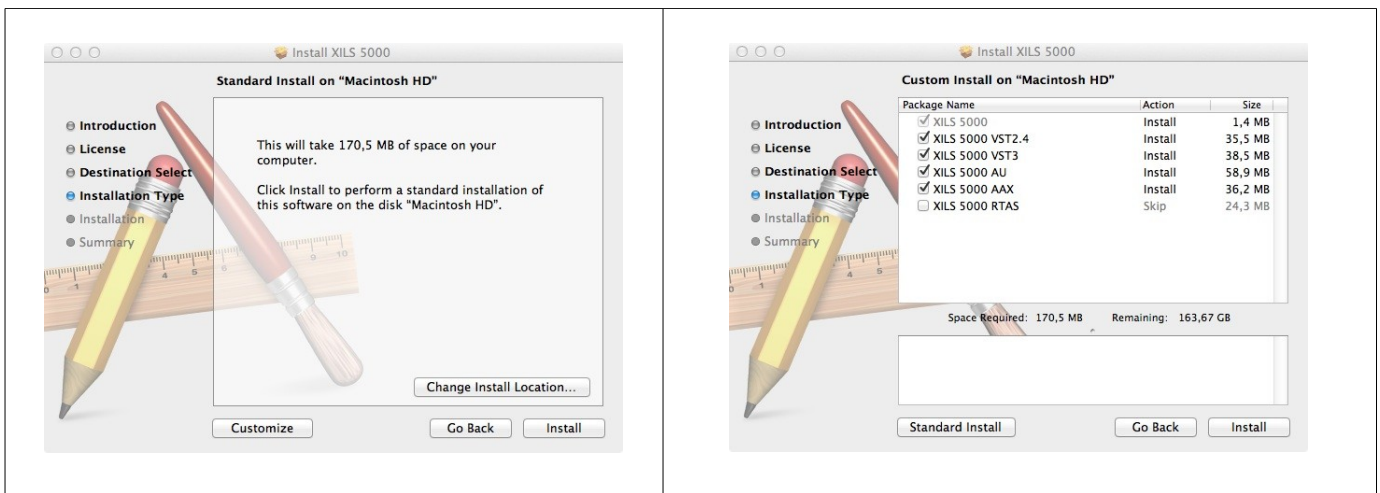
3.4 Mac (OSX 10.5 and later)

To install the XILS Vocoder 5000 on a computer equipped with Mac OSX 10.5 or later, download the latest version of either the iLok or eLicensor versions from the XILS-lab website to make sure you have the latest version of the software.

http://www.xils-lab.com/pages/XILS_Vocoder_5000_Download.html

Then launch the install program, XILS Vocoder 5000. pkg, and follow the instructions.
Warning: the install program will ask you for your system password.

Just after selecting the drive where the XILS Vocoder 5000 will be installed, you can choose which components to be copied by clicking on “customize” and selecting or unselecting them :



The various files of the XILS Vocoder 5000 will be copied into the following directories:

Library/Application Support/XILS-lab/XILS Vocoder 5000
Library/Application Support/Digidesign/Plug-Ins
Library/Application Support/Avid/Audio/Plug-Ins
Library/Audio/Plug-Ins/Components
Library/Audio/Plug-Ins/VST
Library/Audio/Plug-Ins/VST3
Library/Application Support/Documentation/XILS-lab/XILS Vocoder 5000

And for the user preset and various option :

..users/username/Library/Preferences/XILS-lab/XILS Vocoder 5000

4 What is a vocoder

A Vocoder is an effect which uses two signals to produce one output signal.

The first signal is called the modulator. Usually vocals are used as the modulator, but it can also be drums, percussion, or any other musical signal. The second signal, called the carrier signal, is usually a synthesizer signal, like a sawtooth chord, white noise, etc.

A bank of bandpass filters splits the modulator into several frequency bands. For a good result and an understandable synthetic voice, 22 bands were used in our legacy EMS 5000 model, but less bands are also commonly used. The level of each band output is constantly measured.

The same filter bank also splits the carrier signal. The measured level of each modulator filter band is then applied to each corresponding carrier filter band. This way, the spectrum of the carrier is modulated by the spectrum of the modulator. The output of all the carrier filters are then mixed together, producing the output of the vocoder.

The quality of a vocoder is depending on different components :

- The filter bank : it must provide a good analysis spectrum, for which every band is equally measured (without any digital artefacts)
- The band level analysis : the way each band level is measured and analysed gives the key of a good vocoder and how the result is understandable.
- The synthesis band modulation : the way each synthesis band is modulated is also part of the vocoder sound, its quality, its smoothness.
- Synthesizer carrier : Without a good synthesizer feeding the vocoder filters, the result wouldn't be as good as expected.

