



**NATIVE INSTRUMENTS**  
SOFTWARE SYNTHESIS

# **ABSYNTH 4**

## **Operation Manual**

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And also, if you're reading this, it means you bought the software rather than stole it. It's because of people like you that we can continue to create great tools and update them. So, thank you very much.

Users Guide written by Christoph Laue.

Special thanks to the Beta Test Team, who were invaluable not just in tracking down bugs, but in making this a better product.



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# 1. Welcome to ABSYNTH 4!

We are delighted that you have chosen ABSYNTH 4. You now own a synthesizer, which is capable of producing some of the most daring sounds. Whether you are developing a film soundtrack or “just want to make music” – ABSYNTH 4 always has the right sound in store for you. The semi-modular design allows you to combine oscillators, modulation sources, and filters in any way you want. You can create unusual and dynamic sounds by combining the numerous effects and modulation possibilities in different ways. The new Marco Controls allow you to operate several parameters at the touch of a button, just pressing one key of your MIDI controller. Or you can take advantage of the automation capabilities in your Audio MIDI Sequencer to trigger your sounds into action.

With all these possibilities, the operational ease of ABSYNTH 4 never fails to impress: you can find the right sound quickly and intuitively using the sound browser. Simply state the characteristics that the desired sound requires and let ABSYNTH 4 perform the search. The newly designed interface now has a clearer structure so that you can quickly find important operating features and always keep them in view. All this allows you to realize your musical ideas and make great music without having to take detours. This is exactly what you should set out to do right now!

The ABSYNTH 4 TEAM at NATIVE INSTRUMENTS

Wishes you the best of luck with ABSYNTH 4.

## 2. Installing and Setting Up ABSYNTH 4

We recommend that you first follow the steps described in the Setup Guide supplied separately before you start reading this manual. The Setup Guide explains how to install ABSYNTH 4 on your computer, how to setup the audio and MIDI interfaces of the Stand-Alone Version or alternatively, how to incorporate ABSYNTH 4 as a plug-in to your Audio MIDI Sequencer. The Setup Guide also includes a step-by-step introduction to using the new NI Service Center, which is available online to help you activate ABSYNTH 4 for permanent use on your computer and search comfortably for new updates with ease.

## 3. Overview

In this chapter you will find a list of the new and modified functions in ABSYNTH 4. You will learn about the concept behind ABSYNTH 4 and get to know the interface. The practical examples will simplify the learning process, to get you started with designing your own sounds.

### 3.1. What's new in ABSYNTH 4?

Here you will find a short overview of the new features in ABSYNTH 4 compared to ABSYNTH 3.

- *Wave Morphing*: this new waveform type allows you to fuse two waveforms into a new one.
- *Sync Granular Mode*: this new sound source in the *oscillator module* produces organic sounds, that are reminiscent of blowing into or strumming a traditional instrument.
- Expanded *Resonator* effect: the new parameter *Drive* allows you greater control over the input signal, which can be manipulated all the way to distortion.
- *Audio Mod*: the level of an audio signal can now act as a modulation source in order to use ABSYNTH as an effect. The level of an oscillator can also be used to modulate an effect parameter.
- *Macro Controls* assemble all incoming and outgoing modulation and automation data to allow you to quickly interact with the parameters of ABSYNTH, for example, in conjunction with a host sequencer or in a live situation.
- *Sound Browser* lets you search for the sounds you require in a fast and intuitive way, easing the administration of large sound collections and allowing seamless integration into KORE of NATIVE INSTRUMENTS.
- *Master ADSR*: the new global operating envelope *Master ADSR* allows fast and effective transformation of complex sounds.
- *Step Mode* in *Envelopes*: allow you to place break points in a rhythm grid, similar to the principle of a step sequencer.
- A logical interface: clear structure and new operating features ensure quick access to all Parameters.

## 3.2. The Idea behind ABSYNTH 4

We would now like to introduce you to several of your synthesizer's fundamental concepts so that you are familiar with how ABSYNTH 4 is constructed and some of the advantages of its design. You will continuously encounter these concepts in your work with ABSYNTH 4. It is worth reading this section even if you are familiar with ABSYNTH from an earlier version. There are several new things to discover!

### 3.2.1. Semi-Modular Design

The semi-modular design of ABSYNTH 4 allows you to adapt the structure of your sound production to meet your own demands. Unlike in hardware synthesizers, you yourself can determine to a large extent the number and order of the oscillators, filters and other features you wish to use: for example you can have a filter follow a wave shaper and an oscillator in sequence or send the signal through two filters one after the other.

ABSYNTH 4 offers three so-called *Channels* in the *Patch Window*, which you can combine with *Modules* as deemed necessary. An *Oscillator Module* always sits at the top of a *Channel*. The *Oscillator Modules* are the only sound sources in ABSYNTH 4. They provide the foundation for every sound. One of the three *Oscillator Modules* must always be active in order to hear a sound. The other two *Module* positions in each *Channel* can be freely assigned to one of the following three *Modules*:

The *Modulation Module* offers you access to the ring modulator (*Ringmod*) and the *Frequency Shifter*. The *Filter Module* gives you fourteen different filter types to choose from. They range from various high and low-pass filter types to all-pass and notch filters. By using the *Waveshape Module* you can give the input signal the character of any Waveform you want.

The signals of the three *Channels A* to *C* then run together through the *Master Channel*. Here you can also activate up to three *Modules*. In the first two positions, you can insert a *Filter Module* or *Modulation Module*. In the third position, you find the *Effect Module*, which enables you to make unusual delay and resonator effects.

To use the same settings for several modules, you simply copy the *Modules* and insert them into free *Module* positions. You can also store frequently used combinations in a library, as well as load complete *Channel* assemblies with the push of a button. In chapter 3.3.4 you will find an overview of individual features in the *Patch Window*.

Read section 3.4.2 to learn out how to insert *Modules* into the *Channels* and thus create the foundation for your own and individual sounds.

### 3.2.2. Modulation

ABSYNTH is known for its lively, organic sounds that grow and change whilst being played over time. The backgrounds of these capabilities are the flexible possibilities of modulation in ABSYNTH 4. To change a parameter for the duration of a sound, you simply connect a parameter with a modulation source. The modulation source then takes control of the relevant parameter.

There are different modulation sources to choose from in ABSYNTH: you can produce very good cyclical value sequences with an *LFO*, for example by letting the amplitude of an oscillator go up and down or by changing the cutoff frequency of a filter.

To precisely modify the value of a parameter at a certain point in the sound, you must connect the value changes with the specific break points of the *Envelopes*. There are 64 break points to choose from as a trigger for value changes.

You can find a guide to the practical application of *Envelopes* in section 3.4.2, whilst the *LFO Window* is introduced in section 3.3.8.

### 3.2.3. Macro Controls

Use the *Macro Controls* to control any parameter via MIDI hardware or by using sequencer automation. You can then raise the filter resonance in real time, or move the break points of the envelopes.

*Macro Controls* assemble all of the incoming and outgoing control data, which you can then move into groups using the parameters in ABSYNTH. You can easily assign any MIDI source to a Macro Control in the *Perform Window* using MIDI Learn. From here, you can then control all the parameters in this group using a rotary controller on your MIDI keyboard or an automation track from your sequencer software.

You can learn how the *Perform Window* looks using the diagrams in section 3.3.7. A list of the control feature names is also included.

### 3.2.4. Waveforms

In ABSYNTH 4 you do not have to depend on pre-assembled waveforms such as a sine or sawtooth curve: instead you can produce your own waveforms and implement them as a sound source or controller for modulations.

In many areas of ABSYNTH 4, *Waveforms* play an important role, for example, in the *Oscillator Modules* or in the *LFO Window*. Although a large number of finished *Waveforms* are provided for immediate use, ABSYNTH 4 does not limit you to these readymade waveforms when you make new sounds. Instead, you

may start from scratch and design your own waveforms in the *Wave Window*. To do this you simply select one of the graphic tools and draw the curves with the mouse. You can then apply different functions to the *Waveform* such as turning the curve on its head or changing the phase. You can also produce many weird and wonderful sounds using the *Fractalize* tool.

As well as randomly changing the curve progression (and thus the temporal component) of an oscillation loaded as a *Waveform*, you can also edit the (harmonic) fractal sounds using the tools in the bottom-view *Spectrum*. Just draw the amplitude and phase of the harmonic sounds and you can produce subtle to drastic changes in sound over the curve progression.

It is best to save the results and store them in your own *Waveform* library. These waveforms are then readily available in ABSYNTH 4. You can either use these waveforms individually or “morph” them with the function *Morph*. This is how interesting curve progressions are produced, which allows greater variety in the creation of your sounds. You can learn about the *Wave Window* and its features in section 3.3.6. To learn more about creating, storing, and morphing waveforms refer to section 3.4.3.

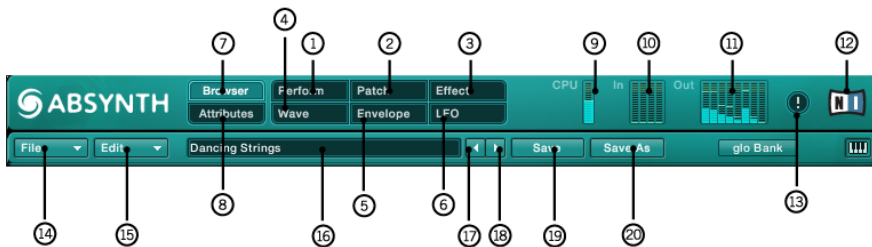
### 3.3. An Overview of the User Interface

In the following pages we will introduce you to the individual *Windows* and their features to help you understand the interface of ABSYNTH 4. You may also use this as a reference guide in case you ever forget the name of a certain switch or controller.