All these modules would lack to reproduce the human voice without a voice detector. This module is separating the voice part (like the vowels, called "voiced") and the sibilants (like "s", "sh", called "unvoiced"), allowing the synthesizer modules to be adapted for using either noise or pitched oscillators.

When the pitched oscillator is used, it could be interesting that it follows the voice pitch. For this we must use a pitch tracker.

Mixing up all these modules, we are now in front of a impressive effect with a lot of sound possibilities : Following or not the pitch of the voice, changing the oscillators waveform, modulating them with LFO, changing the spectrum band relation between the analysis and the synthesis filters, changing then what is called the "formants" of the voice.

Sound design and fun are endless !

5 Using the XILS Vocoder 5000

5.1 The XILS Vocoder 5000 tools bar



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 of 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 **XILS Vocoder 5000** will display presets sorted by instruments Categories (Type = Bass, Keys, Leads etc.) and Library Bank by default.

Please note that the **XILS Vocoder 5000's** powerful preset management is fully detailed in chapter 6 of this manual.

5.2 Adjusting the instruments parameters

On **XILS 4**, most sound parameters, such as the pitch of an oscillator, or the filter's Cut-Off Frequency, are controlled using Knobs.

To adjust the parameters of **XILS 4** 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 selected parameter with greater 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.

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.

5.3 Using the XILS Vocoder 5000 as a simple effect

This is the easiest way to use the XILS Vocoder 5000, when chords or notes are not going to be changed.

For this you just have to insert your XILS Vocoder 5000 in an audio track, mixer or effect rack (it can be used as an insert or a send effect).

Once the XILS Vocoder 5000 is launched, select the following preset:

Bank: Factory, Author: XILS-lab, Preset: Simple VocoderC1

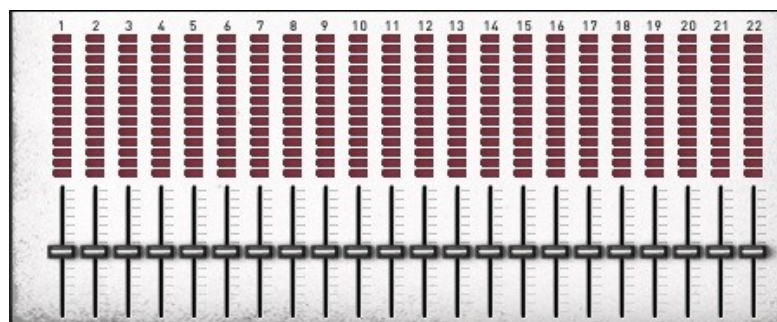
As you can see, the note C1 is held (it was right clicked then saved in the preset, see below)

Then start your DAW, your audio content should be input the **XILS Vocoder 5000** and modulating the carrier done with the oscillators triggered by the note C1: a typical Robot vocoded sound.

You can listen to your audio track by raising the **SPEECH** level knob, listen to the Synthesis sound by raising the **SYNTH** level knob, or adjusting the **VOCODER** level or the **OUTPUT** level with the two corresponding knobs. The level of each part is displayed with the vu-meters.



You can then adapt the gain of each bands and see the corresponding level :



To change the note of this Vocoding sound, click on the C1 note, this will released it. Of course no sound is then created by the Vocoder. Click on an other note, a sound is output, but stops as soon as the note is released. To hold the note, just right click on it instead of left click. You can add any number of notes doing this. Using the **“Save as”** button, the **“save”** button (see the preset management chapter below), this new chord can be recorded in a new preset.

5.4 as a Midi Controlled effect

A robot voice is interesting, but we may want to change the note or the chords; for this, Midi messages must be sent to the XILS Vocoder 5000. The way it is done depends on the DAW. You will find below two examples, one for DAW that are working like Logic 9 and another which are working like Cubase. Several other examples, for several different DAW, are explained at the end of this manual.

Logic needs the XILS Vocoder 5000 to be inserted in an instrument track. Be careful to insert the Midi controlled effect, not the instrument only plug-in. Once the XILS Vocoder 5000 is launched, you will find a side chain menu, created by the DAW. You just have to select the audio track to feed audio content to the XILS Vocoder 5000. Each Midi note is also sent to the XILS Vocoder 5000 and driving the Virtual Keyboard.

Cubase needs the XILS Vocoder 5000 to be inserted as an effect (either insert or send). Create then a Midi track and select the XILS Vocoder 5000 in the list of the instruments where which the midi message are sent.

You can use now your XILS Vocoder 5000 vocoder in the same way explained in the above chapter, excepted that you can change the note or the chords the way you like.

5.5 The XILS Vocoder 5000 modules

The XILS Vocoder 5000 features several modules to give you endless possibilities using a vocoder.

- **SPEECH GATE** : a simple gate to avoid feeding the XILS Vocoder 5000 with noise.
- **PITCH TRACKER** : analog like pitch extractor to follow the pitch of the voice
- **V/unVOICE** : a module which is separating the voice part from the sibilant
- **OSCILLATOR 1&2** : two finely emulated analog oscillators from the legacy VCS3
- **NOISE** : an analog like noise generator
- **LFO1&2** : two low frequency oscillators, used for modulating the synthesizers parts.
- **VCA** : an envelope generator modulating the synthesizer output.
- **KEYB CONTROL** : several controls for adapting the virtual keyboard to your performance.
- **FILTER BANK PATCHING AREA** : a pin matrix to connect any analysis band to any synthesis band
- **SLEW RATE** : a module to control the way analysis is done
- **FREQUENCY SHIFTER** : a finely analog like frequency shifter effect which can be applied on any of the audio content, speech, synthesis, vocoder or global output.
- **OUTPUT MIXER** : where the audio content of the XILS Vocoder 5000 are mixed together
- **BAND LEVEL** : where the gain of each band can be adapted and visualized.

At the right corner of each module, clicking on the “advanced” icon will open a popup where you can tweak advanced parameters of the module.

5.5.1 SPEECH GATE

This is the input module of the XILS Vocoder 5000 for the modulator signal (voice, drums, etc.). This gate avoids to feed the XILS Vocoder 5000 with noise when there is no speech or voices.




- **LEVEL** : this knob adjusts the gain of the input signal.
- **THRESH.** : this knob adjusts the threshold of the input gate.


Clicking on the advanced icon opens the advanced settings popup.

There are three thresholds for finely tweak the input gate. The Gate will open when the input signal level is above “Threshold+Opening” and it will close when the input signal level is below “Threshold – Closing”.


Having a difference threshold for opening and closing is very important when there are a lot of noise, avoiding pump effects.

	<ul style="list-style-type: none">• ATTACK: sets the attack time of the gate• RELEASE : sets the release time of the gate• OPENING : sets the added threshold for opening the gate• CLOSING : sets the added threshold for closing the gate
--	--

5.5.2 PITCH TRACKER

	<ul style="list-style-type: none">• QUALITY : this knob adjusts the pitch smoothing. Turned left for a fast response, turned right for a smoother one.• VOICE/VOICE&UNVOICE. : this switch allows the pitch tracker to follow only the voiced part of the input signal, or to be independent of this detection.• ZERO : this knob adjusts the the range and the base of the output pitch.• SNAP : allows the pitch tracker to match the scaled notes.
---	--

Clicking on the advanced icon opens the advanced settings popup.

	<ul style="list-style-type: none">• LOW : this knob adjusts the low frequency. The pitch tracker won't detect any pitch below this frequency• HIGH : this switch allows the high frequency. The pitch tracker won't detect any pitch above this frequency.• PRESET : this menu allows you to select various preset for the pitch tracker.
---	--

5.5.3 Voice/unVoice

This module is used to detect which part of the input signal must be synthesized with a pitched oscillator and which one with a noise. The “Voice” part is used to enable the oscillator the “unVoice” part, or Sibilant, is used to enable the noise of the synthesizer (see below)



- **TRESH.** : this knob adjusts the threshold which is used to separate the voice and the sibilant sounds of the input signal.
- **SMOOTH** : This knob sets how the Sibilant detection will be applied, fast (turn left) or slow (turn right).

Clicking on the advanced icon opens the advanced settings popup.



- **LISTEN** : this switch connect the filter output to the main output of the plug-in, helping for choosing the correct settings.
- **FREQUENCY** : This knob sets the frequency which separates voice and sibilant sounds.

5.5.4 Oscillator 1&2


These two modules are feeding the Filter bank with pitched sound (on the contrary of the noise which is outputting unpitched sound). These oscillators, finely emulated from the original VCS 3 Synthesizer, can be controlled in pitch by the keyboard but also by the pitch tracker. Their output can be controlled by the Voice/unVoice module.