You will find tips for handling the different user interfaces and further information about core features in section 4.1.

#### 3.3.1. Navigation Bar

The *Navigation Bar* is a central feature in ABSYNTH 4 because it is the only menu always present in the user interface. Here you can switch between *Windows* with particular work environments. From here you can also access the dialogs for loading and storing data through various *Popup Menus*. You are over-seeing the vital functions of ABSYNTH 4 with the different status displays. There is more on the *Navigation Bar* and its features in section 4.3.



(1) Perform Tab

(2) Patch Tab

(3) Effect Tab

(4) Wave Tab

(5) Envelope Tab

(6) LFO Tab

(7) Browser Tab

(8) Attributes

(9) CPU Meter

(10) Input Level Meter

(11) Output Level Meter

(12) Panic Button

(13) NATIVE INSTRUMENTS Logo

(14) File Popup Menu

(15) Edit Popup Menu

(16) Sound Name Display

(17) Previous Sound Button

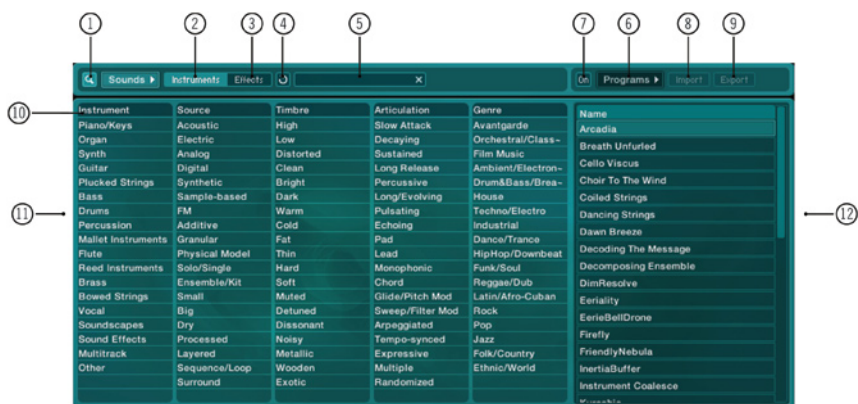
(18) Next Sound Button

(19) Save Button

(20) Save As Button

### 3.3.2. Browser & Attributes Window

Searching for a specific sound in the *Browser Window* quickly leads to success: you simply choose certain characteristics that the sound is supposed to exhibit and ABSYNTH 4 quickly comes up with the appropriate results from the database. *Attributes* that define the sound are the basis for this search function. We have already attached *Attributes* to all of the sounds provided by the ABSYNTH 4 library. You should also assign *Attributes* in the *Attributes Window* to the sounds that you produce describing them as closely as possible. The effort is worth it because ABSYNTH 4 integrates your sounds into the search, and the benefits of your work will become more obvious as you progress. There is more on the *Browser Window* and *Attributes Window* in section 4.10.



(1) Sounds Button

(2) Instruments Button

(3) Effects Button

(4) Clear Button

(5) Search Term Field

(6) Programs Button

(7) On Button

(8) Import Button

(9) Export Button

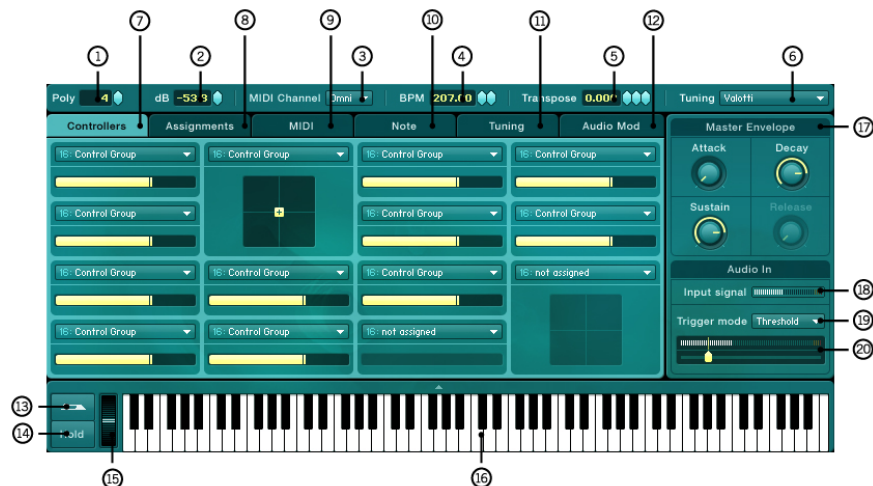
(10) Categories

(11) Attributes

(12) Search Results

### 3.3.3. Perform Window

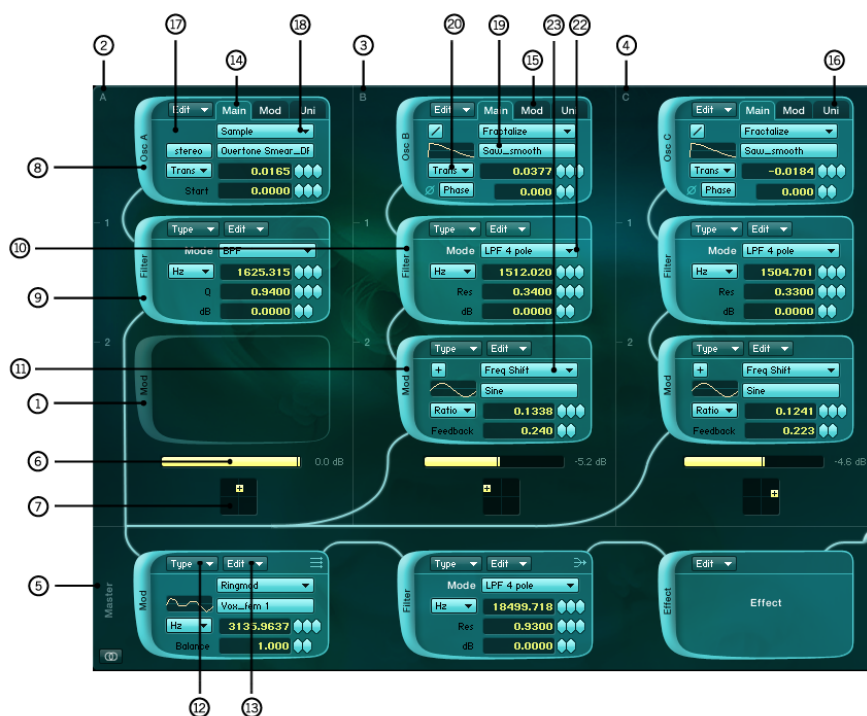
The *Perform Window* manages all control signals “outside” of ABSYNTH 4. Here, MIDI signals and automation information from host software are distributed into different *Macro Controls* and are then readily available throughout ABSYNTH 4. Furthermore, you can draw upon different global settings in the *Perform Window* that, for example, affect the polyphony or internal tempo. There is more to learn about the *Perform Window* in section 4.9.



- |                          |                              |
|--------------------------|------------------------------|
| (1) Voice Control        | (11) Tuning Tab              |
| (2) Damping Control      | (12) Audio Mod Tab           |
| (3) MIDI Channel Control | (13) Sustain Switch          |
| (4) Tempo Control        | (14) Hold Switch             |
| (5) Transpose Control    | (15) Pitchbend Wheel         |
| (6) Tuning Popup Menu    | (16) Piano                   |
| (7) Controllers Tab      | (17) Master Envelope Area    |
| (8) Assignments Tab      | (18) Input Level Meter       |
| (9) MIDI Tab             | (19) Trigger Mode Popup Menu |
| (10) Note Tab            | (20) Threshold Control       |

### 3.3.4. Patch Window

The *Patch Window* is where you start to design new sounds: this is where you create the structure of the sound, by choosing the type and order of the oscillators, filters, and other modules. You can transform ABSYNTH 4 into completely different instruments by changing the assembly in the *Patch Window*. On top of that, you are calling upon elementary functions from the *Modules* in the *Patch Window*. This is where you can also switch over to the *Wave Window* and produce waveforms there or switch to the *Envelope Window* by using one click to work on an envelope. You will read more on the *Patch Window* in section 4.4.



- (1) Module (empty slot)
- (2) Channel A
- (3) Channel B
- (4) Channel C
- (5) Master Channel

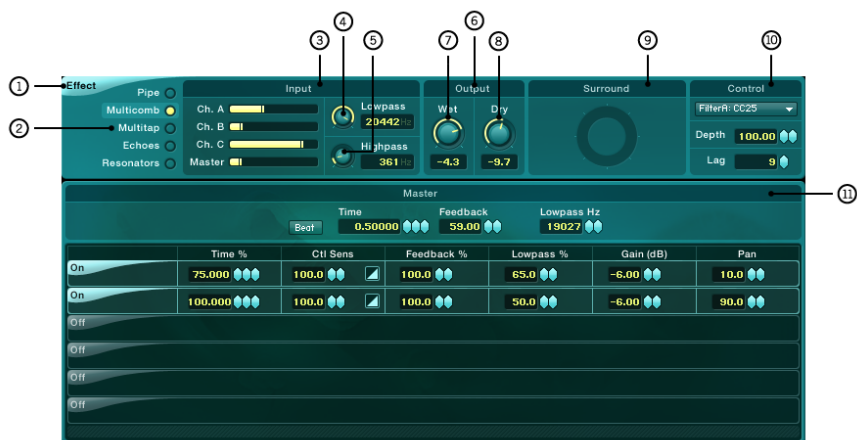
- (6) Channel A Level Control
- (7) Channel A Pan Control
- (8) Oscillator Module
- (9) Modulation Module
- (10) Filter Module

- (11) Waveshape Module
- (12) Type Popup Menu
- (13) Edit Popup Menu
- (14) Main Tab
- (15) Mod Tab
- (16) Uni Tab

- (17) Anti Alias Switch
- (18) Synthesis Popup Menu
- (19) Waveform Popup Menu
- (20) Frequency Popup Menu
- (22) Filter Mode Popup Menu
- (23) Waveform Popup Menu

### 3.3.5. Effect Window

The *Effect Window* helps you determine which effect type you would like to use and how this effect is supposed to change the sound. There are five different effects to choose from whilst numerous parameters allow for a detailed adaptation of the sound. This is the right place to come for producing effects whether you are making a subtle echo or a psychedelic haze of delay. There is more on the *Effect Window* in section 4.5.