- **FREQ** : sets the pitch of the oscillator (the outer ring sets the range by octave)
- **PITCH** : set the amount the pitch modulation from the pitch tracker, when the corresponding switch is set to **VAR**.
- **ON-OFF-VAR** : when this switch is **OFF**, the oscillator pitch doesn't follow the pitch tracker. When **ON**, the pitch is following the pitch tracker with the same variation. When **VAR**, the pitch is following the pitch tracker with the amount set by the **PITCH** knob.
- **PITCH** : when **OFF** the oscillator pitch doesn't change. When set to **PITCH**, it follows the keyboard and the pitch tracker if this one is enable.
- **GATE-OFF-ON** : this switch controls the way the oscillator is feeding the filter bank. When set to **OFF**, the oscillator is muted. When **ON**, it is always enable and when set to **GATE**, it is enable only in case of voice signal, following the Voice/unVoice detector.
- **LEVEL** : sets the level of the oscillator
- **FM AMOUNT** : set the amount of the frequency modulation, controlled by the LFO1 or the LFO2.
- **PWM AMOUNT** : set the amount of the pulse width modulation, controlled by the LFO1 or the LFO2
- **M-P** : these two switches set the modulation as mono (all the voices are modulated by the same LFO) or polyphonic (each voice is modulated with its own LFO)


For adapting the sound of the oscillator, a analog like filter, either high or low shelf, is applied before the filter bank. This filter can be tweak in the advanced panel.

Clicking on the advanced icon opens the advanced settings popup.

	<ul style="list-style-type: none">• FREQUENCY : sets the cutoff frequency of the filter• EMPHASIS : sets the resonance (or emphasis) of the filter• GAIN : sets the gain of the shelf filter• SWITCH : sets the filter type, High shelf, Low shelf of OFF (no filter applied)• SOURCE PWM : this menu selects the source of the pulse width modulation, LFO1 or LFO2.• SOURCE FM : this menu selects the source of the frequency modulation, LFO1 or LFO2.• WAVEFORM : this menu selects the wave form of the oscillator, Saw, Square, Pulse, Triangle, Sine.
--	---


5.5.5 NOISE

This module is feeding the Filter bank with un-pitched sound (on the contrary of the oscillators, see above). The output of the noise module can be controlled by the Voice/unVoice module.

	<ul style="list-style-type: none">• COLOUR : Sets the colour of the noise• LEVEL : Sets the level of the noise, when enable.• ON-OFF-GATE : When set to ON, the noise is continuously output at the level sets by the LEVEL knob. When OFF, the noise is muted. When set to GATE, the noise is enable only when the voice/unVoice detector is detecting a unvoiced signal.
---	---

For adapting the sound of the noise, a analog like filter, either high or low shelf, is applied before the filter bank. This filter can be tweak in the advanced panel.

Clicking on the advanced icon opens the advanced settings popup.

	<ul style="list-style-type: none">• FREQUENCY : sets the cutoff frequency of the filter• EMPHASIS : sets the resonance (or emphasis) of the filter• GAIN : sets the gain of the shelf filter• SWITCH : sets the filter type, High shelf, Low shelf of OFF (no filter applied)
--	---

5.5.6 VCA

Just before feeding the filter bank, an amplifier modulated by an envelope is applied to the synthesized sound. This envelope, featuring the standard ADSR parameters is triggered by the keyboard.



- **ATTACK.** : sets the attack time of the envelope, to reach the maximal level.
- **DEACY** : sets the decay time of the envelope, to reach the sustain level..
- **SUSTAIN** : sets the sustain level
- **RELEASE** : sets the release time of the envelope to reach zero

5.5.7 KEYBOARD control



- **PORTAM.** : when engaged, this switch enables the portamento between notes. This means that when a not changed, the pitch is slowly changing, according to the DRIVE knob.
- **LEGATO** : when engaged, this switch enables the legato mode. This means that the portamento is taken into account only when notes are played legato (the keyboard mist not be left between notes). This mode is only enable when the keyboard is playing in **MONO** mode.
- **GLISSANDO** : when engaged, the glissando mode is enable. This means that when a portamento occurs, the pitch is changing between scaled notes and not continuously.
- **GLIDE** : sets the glide time for the Portamento.

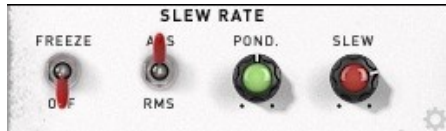
Clicking on the advanced icon opens the advanced settings popup.



- **PITCH BEND RANGE** : sets the range of the pitch bend wheel (from 1 semi-tone, to 12 semi-tones)
- **MOD. WHEEL** : this menu selects toward which parameter the modulation wheel will be affected: SLEW, OSC1&2 FM and PWM amount.
- **FOOT SWITCH** : this menu selects toward which parameter the foot switch will be affected : NONE, FREEZE.
- **VELOCITE** : this menu selects toward which parameter the velocity switch will be affected: NONE, VCA

5.5.8 Slew Rate

This module is controlling how the filter bank is analysis the input audio and how it is modulating the carrier spectrum.