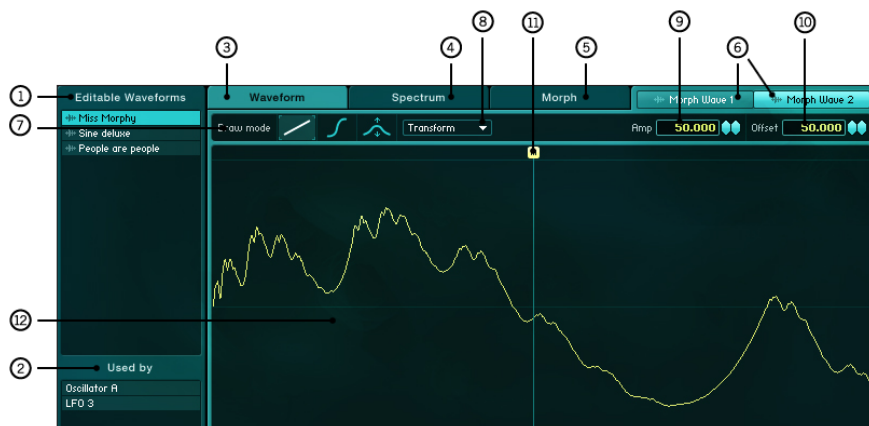


- (1) Effect Switch
- (2) Effect Mode Selector
- (3) Input Mix Area
- (4) Input Lowpass Frequency Control
- (5) Input Highpass Frequency Control

- (6) Outout Mix Area
- (7) Wet Level Control
- (8) Dry Level Control
- (9) Surround Area
- (10) Control Area
- (11) Effect Control Master Area

### 3.3.6. Wave Window

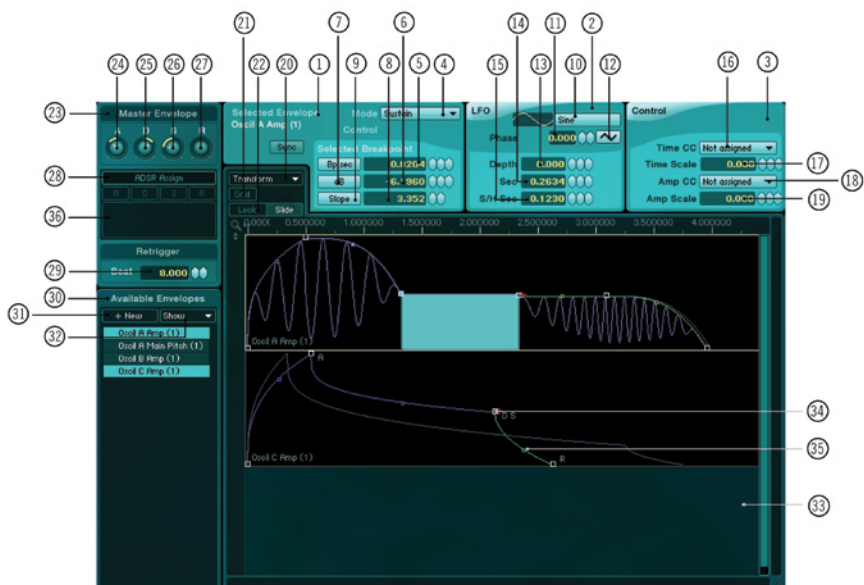
You work on all of the *Waveforms* or *Waves* in the *Wave Window* of ABSYNTH 4. These *Waveforms* play a central role in ABSYNTH 4 because they provide the foundation for numerous modules. For example, *Waveforms*, which you create and change in the *Wave Window*, come into use within oscillators, LFOs, modulation and waveshaper modules. You will learn more about the *Wave Window* in section 4.6.



- |                               |                           |
|-------------------------------|---------------------------|
| (1) Wave Selection Area       | (7) Draw Mode Tools       |
| (2) Wave Usage Area           | (8) Transform Popup Menu  |
| (3) Waveform Tab              | (9) Amplification Control |
| (4) Spectrum Tab              | (10) Offset Control       |
| (5) Morph Tab                 | (11) Edit Anchor          |
| (6) Morph Wave Selection Tabs | (12) Wave Display Area    |

### 3.3.7. Envelope Window

The *Envelope Window* is where you prepare all of the envelopes used in ABSYNTH 4. To modulate, you can apply whichever parameters you like to the envelopes. This allows you to arrange your sounds in a very lively and dynamic way. Envelopes are thus another important medium next to waveforms for designing complex sound progressions or subtle modulations. There is more to learn on the envelope window in section 4.7.



- |                                   |                              |
|-----------------------------------|------------------------------|
| (1) Envelope Area                 | (19) Amplitude Scale Control |
| (2) LFO Area                      | (20) Transform Popup Menu    |
| (3) Macro Control Area            | (21) Grid Switch             |
| (4) Envelope Mode Popup Menu      | (22) Lock/Slide Switch       |
| (5) Breakpoint Time Control       | (23) Master Envelope         |
| (6) Breakpoint Amplitude Control  | (24) Master Attack           |
| (7) Breakpoint Amplitude Switch   | (25) Master Decay            |
| (8) Breakpoint Slope Control      | (26) Master Sustain          |
| (9) Breakpoint Slope Switch       | (27) Master Release          |
| (10) LFO Waveform Popup Menu      | (28) ADSR Assign Switch      |
| (11) LFO Phase Control            | (29) Retrigger Control       |
| (12) LFO S&H Switch               | (30) Envelope List           |
| (13) LFO Depth Control            | (31) New Envelope Button     |
| (14) LFO Rate Control             | (32) Show Envelope Button    |
| (15) LFO S&H Rate Control         | (33) Envelope Display        |
| (16) Time Macro Control Menu      | (34) Breakpoint Handle       |
| (17) Time Scale Control           | (35) Breakpoint Slope Handle |
| (18) Amplitude Macro Control Menu | (36) Zoom Handle             |

### 3.3.8. LFO Window

The *LFO Window* is where you manage the settings for the three freely usable *LFOs* as well as set the goals of the modulation signals that you have produced. The possibilities of the *LFOs* are multi-faceted: for example, you can use them for effects like Tremolo and Vibrato or for automated voyages into the stereo or surround panorama. Read more about the *LFO Window* in section 4.8.



- (1) LFO Switch
- (2) Mono/Poly Switch
- (3) Waveform Popup Menu
- (4) Phase Control
- (5) Rate Switch
- (6) Rate Control
- (7) S&H Switch
- (8) Vibrato Depth Control
- (9) Vibrato Inversion Switch
- (10) Vibrato Channel Switch
- (11) Modulation Target Popup Menu
- (12) Modulation Amount Control
- (13) Modulation Channel A Switch 1
- (14) Modulation Channel A Switch 2
- (15) Retrigger Switch

## 3.4. Quick Intro

This chapter introduces you to the fundamental steps for operating ABSYNTH 4. First you will learn how to select and load a sound from the library in the Stand-Alone Version. The automation of your Audio-MIDI-sequencer can then be used to control the parameters in ABSYNTH 4. The second section on chapter 3.4.2 provides an introduction to sound design. Meanwhile, chapter 3.4.3 enables you to produce your own *Waveforms* and introduces *Wave Morph*, a new feature for ABSYNTH 4.

### 3.4.1. Loading and Playing Sounds

In this section, you will first learn how to load a sound with the browser in Stand-Alone mode and then how to play the sound with a keyboard.

#### Stand-Alone Mode

First make sure that you already have the Stand-Alone Version of ABSYNTH 4 installed on your system and that the audio and MIDI interfaces are set up. You can also catch up on this step later (guidelines for that are found in the separate installation instructions) and continue with the quick intro if you have not yet set up your audio and MIDI gadgets to use with ABSYNTH 4. If you happen to not have your MIDI keyboard hooked up, for example, if you are sitting with your notebook on a plane, you can still operate ABSYNTH 4: the *Perform Window* offers an Onscreen Keyboard, and you just use your mouse to strike the keys.

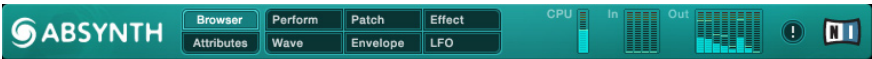
OK so far? Let's start up ABSYNTH and we will get started.

As an example, we will search for a sound for a film. We have a piano unlike any other in mind, a piano that is accompanied by mysterious, floating sounds. The ideal sound would be one that continues to change even after the note is played so that it creates a strange atmosphere. Also, we want the sound to utilize the surround capabilities of ABSYNTH 4. We are working on film music and must operate using multi-channel film score formats.

We could now search the entire ABSYNTH 4 library for the right sound and listen to each and every one. But that would be quite tedious, and by the time we actually find something fitting, we may have forgotten our musical idea.