- **FREEZE** : when engaged, this switch freezes the spectrum. Of course this parameter ca be assigned to a Midi controller or to the foot switch. This could be useful for creating a particular sound or effect.
- **ABS-RMS** : this switch allows you to select how the input signal will be analysed. Level can be measured in absolute (**ABS**) or Root Means Square (**RMS**)
- **POND.** : This knob allows you to control the ponderation applied to the spectrum level. Turn left for no ponderation, turn right for a full ponderation. The ponderation allows to keep a low slew rate in the low part of the spectrum, for a smoother sound, and a high slew rate in the upper part of the spectrum, for a better voice recognition.
- **SLEW** : This knob sets the slew rate time. Turn left for a fast analysis (with sometime harsh sound) , turn right for a low slew rate, smoother sound but less articulation.

Clicking on the advanced icon opens the advanced settings popup.



- **MIDI** : This menu selects which MIDI controller will control the freeze feature : NONE (no controller) or FOOT (foot switch controller)
- **INTERNAL** : this menu selects which internal module will control the freeze feature : NONE (no modules), LFO1, LFO2. When selecting a LFO, the the freeze will happen every cycle.
- **FORMANT, PITCH, V/UNVOICE** : These switches are selecting which modules are involved in the freeze. Formant (the whole spectrum), the pitch from the pitch tracker or the Voice/UnVoice detector
- **ATTACK SLEW** : this knob sets the attack of the slew rate: Turn left for a fast attack, turn right for a slow one.

5.5.9 Frequency Shifter

A frequency shifter is an effect which shifts the frequency of the whole spectrum. As the spectrum is simply shifted, the formant won't be preserved and then some very strange effect can be heard. With a small frequency shift and using the various available panoramic parameters, nice stereo effects can also be done.



- **FREQUENCY** : sets the frequency with which the spectrum will be shifted.
- **PITCH** : sets the amount of the frequency modulation, came from the pitch tracker when the selector is set to **VAR**.
- **KEYB-VAR-OFF-ON** : selects which sort of modulation will be applied to the Frequency. **KEYB**, for following the Keyboard, **VAR** for following the pitch tracker with variable amount (set by the **PITCH** knob), **OFF** when no frequency modulation is desired and finally **ON** when the pitch tracker is modulating the frequency with a scaled amount.
- **SPEECH-SYNTH-VOC-OUTP** : selects on which part of the XILS Vocoder 5000 internal signal, the frequency shifter must be applied.
- **ON-OFF** : enables or disable the frequency shifter.
- **STEREO** : increases or decrease the stereo effect
- **DRY-WET** : increases or decrease the dry and wet mix

Clicking on the advanced icon opens the advanced settings popup.



The frequency shifter is separated in two parts, each one as well as the dry path, has its one level and panoramic knob .

- **GAIN** : sets the level of the corresponding part
- **PAN** : sets the panoramic of the corresponding part. Turn left for a full left effect, turn right for a full right effect.

5.5.10 Output Mixer and Side Chain

This module allows to mix every signal present in the XILS Vocoder 5000 : the input Speech, the internal Synthesizer and the Vocoder output. A global gain allows to adjust the output level of the plug-in.

Three vu-meter as displaying the various level, one can be switched between the Synthesizer and the Vocoder.



- **SPEECH** : this knob sets the level of the input speech signal.
- **SYNTH** : this knob sets the level of the internal synthesizer signal.
- **VOCODER** : this knob sets the level of the vocoder signal.
- **OUPUT** : this knob sets the level of the global output of the XILS Vocoder 5000.
- **SWITCH** : This switch allows to select which signal will be connected to the Vu-meter, Synthesizer or Vocoder.

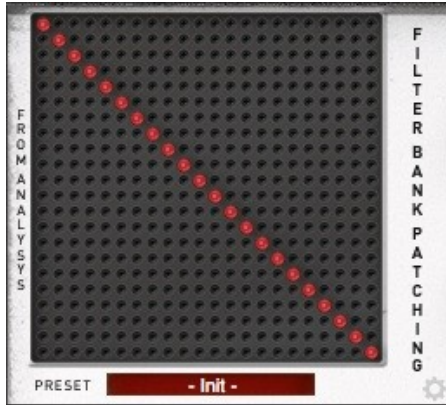
Clicking on the advanced icon opens the advanced settings popup, where the side chain can be controlled.



This popup allows to adapt the internal process

- **SIDE-CHAIN SELEC** : This menu selects the side chain function : Not Used, Voice&UnVoice synth, Voice Synth, Unvoice Synth and finally Speech.
- **SIDE CHAIN LEVEL** : This knob sets the level of the external side chained signal.
- **MONO-STEREO ANALYSIS** : Selects the analysis process, MONO or STEREO. In that case two Filter banks are calculated, meaning a lot of calculation. This mode could be quite heavy for some computers
- **MONO-STEREO YNTHESIS** : Selects the synthesis process, MONO or STEREO. In that case two synthesizers are calculated, meaning a lot of calculation. This mode could be quite heavy for some computers.
- **STEREO DETUNE** : When two synthesizers are used, this knob allows you to detune one from the other, giving a true stereo effect.
- **LEFT PAN-RIGHT PAN** : these two knob are controlling the panoramic level of each of the two synthesizers. This is useful only in when the STEREO SYNTHESIS mode is engaged.

5.5.11 Matrix Patch Area



- **PRESET** : This menu selects which preset to launch. It is possible to save your own presets.
- Clicking on a hole add a pin which is connecting a Analysis band filter to the corresponding synthesis band. Right-click on a PIN removes it.

Clicking on the advanced icon opens the advanced settings popup.



This popup allows to adapt the filter bank

- **BAND NUMBER** : Selects the number of bands, 22 or 20.
- **FILTER ORDER** : Selects the order of the filters, 12db, 18db, 24db/oct
- **EMPHASIS** : Sets the emphasis (resonance) of each filters
- **PONDERATION** : Adapts the resonance, depending on the band number. Turn left for no ponderation, right for maximal ponderation. In that case, the low end is preserved, without the "tube effect", but the voice is very articulated.
- **LOW PASS** : sets the frequency of the low pass filter, when the 22 bands mode is selected.
- **HIGH-PASS** : sets the frequency of the high pass filter, when the 22 bands mode is selected.

6 Getting started : How to set up your Vocoder 5000 in your Daw.

Depending on what you want to achieve, there are several ways to use the Vocoder 5000. Whatever the situation, the two very important things to remember are :

- **Vocoder 5000 will appear as an EFFECT.** Don't waste time searching it in the Instrument list
- **You will only hear the Vocoder 5000 when your Daw is in PLAY MODE** (unless you check the option : option->misc->Vocoder runs when DAW stops, witch can bring non desired artefacts in certain daws/situations combinations)

6.1 General cases :

6.2 **Vocoder 5000 on a Vocal track (or drums etc) without controlling pitch with Notes/Midi Playing**

Just insert the Vocoder 5000 as an effect on the track. Browse presets. You can still control the base pitch with V5000 internal keyboard (right click to set a permanent note, or add note to a Chord, Left Click to play it in real time –Note will last until you release the left click)

6.3 **Vocoder 5000 on a Vocal track (or any other signal) while controlling the pitch in real time)**

This is the way to make a melody from a spoken voice, or to make Vocoded Choirs and chords out of any signal.

To achieve this you MUST control the Vocoder 5000 with Midi, and therefore create a MIDI TRACK in your daw, whose output will be routed to the input of the V5000

- 1/ Insert the Vocoder 5000 on the source Audio Track (Vocals, speak, keys, drums etc)
- 2/ Create a MIDI TRACK in your Daw and assign its output to the V5000
- 3/ Play or Record a melody/Chords on the midi track while your Daw is in Play mode

6.4 **Use Internal Synthesizer (Optional + Vocoder Signal, + Pitch Shifter etc) to play along with a pitched instrument (VSTI), while changing the character of the instrument**

This is the way to make a Rhodes Gritty, add organic signals modulations to a digital Pad, or depth to any synthesizer. In this configuration, you'll need to simultaneously send the same midi data to both the VSTI, and to the V5000.

- 1/ Insert the Vocoder 5000 on the VSTI Midi track (Keys, Pads, Guitar, Pads etc)
- 2/ Create a MIDI TRACK in your Daw and assign its output to the V5000
- 3/ Enable both VSTI and V5000 midi tracks to receive midi data simultaneously (in Cubase, select the VSTI track first, then Control click on the V5000 midi track)
- 4/ Play or Record a melody/Chords on the 2 midi tracks while your Daw is in Play mode

The figure below shows how to set tracks in Cubase 7.5. You can listen to an audio example which shows the results : Transforming a clean Rhodes into a kind of gritty analog keyboard using the Vocoder 5000 as insert on an FM8 Rhodes sound – You fist hear the FM8, then the FM8 effected by the Vocoder 5000)



6.5 Generating Vcoded Chords from a Live Drum pattern.

In this example, you need only two tracks.

1. Insert the V 5000 on your Drumtrack Channel.
2. Create a new Midi Track in your Daw, and assign its Midi output to the Vocoder 5000 Midi input.
3. Play/Record some chords on the V5000 Midi Track while your Daw is in Play Mode

You'll notice that the rhythm of the drums is printed in your Vcoded Chords !