This is why we use the *Browser* and the so-called *Attributes* to track down the right sound. The *Browser* is a new feature of ABSYNTH 4. It offers an environment in which you can search for sounds quite intuitively. You do not have to recall abstract things like preset names or even numbers. In fact, you can just select terms that describe the desired sound from a list and then

use them as search criteria. These descriptive terms are called *Attributes* in ABSYNTH 4. Essentially, *Attributes* are tags that you can attach to your sounds, which also give information about the properties of your sounds. The more precisely you specify your designated sound when selecting attributes, the closer you narrow down the sounds in question until very few are. The requirement for this type of search is that the sounds carry *Attributes*. The sound designers at NATIVE INSTRUMENTS have already applied *Attributes* to the sounds installed in the ABSYNTH 4 library, so your search can begin immediately.



Normally, ABSYNTH 4 shows the *Browser Window* directly after starting up. If not then you must call it up yourself. To do this you click on the *Window Selection Area* in the *Navigation Bar* and then choose the *Browser Tab*. The *Browser Window* is shown underneath the *Navigation Bar*.

The image shows the 'Browser Window' of the ABSYNTH 4 software. At the top, there are tabs for 'Sounds', 'Instruments', and 'Effects', with 'Sounds' currently selected. To the right of these tabs are buttons for 'On', 'Programs', 'Import', and 'Export'. Below the tabs is a large table with six columns: 'Instrument', 'Source', 'Timbre', 'Articulation', 'Genre', and 'Name'. The table lists various sound categories and their attributes. For example, under 'Instrument', there are entries like 'Piano/Keys', 'Organ', 'Synth', 'Guitar', 'Plucked Strings', 'Bass', 'Drums', 'Percussion', 'Mallet Instruments', 'Flute', 'Reed Instruments', 'Brass', 'Bowed Strings', 'Vocal', 'Soundscapes', 'Sound Effects', and 'Multitrack'. Each of these has corresponding values in the other columns, such as 'Acoustic', 'Electric', 'Analog', 'Digital', 'Synthetic', 'Sample-based', 'FM', 'Additive', 'Granular', 'Physical Model', 'Solo/Single', 'Ensemble/Kit', 'Small', 'Big', 'Dry', 'Processed', and 'Layered' for the 'Source' column. The 'Name' column lists specific sound names like 'Arcadia', 'Choir To The Wind', 'Coiled Strings', 'Dancing Strings', 'Dawn Breeze', 'Decoding The Message', 'Decomposing Ensemble', 'DimResolve', 'Eeriality', 'EerieBellDrone', 'Firefly', 'FriendlyNebula', 'InertiaBuffer', and 'Instrument Coalesce'.

You can see that the *Browser Window* is divided into several columns. The five columns on the left make up one group called the *Database View*. The heading describes the *Categories*, below are the *Attributes*. Click with your mouse on the chosen field in order to select an *Attribute*. The field is then highlighted to show that the *Attribute* has been selected. To deselect an *Attribute* simply click on the field again.

On the right, we find the *Search Result List*. In this function window the browser displays the search results. It is also divided into columns that contain information about the selected sounds. Besides the names of sounds, the *Search Result List* can display an individual sound's *Rating*, and also display the results according to the criteria of the heading.

Let us now start searching for our sound. You will find the different synthesizers in the first column of the *Database View*, which is titled *Instrument*. This does not just include instruments but also effects and voices. We are looking for a piano and therefore choose the *Attribute Piano/Keys* from the top of the list. **Now take a look at the Search Result List:** the list has become shorter because all the sounds that are not marked by the *Attribute Piano/Keys* have disappeared from the list. You can specify the basic character of a sound in the next column titled *Source*. Here you will find entries that lead to a certain synthesizing process, for example *FM* or *Physical Model*, but also general *Attributes* like *Processed*, *Layered* and *Surround*. We will try our luck with the last three mentioned. Go ahead and add the *Attributes Digital* and *Synthetic* to the search. You will see a definitively shorter list of sounds in the *Search Result List* appears. As you can see, the more *Attributes* you pick, the more you narrow down the search and the fewer sounds ABSYNTH 4 will offer you in the *Search Result List*. *Attributes* that describe sound colors can be found in the category called *Timbre*. It may include, for example, expressions like *Distorted*, *Warm* and *Hard*, but also terms that relate to material qualities or to the vibe. Let's choose *Fat*, *Soft* and *Exotic*. The column *Articulation* contains *Attributes* that link to the playing style or application area of the sounds. Descriptions of the keystroke behavior, decay length and what happens while you are playing are also found here just like the familiar sound categories *Lead* or *Pad*. Click on *Decaying*, *Long Release*, *Long/Evolving* and to be safe also *Echoing* and *Sweep/Filter Mod*.

You can see a selection of musical genres in the last column titled *genre*. Remember: we are working on a film soundtrack, so *Film Music* is the obvious choice. You can also select *Ambient/Electro* if you like.

Q Sounds Instruments Effects X					On Programs Import Export
Instrument	Source	Timbre	Articulation	Genre	Name
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde	Quiet Afternoon Piano
Organ	Electric	Low	Decaying	Orchestral/Class-	
Synth	Analog	Distorted	Sustained	Film Music	
Guitar	Digital	Clean	Long Release	Ambient/Electron-	
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-	
Bass	Sample-based	Dark	Long/Evolving	House	
Drums	FM	Warm	Pulsating	Techno/Electro	
Percussion	Additive	Cold	Echoing	Industrial	
Mallet Instruments	Granular	Fat	Pad	Dance/Trance	
Flute	Physical Model	Thin	Lead	HipHop/Downbeat	
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul	
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub	
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban	
Vocal	Big	Detuned	Sweep/Filter Mod	Rock	
Soundscapes	Dry	Dissonant	Arpeggiated	Pop	
Sound Effects	Processed	Noisy	Tempo-synced	Jazz	
Multitrack	Layered	Metallic	Expressive	Folk/Country	

Now look at the *Search Result List*. Here ABSYNTH 4 only offers you a single sound, namely the one that contains all the chosen *Attributes*. “Quiet Afternoon

Piano.“ Double click on this entry in the *Search Result List* in order to load the sound. Now play several keys on your MIDI keyboard. You hear a sound that corresponds very closely with the demands set forth in the beginning: a type of piano, accompanied by mysterious sounds, which produces its full effect when played on a surround system. You do not necessarily need to set all of the *Attributes* named in this manual to get to this type of sound. From time to time, you will see that fewer *Attributes* will lead to good results. This also applies to situations where ABSYNTH 4 does not deliver any hits at all. In such cases, you can expand the search spectrum by deselecting some of the *Attributes* until usable results are shown.

### 3.4.2. Creating Own Sounds

ABSYNTH 4 comes with an extensive selection of different sounds. You have just learnt how to load and play the sounds from the existing library in the previous chapter, but you can also create your own sounds quickly and intuitively. This chapter teaches you how to build your own polyphonic lead sound for several voices: you will learn how to combine the *Modules* in the *Patch Window* and how to modulate envelope parameters. We will use the Stand-Alone Version of ABSYNTH 4 for these purposes.

#### Preparations

Start up the Stand-Alone Version of ABSYNTH 4. It is best to begin working on a new sound with an empty *Preset*. Choose *New Preset* from the file popup menu in the navigation bar to create an empty *Preset*. Select the “no” icon if a dialog window appears that asks whether to save or discard changes to the current preset.

As previously mentioned in the introductory section 3.2.1, the *Patch Window* is used for creating the foundation for any sound within the semi-modular design of ABSYNTH 4. Click on the area titled *Patch Window* in the *Window Selection Area* located in the *Navigation Bar*. The *Patch Window* is shown underneath the *Navigation Bar*. At least one *Oscillator Module* must be active for ABSYNTH 4 to produce an audio signal. Normally, the *Oscillator Module* in *Channel A* is already engaged when you call up an empty preset. The waveform is set to Sine. All the other *Module Slots* are free (remember: *Module Slots* are the framed areas in the *Patch Window* in which you can call up the *Modules*). This means the remaining *Modules* are not active. We will now learn how to integrate the *Patch Window* with further *Modules* and change the settings of the *Modules*.

## Configuring the Module



You should now be able to play this *Oscillator Module*: when you press a key on your MIDI keyboard, the sine wave makes a sound that corresponds to the frequency of the note played. We will now try changing the waveform of this oscillator, as we want to create a stronger lead sound. Click on the *Waveform Popup Menu* that you see on the right, next to the small waveform diagram. A window with a list of names opens up that refer to different waveforms.

Choose from one of the waveforms, and you will see that the waveform representation changes automatically in the *Oscillator Module*. You can play the selected waveform immediately through your MIDI keyboard, and this will allow you to hear whether the resulting sound meets your expectations or not. This is how you can quickly find a waveform that is appropriate to your needs.

We will pick the waveform *Square\_real* as our lead sound. You can already hear how sharp and assertive the waveform sounds when it starts to play. Therefore, it easily makes a strong lead sound, which will not be lost amongst a compact mix.

We will now add another oscillator to give the sound even more character. To do this, call upon a second *Oscillator Module* by clicking on the extended left edge of the *Module Slot B* that has *Osc B* written in it.



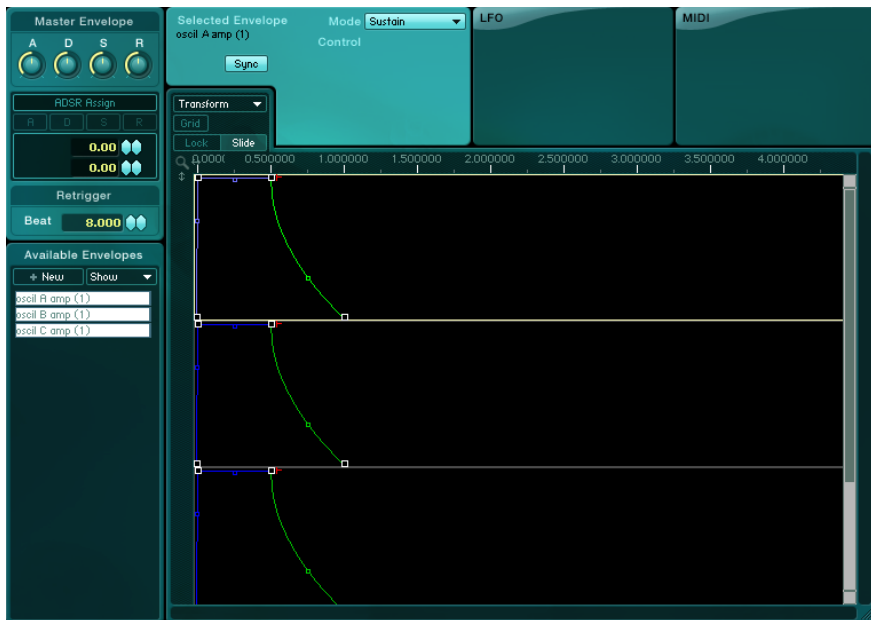
To begin with, a standard sine wave is active even in this *Oscillator Module*. Here you can replace the sine with the waveform *Saw\_filt2* by repeating the steps described above for choosing a waveform. Listen repeatedly to the sound that you have created during the in-between steps to get a feeling for changing the sound with small steps. We will now transpose the second oscillator by one octave, in order to separate it from the first one. You can see the *Transpose Control* - which shows “0.0000” at the moment - next to the *Transpose Pop-Up Menu* in the *Oscillator Module B*. This value describes the tone pitches of the oscillators in relation to the tone pitch of the note that you play on your keyboard. There are three small hexagons, the *Edit Combs*, with which you can change the tone pitch of the oscillators in different size steps: click with your mouse outside the left edge of one of the hexagons, and scroll the mouse slightly upward. This is how you raise the tone pitch in halftone steps. Set this value at 12.0000, which correlates to 12 whole tones, basically one octave. So your second oscillator always sounds one octave higher than the first.

Now put the second oscillator out of tune a bit to make the sound wider and more powerful. To do this, you have to raise the value a few cents in the *Transpose Control* of *Oscillator Module B* (remember: a halftone step in the equally tempered tone system is divided into 100 cent-steps). This time choose the middle hexagon and increase the value in the *Transpose Control* to 12.1100. This minor detuning produces a subtle beat in your sound and is how lead sounds and pads become livelier and stronger.

Now we will treat the sound with a filter in order to reduce the high frequencies a bit. For this we require a *Filter Module*. Activate the *Filter Module* by clicking on the extended left margin *Module Slot* (marked *Filter*) in the *Master Channel*. The *Filter Module* is now active. You will recognize the signal flow of your sound by the lines that connect the three active *Modules*. The signals of both *Oscillator Modules* are then combined in the *Master Channel* and now run together through the *Filter Module*. Now select the *Filter Mode LPF 2 Pole* in the *Filter Mode Pop-Up Menu*. Next raise the value to 7000.00 Hz in the *Frequency Control* through the three *Edit Combs*. Shortcut: you can enter the value directly into the *Frequency Control* via keys. Simply click directly on the shown value from the *Frequency Control*, which then is selected and highlighted in color. Decide on your desired frequency and press the “enter” button on your keyboard. You will notice that with this filter setting, the sound is now softer.

## Modulation of Filters

Next we are going to modulate the frequency envelope to make the sound more interesting. The term “modulate” refers to the automated change of a parameter through another module. We will first have to setup the prerequisites to create an automated parameter change. To do this, we have to connect a modulation source with a modulation goal. You already know your modulation goal: the *Frequency Envelope* of ABSYNTH 4. You can work on the *Frequency Envelope* in the *Envelope Window*, as with all envelopes in ABSYNTH 4, by clicking on the area marked Envelope in the *Window Selection Area* of the *Navigation Bar*. The *Envelope Window* is shown beneath the *Navigation Bar*.

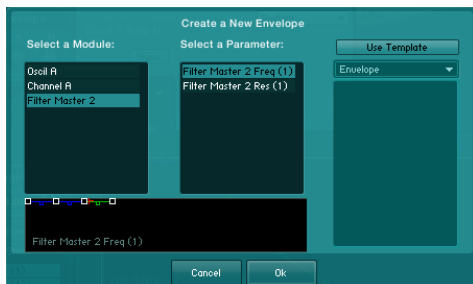


The *Envelope Window* is where you can produce and work on all *Envelopes*, which are used in the preset that you just loaded. The envelopes in ABSYNTH 4 produce a signal for modulating a parameter according to its outlined course. When you play a sound, this course is channeled and the fluctuating value of the envelope changes the activated parameter.

You can see all the parameters that already have existing envelopes in the *Envelope Selection List* - the area listed with the header *Available Envelopes* on the left side of the *Envelope Window*. In this list you will find, for example, the *Amp Envelopes* of both oscillators: *Oscil A amp* and *Oscil B amp*.

We actually want to work on the *Frequency Envelope* of the filter. First we must add this envelope, as it does not yet appear in the list. Click on the

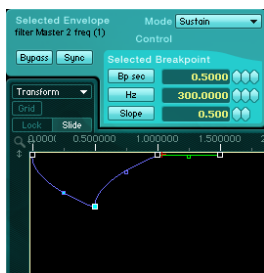
*New Envelope Button* to add an envelope to the Envelope List. You will see a list of loaded *Modules* in the *New Envelope Menu*, which is titled *Select a Module*. Choose the entry *Filter Master2* and click *Ok*.



The newly added envelope now appears in the *Envelope Selection List* and is already selected. Now hide all the other envelopes from the display (*Envelope Display*) located next to the list. To do this you choose the entry *Filter only* from the *Show Popup Menu* above the list. Now only the *Filter Envelope* in the *Envelope Display* should appear.

As you can see, the points where the envelopes change their direction are marked with small squares. These squares are called *Breakpoints*. You can work on the breakpoints as you see fit: add new breakpoints to the envelope, delete breakpoints, or relocate them as in our case. If you move a breakpoint to the right or left, the envelope's position changes on the timeline axis. If you move the breakpoint up or down, you change the amplitude of the envelope and, in so doing, the value of the modulation signal at this point in the course of the envelope.

To move a breakpoint, click on the small square and drag it with a pressed down mouse button to the desired new position. We would like to modulate our filter with a rate of 300 Hz. To set this value simply drag the first breakpoint of the envelope downward until it has reached the value of 300.00 Hz in the *Frequency Control* of the *Selected Breakpoint Area*.



When playing your sound you will notice that the filter closes for a brief moment after the note is struck, then opens again: the sound very quickly becomes duller and less stellar; more importantly, however, the modulation makes it livelier and more diverse. Feel free to move around more breakpoints to learn how to influence your sound.

The Leadsound has now been completed and can be stored as a KoreSound.

## Saving the Sound

Click on the *Save Button* in the *Navigation Bar* to save your newly designed sound as a Preset in the KoreSound format (\*.ksd). A dialog will open up. Here is where you can choose the folder for your index structure.

We recommend that you save the sound in the folder “My Sound” of ABSYNTH 4 or in one of the sub-categories. This automatically integrates the sound into the KoreSound database of ABSYNTH 4 and is readily available in the same way as the sounds provided in the library in the *Browser Window*. You can read more on the Browser Window in section 4.10.3 of this manual. There you will also find information on *Attributes*, which you should add to each newly designed sound en route to the KoreSound database. Of course, this quick introduction merely gives you a brief insight into the sound synthesis in ABSYNTH 4. Continue your own research by following the instructions detailed above. For example, use an additional oscillator to make the sound even livelier. Perhaps you can add more filters and envelopes - the possibilities are almost endless.

### 3.4.3. Producing and Morphing Waveforms

In this section you will learn how to merge *Waveforms* into a *Morph Wave*, with the help of the new function *Wave Morph*. With it you can morph back and forth between waveforms - between a sine wave and saw tooth wave, for instance. This is not just a simple cross fade of both original types but more of a non-linear combination, which produces delightful musical effects by pushing and pulling the Waveforms during morphing. In the following section, a step-by-step guide will acquaint you with this mighty instrument for sound design.

#### Producing a Morph Wave

Start ABSYNTH in the Stand-Alone mode to begin working on a new morph wave. Create a new empty patch following the instructions in the previous section. You can also set up a new patch by pressing the key combination STRG+N (Windows) or Option+N (Mac OS X). Answer the question with a “No” when asked whether to save changes to your settings.



Now open the selection window with the list of accessible waveforms by clicking on the *Waveform Popup Menu* of the only active *Oscillator Module*. In this window, single-click the category *Morph Waves*. Choose the entry *Miss Morphy* from the list of *Morph Waves*. This *Waveform* will now serve as a draft for your own *Morph Wave*. Next, click on the *New Wave Button* to load a copy of the selected *Morph Wave* into the *Wave Window*. ABSYNTH 4 immediately switches the window view to *Wave Window*. You will find the list of *Available Waveforms List* on the left edge of the *Wave Window*. This list contains all the *Waveforms* that you have created from other *Waveforms* via the *New Wave Buttons*. You will see that your new *Waveform* is currently the only one there, which is why it was selected in the first place. Click with the mouse on the name of the waveform: you can now change this name and confirm the new name by pushing Enter.



Notice that only the modules using the *Waveform* are shown below the list. Right now, only the *Oscillator Module* is shown, from which we activated the *Waveform Popup Menu*, but this feature is useful to gain an overview of which *Waveform* you are working on, in the case of multi-layered sounds.