To hear the result, please listen to the following short audio clip. I've left a bit of the Speech signal (here the drums) pass thru the Vocoder 5000 mixed with the chords, so that one can hear the interaction between the drums, and the generated Chords. Usually you'll want to nullify the Speech signal, so that you can process the Vcoded chords separately.(Reverb, Delay, etc)

The following figure shows you how to set up your Daw to get similar results.



7 Preset Management

7.1 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 of the resulting selected group of presets.

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

Info: Once any one parameter of a preset has been modified, the name of the preset is followed by a *, indicating that the current settings of **XILS Vocoder 5000** no longer match 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.

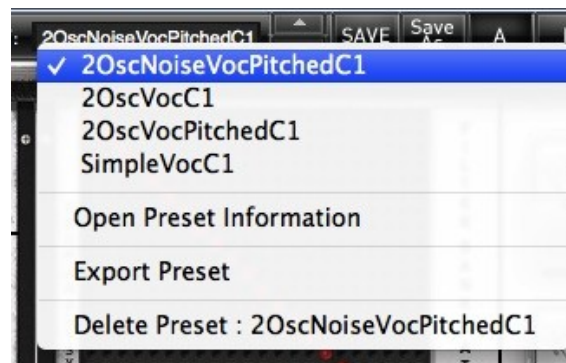
Factory Preset Protection: In order to prevent you from erasing them, the Factory presets cannot be overwritten using the **SAVE** function. When you edit a Factory preset, the **Save** button will therefore be grayed, and you **MUST** use the “**Save As**” function to save it in another bank.

If you edit any preset other 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 disappear, until you start to edit that saved version yet again.

7.2 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 XILS Vocoder 5000.

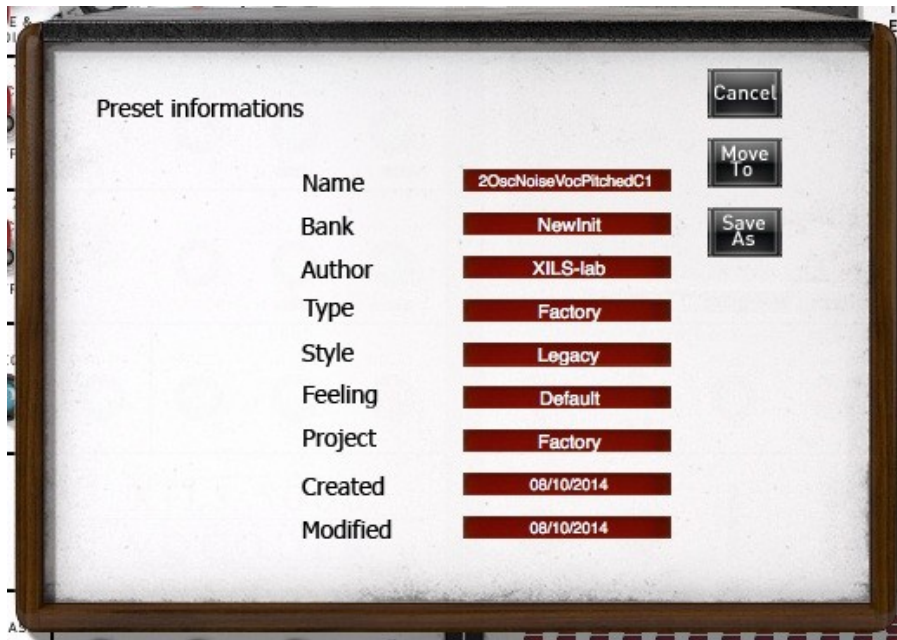


In this menu, other actions are also available:

Delete Preset: Use this to delete the current preset (a pop-up 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 to an external file location. 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): This opens the following preset information window where, not only the name, but all the other information related to the current preset can be displayed or changed.



This window allows you to specify or change the data below, to be saved with the newly named preset:

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

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

All the above can also be determined when moving presets to another file location.

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 appear at the bottom of the list. This will open a separate new window, in which you can write the name of the new item. Click OK to confirm this, then the name and the newly created tag will now be active and selected for the current preset.

Note: You may have to browse down to the bottom of the list in order to select "new", depending on the length of the list.

TIP: How to create a Favorite Sound-bank:

There are two possibilities:

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

2. Just create a new tag in the **Project** field, and name it "My Favorites", then just re-save any interesting patch with this tag, using the **SAVE AS** option. To browse your favorites, just choose this tag in the project field as the first criteria. This

method is maybe more interesting because you can reverse it. Should you later decide that a particular patch no longer deserves to be honored with its "Favourites" tag, simply remove the tag, then re-save it.