## Executing Waveforms

Next to the *Available Waveforms List* you will see an area with three *Tabs*: *Waveform*, *Spectrum* und *Morph*. The *Morph Tab* is active because you have created a *Morph Wave*; the tab has no function when you work on a *Waveform* of the *Simple* type. To the right of the *Morph Tab* you will find two *Buttons* that are marked with stylized waveforms, as well as the numbers 1 and 2. These two *Buttons* make up the *Morph Wave Selection Toggle*: a toggle with which you can switch back and forth between both waveforms contained in your *Morph Wave*, when the *Tabs Waveform* or *Spectrum* are selected.

Now we will change the first of two waveforms. Simply open the *Transform Popup Menu* by clicking on it. Then select the last entry: *Clear*. Choose the *Line Draw Tool* to the left of the *Transform Popup Menu* and press the mouse button to drag the left end of the horizontal line all the way down. Next drag the right end of the line in the same way but upward. The result should show a line from the left bottom corner to the top right - a classic saw tooth curve.



Next switch to the second waveform by clicking the button marked with the number 2 in the *Morph Wave Selection Toggle*. Here a sine wave is supposed to be utilized. However, its curve is hard to draw using the line-tool. Instead of drawing the curve on your own, you simply load the sine wave from the library with the waveforms provided. To do this, again select the entry *Load* in the *Transform Popup Menu*. It will open the same list of waveforms. Choose the category *Simple Waves* - only a single sinus wave is needed, not a *Morph Wave*. Choose the list entry *Sine* and confirm the selection with a click on *OK*. The dialog will close and the sinus-curve is loaded.

We cannot go into every possibility for working on loaded waves in this quick introduction. For example, we have not yet looked at the function *Spectrum Tab*. But you will find information on all the tools and functions in the *Wave Window* in chapter 4.6 of this manual.

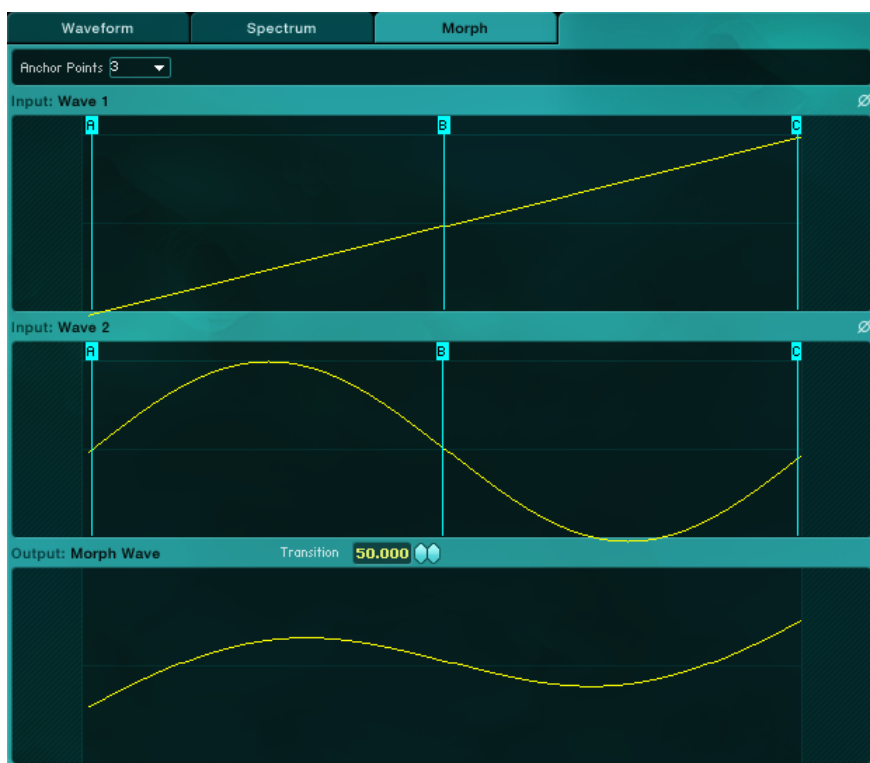
### Changing the Morph-Parameter

We have now created two waveforms independently of each other. But now we will bring these two waveforms together. Switch to the *Wave Window* with one click on the *Morph Tab* in the *Morph View*. Here you can see the two individual waveforms *Wave 1* and *Wave 2* in both upper waveform indexes. Right down at the bottom you can see the result of the morphing which is used in the actual sound production.

You should always keep playing some tones on your MIDI keyboard while you change the desired parameters in this process. That way you can always hear

immediately how the changes you make affect the sound.

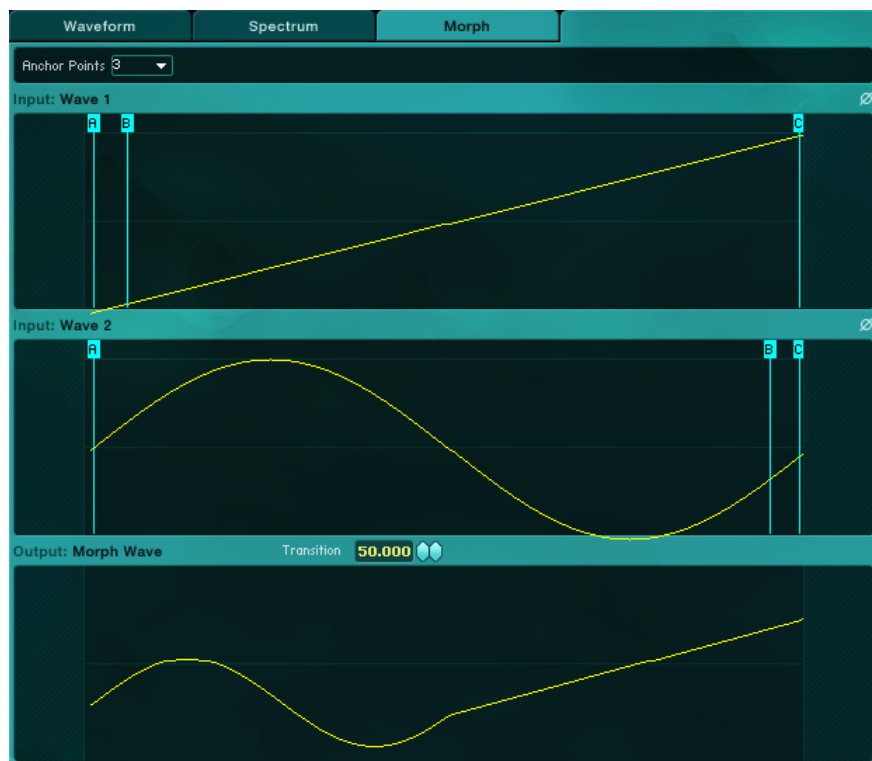
You can modify two parameters in the *Morph View*: the mix relationship between both waveforms, and the curves of the single waves. The latter involves a type of *Wave Morphing* that separates the waves by a slight cross fade. You can change the curve of the waveforms with *Anchor Points*, which are represented in the Waveform display by vertical lines with attachments at the upper end. When you first call upon a *Morph Wave*, there are two active *Anchor Points*. But for our example, we will raise the number of *Anchor Points* to three by choosing the entry 3 from the *Anchor Points Popup Menu* in the upper left corner of the *Morph View*. Now you can evenly spread the anchor points over the length of the waveform by dragging (with the mouse button held down) the heads marked with letters. Use the following diagram for guidance:



Now we turn to the *Transition Control*, which is located between the second waveform and the result of the wavemorph just underneath. The given value, set at 50, causes each wave to influence 50 percent of the waveform, which results in a sinus-curve that climbs slightly like a rising saw tooth. Reduce

the value now to 0 by clicking on the *Transition Control* with the mouse and dragging it downward holding the button. What remains is solely the saw tooth from the first waveform. You can see a spitting image of the second Waveform when you raise the value to 100 by dragging upward.

As you can tell, this does not yet deal with non-linear bended morphing as mentioned previously, but rather with simple linear cross fading. This is because of the even distribution of *Anchor Points* in both waveforms. Set the *Transition Control* again to the value of 50 in order to attain an even mix relationship. Finally, drag the middle *Anchor Point* of the upper waveform to the left and the middle *Anchor Point* of the lower one to the right. Observe how the result of the morphing then changes.



What happens here? The area between the *Anchor Points* A and B (as B and C, C and A) now has a very different length in both waveforms. Despite the variations between them, however, these areas maintain a relationship with one another as a result of wave morphing. In other words, the short section is broadened and the long section is jolted. You can again determine the mass

of the bend in the *Transition Control*: the area between *Anchor Points A* and *B* of the first waveform, all the way to the point equidistant between *Anchor Point B* of the first and *Anchor Point B* of the second waveform, is stretched out by a value of 50. The result is a sine-shaped section to the left in the ending *Morph Wave*. The area between *Anchor Points A* and *B* of the second waveform first begin here and are jolted this way. The result is the straight line rising to the right in the *Morph Wave*. You get the familiar single waves when dragging the value for *Transition* back to 0 or to 100; it is just the transition in between that is significantly multi-faceted. There are many other ways of using *Wave Morphings* that we cannot cover in this quick introduction; for example, with just four *Anchor Points* you can produce exact, elaborate transitions. You will find more in-depth *Wave Morphing* information in the reference section of this manual in chapter 4.6.5.

## 4. Reference

In this part of the handbook you will find instructions on how to use ABSYNTH 4: explanations of the individual work areas and their uses, descriptions of the parameters, and instructions on how to make practical use of the functions. Here you can look up questions such as – for example – which effect you can use in order to achieve a particularly strong sound. In short: Here you can find out how to use the different features of ABSYNTH 4 and how to then bring the program into contact with the outside world.

### 4.1. Interaction with Control Features

You will find various control elements on the ABSYNTH 4 interface, which allow you to switch between *Windows* or change values. This section provides you with an introduction to these elements and instructions for their use.

#### 4.1.1. Windows und Tabs

Browser	Perform	Patch	Effect
Attributes	Wave	Envelope	LFO

*Windows* is the word that is used to refer to the different work areas in ABSYNTH 4. There are eight *Windows* that can be accessed through the *Window Selection Area* in the *Navigation Bar*. In order to switch to another *Window*, click on its name in the *Window Selection Area*. These buttons

are called *Tabs*, whereas the Tabs that belong to *Patch Windows* are called *Patch Tabs*. The *Tab* of the selected *Window* is shown a lighter hue than the other Tabs.



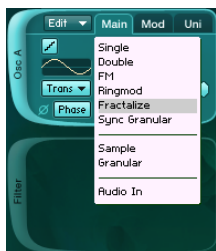
Some *Windows*, such as the *Oscillator Module*, can be switched between multiple bottom views. These bottom views can be accessed through *Tabs* that are set up here as index tabs. In order to access a bottom view, click on the *Tab* that you want to view. The active Tabs will be distinguished through their color and changes in their margins.

### 4.1.2. Module On/Off Switches



In the *Patch Window*, the *Module On/Off Switches* option allows you to turn individual modules on and off by simply clicking the extended left area on the module frame. You do not necessarily need to click on the writing, since the entire left margin area works as a button.

### 4.1.3. Popup Menus

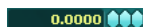


*Popup Menus* can be found in many areas in ABSYNTH 4. These opening and closing menus contain lists of available options. *Popup Menus* can be recognized through their lightly hued appearance and the small triangle pointing downwards.

In order to choose an option from a *Popup Menu*, click on the lightly hued panel. A list appears which remains open if you move the cursor. In order to choose an entry, click the desired entry and the name of the selected entry will appear as new writing in the *Popup Menu*.

Some Popup Menus open a new window rather than placing your file in an opening and closing list, due to the space limitation on screen. This is the case for the *Waveform Popup Menu*, for example.

#### 4.1.4. Value Fields



*Value Fields* contain the numerical values of parameters. The values indicated can be changed in a variety of ways:

- Click in the field in order to select the entry. The value appears over a colored background. Now enter the desired value using your computer keypad.
- The values can also be changed using the mouse by clicking on one of the hexagons to the right of each *Value Field*, and then by dragging the mouse either up or down whilst pressing the button. Drag the mouse up to increase the value and down to decrease the value. Depending on the resolution of a value in a *Value Field*, you will see two or three hexagons — the *Edit Combs* — next to the *Value Field*. By changing the value in the left hexagon, the hexagon on the right (i.e. in front of the decimal point or comma) will also change. With the other hexagon you can carry out the precise installation.
- If your mouse has a scroll wheel, you can place the cursor on a hexagon and change the value indicated in the *Value Field* by moving the scroll wheel. Move the wheel forward in order to increase the value and backwards to decrease it.
- Remember that you can click on the right mouse button in the *Value Fields* to bring up a context menu. Here you can assign one of the Macro Controls to the parameter. More specific information about Macro Controls can be found in Section 4.9.

#### 4.1.5. Fader and Knobs

The values of parameters can be changed using different *Fader* and *Knob* controls.



*Faders* are sliders; for example the faders in the *Effect Window* can adjust the levels of input levels such as the *Channel A Input Level*. *Knobs* meanwhile are controllers; for example in the *Effect Window* again, you can adjust the

signal proportions using the *Wet Level Control* and *Dry Level Control* Knobs. The global envelope *Master ADSR* also uses *Knobs*.

In order to change the value of a parameter with a Knob, click on the desired Knob and click and drag the mouse upwards to increase the value. Pull the mouse downwards in order to decrease the value. You do not need to rotate the *Knob* with the cursor. Simply dragging the mouse upwards or downwards does the job.

If you use a mouse with a scroll wheel, you can place the cursor on a *Fader* or *Knob* to change the installed value by moving the scroll wheel. Move the wheel forwards in order to increase the value or backwards to decrease the value.

## 4.2. Stand-Alone Menu

The *Stand-Alone Menu* is only present if you are using the Stand-Alone Version of ABSYNTH 4. It contains the same entries as the Navigation Bar as well as the following additional entries:

### 4.2.1. Import GLO File...

Select the entry *Import GLO File...* in order to import sounds from older versions of ABSYNTH into ABSYNTH 4. You can then load a Soundbank from a previous version of ABSYNTH 4 and go through the list of available sounds. The sound selected from the list will be loaded automatically and you can play it. Should you wish to convert this sound into an ABSYNTH 4 KoreSound, you can save it like any other sound in the usual manner.

The Factory Library of ABSYNTH 3 has already been converted and is available via the *Browser Window*.

### 4.2.2. Options

The Options Dialog has three *Tabs*: General options are installed under the *General Tab*. The Output Configurations can be found by pressing the Surround Tab. The different installations for the KoreSound Databank can be accessed via the *Browser Tab*.

#### General Tab

Two options can be turned on or off under the *General Tab*:

- Balance levels: When Balance levels is turned on, ABSYNTH 4 controls the output of the three individual channels in the Patch Window so that the main output remains constant. That is, if you were to increase the level of one Channel, ABSYNTH 4 would automatically decrease the levels of the other Channels.

- Enable automatic renaming of Macro Controls: When this is turned on, a Macro Control that has had a parameter assigned to it, takes over the name of this parameter – but only if no other parameters have already been assigned to it.

## Surround Tab

In this Option Dialogues Tab, ABSYNTH'S Audio Output Paths can be configured. The fundamentals for constructing the Audio and MIDI interfaces can be found in the installation handbook. For now, we will limit ourselves to an overview of the different channel configurations. You can choose from the following: Stereo, Stereo Wide, Surround 4.1 and 5.1, Front, Quad, Music, Pentaphonic, Hexaphonic, Cinema, Heptaphonic and Octophonic."0.1" stands for the LFE (Low Frequency Effects) or Subwoofer channel. You can turn this channel on or off for any configuration and make the volume of your speaker system conform to it. Here is a list of available configurations:

- 2.1 Stereo: This standard configuration delivers typical two-channel stereo sound. The speakers are situated at 45 degrees and minus 45 degrees in this installation.
- 2.1 Stereo Wide: This configuration is easy to distinguish from 2.1 Stereo: Both front speakers are arranged at 90 degrees and minus 90 degrees. This results in a wider stereo soundscape.
- 3.1 Surround (LRS): This configuration returns to analog Matrix surround sound. It is well known under the names of, for example, Dolby Surround™ (home entertainment center) or Dolby Stereo™ (movie theatre), but without a front center channel. Here, there is a central rear channel as well as left- and right front channels.
- 3.1 Front (LCR): The configuration has an additional front-center channel, which leads to better distribution in the stereo soundscape.
- 4.1 Surround (LCRS): This configuration combines a 3.1 Surround configuration with a front-center channel and is also known under the name Dolby Surround Pro Logic™.
- 4.1 Quad: This four-channel configuration is based on the quadraphonic systems that were popular with consumers in the 1970's. The four speakers are arranged symmetrically in a square shape.
- 5.1 Music: This five-channel surround sound configuration is comparable to top-of-the-line home theater arrangements and movie theaters systems, known as, for example, Dolby Digital™ or DTS™. This system provides you with three front channels (left, center, right) and two surround channels (surround left, surround right).

- 5.1 Pentaphonic: This configuration delivers five-channel surround sound, where the five channels are arranged symmetrically in a circle.
- 6.1 Music: This configuration corresponds to a 5.1 Music configuration, but contains an additional rear center channel. This arrangement is used by, for example, the surround sound systems Dolby Digital EX™ and DTS-ES™.
- 6.1 Hexaphonic: This configuration delivers six-channel surround sound where the six channels are symmetrically arranged in a circle.
- 7.1 Cinema: This configuration delivers seven-channel surround sound as it can often be heard in films. Well-known surround sound systems of this type include SDDS™ and IMAX™. This configuration combines the 5.1 music configurations with two center channels (center left, center right).
- 7.1 Music: This configuration delivers seven-channel surround sound. It is comparable with the 6.1 Music arrangements, but the surround center channel is divided between the two rear channels "surround center left" and "surround center right."
- 7.1 Heptaphonic: This configuration delivers seven-channel surround sound, where the seven channels are symmetrically arranged in a circle.
- 8.0 Octaphonic: This configuration delivers eight-channel surround sound, where the eight channels are symmetrically arranged in a circle, but (unlike in all of the other configurations) there is no LFE channel.

For any of these configurations, you can set the arrangement of the channels using the available audio outputs of the Stand-Alone Version. The audio outputs that you configured in the Audio and MIDI Settings Dialog are at your disposal (more specific information on this can be found in a separate installation manual).

As long as you use ABSYNTH 4 as a Plug-in, the host will automatically choose the correct setting for the channel in which ABSYNTH is used: a particular Plug-in will be used depending on whether you use ABSYNTH as an instrument or as an insert effect, and whether the according channel is a stereo channel or a surround channel.

## **Browser Tab**

In the Browser Tab, you can determine in which folders to search for KoreSounds. You can combine folders containing the respective Buttons or remove folders from the list. Remember that subfolders in the selected folders will automatically be included in the search as well.

---

Should you ever make changes in this Tab, or delete/combine individual KoreSound data using the operating system in the corresponding folders, then you must refresh the databank. In order to do this, use the Rebuild Database Button. (Depending on the number of available KoreSounds, this process can be time-consuming.) Only then will the changes take effect in the databank.