Note: Please be aware that creating too many categories can also have its drawbacks; making browsing change 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. Use these options wisely.

Once you have filled out 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 have filled in.

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

CANCEL: This will just cancel all operations, and return to the standard **XILS Vocoder 5000** GUI.

7.3 Sort menus



The sorting menus are a unique and powerful tool. They allow you to perform sophisticated tasks, such as displaying the preset list, but organized in a variety of different and specific ways.

Examples:

- All the Basses in your Sound Library
- All the Basses tagged with a specific musical genre.
- All the Pads created by a particular Sound Designer.
- All instruments tagged for a chosen musical genre, such as Electronica, or Funk.
- All instruments that were recently imported into a bank (like additional sound-sets from Xils-Lab, or it's 3^d party vendors)

There are many possibilities, but we are confident that you will 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 the 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. There is an example below, showing 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 through the different banks. In a factory bank, the author Xils-Lab is selected, and then the Preset -Init1-. 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.



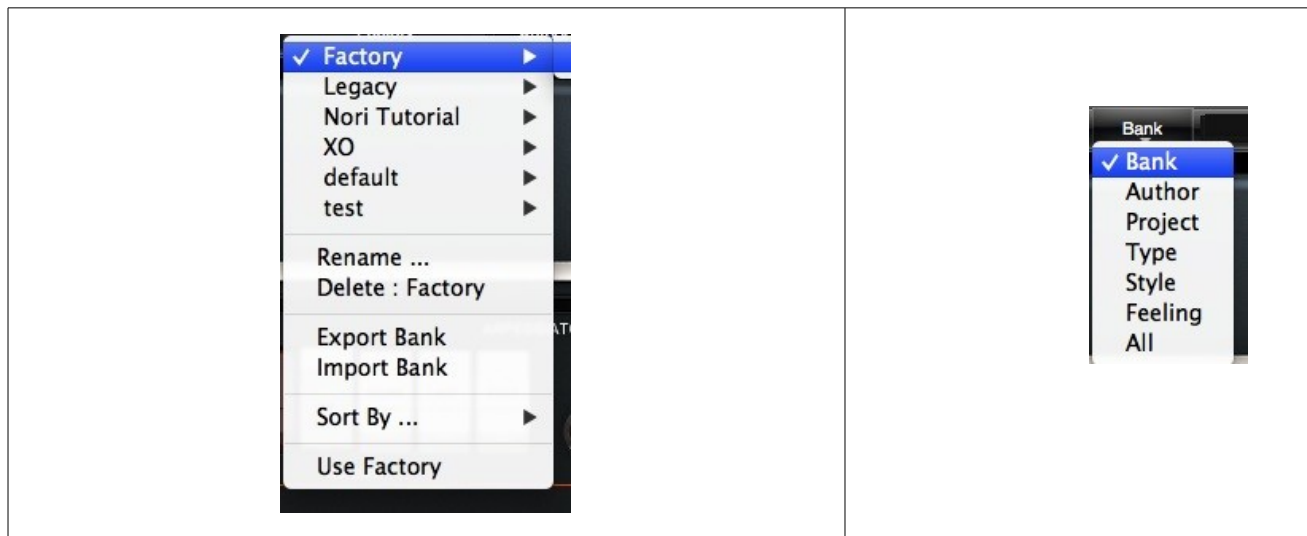
Click on the **row** of the sorting button to open the menu used to manage this sorting group (or sub group). Here you can directly select and load any preset from any group or subgroup.

7.3.1 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 XILS Vocoder 5000'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 XILS Vocoder 5000 bank.

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

7.4 **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 **XILS Vocoder 5000**, 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 **XILS Vocoder 5000**.

8 Option menu

This menu allows to choosing the global settings. These settings are defined for all the instances of the XILS Vocoder 5000. 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 the XILS Vocoder 5000. This menu shows the following options settings:

XILS Vocoder 5000 About: displays information about the XILS Vocoder 5000 (version, build date and credits).

Open MIDI settings panel: Opens a popup where you can assign MIDI controllers for each of the XILS Vocoder 5000'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 XILS Vocoder 5000 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 XILS Vocoder 5000 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.

8.1.3 Misc

Init settings from current settings: initializes the default values of the XILS Vocoder 5000 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 the XILS Vocoder 5000 development:

The presets were done by:

Xavier Oudin.

Graphism and 3-D rendering

Yannick Bonnefoy

The graphical user interface was created by:

Xavier Oudin

This manual was written by

Xavier Oudin

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

Xavier Oudin

Modules licenses:

The Oscillator, the vocoder filters, the frequency shifter effect, are licensed by Xavier Oudin to XILS-lab for exclusive use in the XILS Vocoder 5000 virtual synthesizer.