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#### **4.2.1. Help Menu**

The Help Menu contains 3 options with further information about ABSYNTH 4:

##### **Launch Service Center**

This option allows you to startup the NI Service Center. This program can activate ABSYNTH 4 as well as search for new Updates. Detailed information can be found in the separate installation handbook.

##### **Visit ABSYNTH 4 on the Web**

This option loads the NATIVE INSTRUMENTS website in your Internet browser, where you can access current information on ABSYNTH 4.

##### **About ABSYNTH 4...**

Choosing this option opens the About Screen where you can view the version number and the individual serial number of your copy of ABSYNTH 4. You can also find the names of all of the people who worked on ABSYNTH 4.

#### **4.2.2. Audio and MIDI Setting**

With this menu point, you can activate the configuration dialog for the audio and MIDI interfaces of ABSYNTH 4. All of the options contained in this dialog are described extensively in the separate Setup Guide.

## 4.3. Navigation Bar

The *Navigation Bar* is located at the very top of the ABSYNTH 4 window. It consists of two lines. In the top line of the *Navigation Bar* you will see (from left to right) the *Window Selection Area*, the *CPU Meter*, the *Level Meter Displays*, and the *Panic Button*. More information about these features is available in later sections of this chapter. The bottom line includes options to load and save sounds as well as navigate the library:

- **File Popup Menu** The File Menu provides options for loading new sounds (New Sounds), for saving current sounds (Save) and for saving the current sounds under a new name (Save as).
- **Edit Popup Menu** Here you will find the following entries: Undo, Copy, Paste. Undo allows you to reverse the most recent steps you took in your work. With the Copy command, you can copy an envelope in the Envelope Window and a waveform in Wave into the clipboard. Choosing Paste then allows you to paste this copied envelope or waveform from the clipboard to the file that you are working on.
- **Sound Name Display** displays the names of the sounds you have just loaded. You can change the specified name by clicking on Sound Name Display with the mouse. A double click selects the entire name. You can now enter a new name.
- **Previous/Next Sound Buttons** With these buttons you can scan quickly through a list of sounds. If you used Database Views to load your sound into the Browser Window from Search Results, then a small magnifying glass will appear in Sound Name Display. The Previous/Next Sound Buttons then allow you to choose the previous or following Sound in this Search Results list and load it to the system. If, however, you loaded your sound from the File Tree View, then a small folder will appear in Sound Name Display, and the Buttons allow you to select from the content of the folder from which the original sound was loaded.
- **Save Button** The Save Button activates the same dialog for saving current Presets under a different name to the entry Save in the File Popup Menu.

Further instructions on loading, saving, and administration of sounds can be found in section 4.10, which also provides an extensive description of ABSYNTH 4's new *Sound Browser*.

### 4.3.1. Window Selection Area

In the *Window Selection Area* you can change the appearance of the ABSYNTH 4 interface by switching between individual Windows. Every Window contains a particular working area that makes certain tools available. In order to activate a window, click with the mouse on the Field (*Tab*) with the name of the desired *Window*. The window view of ABSYNTH 4 changes in the new *Window*, the *Tab* that belongs to it appears lightly hued in the *Window Selection Area*.

### 4.3.2. CPU Meter

The CPU Meter indicates the processing load being used by ABSYNTH 4. When the computer is overburdened, distortions or other disturbances can result during playback. To avoid this, it is worth keeping an eye on this indicator.

The processing load depends above all on two factors: the complexity of the sound and the number of voices played. ABSYNTH 4 uses a dynamic voice allocation process. That means that voices that are not played do not contribute to the processing load. The more notes that are played simultaneously, the higher the CPU readout will go. If the CPU overloads, it is recommended that you leave out a couple of notes in order to reduce the processing load. If your computer reacts sluggishly to incoming commands, it is probably because your CPU is overloaded and there is not enough resources available for the production of the image screen . If this happens, try to decrease the load by de-selecting some buttons.

If ABSYNTH 4 overloads the CPU, the audio hardware installed on your computer might get out of step, and no longer be able to accurately produce sound. In such a case, you have several options to restore operations back to normal:

- Release all of the buttons on your MIDI keyboard. This releases resources that ABSYNTH 4 uses for every voice.
- Click on the *Panic Button* in order to reset ABSYNTH 4 and stop play.
- Click on the *Next Sound Button* or the *Previous Sound Button* to change to another sound
- Click on a *Module Slot* frame in the *Patch Window* to turn a *Module* on or off. This will also reset the Audio Engine.

### **4.3.1. Level Meter Displays**

The *Level Meter Displays* tell you the volume levels of the incoming and outgoing audio signals. The four LED chains labeled *In* indicate when a signal is going into an oscillator module. You can read the levels of the outgoing signals on the eight LED chains of the *Output Level Meter*. As you know from the section on surround configurations, ABSYNTH 4 supports up to eight simultaneous audio outputs. Each of these eight outputs has its own LED chain.

### **4.3.2. Panic Button**

With the Panic Button you can interrupt the audio reproduction of ABSYNTH 4 in case something goes wrong and only noise is being produced. Click on the Panic Button to reset the audio engine of ABSYNTH 4 and to stop the reproduction process. All of the MIDI notes that have been “left hanging” will also reset.

### **4.3.3. NI Logo**

Click on the NI Logo in order to activate the About Window. There you can see the version number and the individual serial number of your copy of ABSYNTH 4. Here you can also find the names of all of the people who worked on ABSYNTH 4.

## 4.4. Patch Window



The *Patch Window* is the control center of ABSYNTH 4, where you assemble the components that make up a sound. These components contribute to producing and shaping the desired outcome. The modules represent the individual components in the Patch Window. There are different types of modules: Oscillator Modules are the sound sources of ABSYNTH 4. *Modulation Module*, *Filter Module* and *Waveshape Module* shape the sound. In the following sections you will find brief descriptions of the different *Modules* and their features.

#### 4.4.1. Signal flow

As you know from the introduction of this handbook, the design of ABSYNTH 4 is semi-modular. That means that you can determine the arrangement of certain components yourself. Other components have a permanent place in the Signal Flow.

#### Combine Modules

The *Patch Window* organizes the modules components into three *Channels*. These *Channels* are designated with the letters A through C and they each consist of three vertically arranged fields, the *Module Slots*. Each of these *Module Slots* can be inserted with a *Module*. To turn a module on or off, click on the extended frame on the left side of the module –where the writing indicates the type of the module.

When inserting the modules, the following rules apply: The Module Slots A-C of the three channels can only be loaded with an Oscillator Module. But the remaining *Module Slots*, *Module Slots 1 and 2*, of any *Channel* can be loaded with *Modulation*, *Filter*, or *Waveshape Modules*.

---

While the Oscillator Module always works as a signal source, the other modules can shift between different types of operation: If you turn on a module, then this module type will appear in the margin of the Module Slot. Meanwhile the Type Popup Menu allows you to switch between the operating Modes Filter, Mod and Waveshape. So, for example, you can insert Filter Modules **into both Slots of one channel, and insert two Waveshapers into another Channel**.

---

Beneath *Channels A, B, and C* you can see three horizontal sliders, known as the *Channel Level Controls*. With these sliders the levels of the three *Channels* can be installed. ABSYNTH 4 can adjust the levels automatically so that the sum of the three Audio Signals never exceeds 0 dB, even after a value in one of the three *Channels* has been changed. To activate automatic volume levels in the Stand-Alone Version, select *Edit* from the Main Menu and then the entry *Balance Levels* from the *Edit* menu.

In addition, you can also use the Surround Pan Switch, which is located in the lower left-hand corner of the Patch Window, to activate a mode that allows you to position all three Channels in the Surround Panorama according to your preference. This function can be used for impressive spatial effects, for example, by modulating the Surround Position of the channels independently of one another with an LFO or an envelope. More information about this is avail-

able in section 4.10. The signals delivered by the three Oscillator Modules run through the reactivated modules, and are mixed in the Master Channel under the three Channels, which are arranged horizontally. After the Effect Module in the lower right hand corner, the finished signal leaves ABSYNTH 4. The lightly hued connection between the Modules makes this Signal Flow visible. In the *Master Channel*, there is also a *Module Slot* reserved for a particular Module: The Effect Module can always be found at the bottom-right of the *Patch Window* and at the end of the *Module* chain. The other two *Module Slots* in the *Master Channel* can be inserted with *Modules* of your choice.

### **Mono Mode and Poly Mode in the Master Channel**

The modules in the Master Channel have two operating modes: Poly Mode and Mono Mode. The difference between the two Modes can be heard particularly clearly in the Waveshape Module: In Poly Mode (three small arrows) every voice has its own, independent Waveshaper. The distortion affects every voice separately— in the same way as if every string on a guitar had its own amplifier. In Mono Mode (three arrows pointing toward one another) only one Waveshaper is used for the different voices, which means that many of the notes played interact – similar to the way that they do in chords played on a distorted electric guitar. You can try out the effect simply by inserting a *Waveshape Module* into the *Master Channel*. Play a couple of sounds now and switch between both modes by clicking on the Mono/Poly Mode. You will see that the Mono Mode reacts with significantly stronger distortion as you as begin to play multiple notes. This is because the signals of the different voices are assembled before the Waveshaper input, which results in a higher input gauge. In Poly Mode, by contrast, the voices are distributed among multiple Waveshapers and thus produce lower signal levels.

---

**Tip:** In Mono Mode, the Waveshaper works with low input gauges like a simple compressor and lends itself well to compressing and heating up the filter input signal.

---

#### 4.4.2. Oscillator Module

The three *Oscillator Modules* are the only stand-alone sound sources in ABSYNTH 4. All of the other modules only function to change the sounds produced by the *Oscillator Modules*. If none of the *Oscillator Modules* are turned on, you will hear no sound, and none of the other *Modules* can be activated. Accordingly, the *Modules* of a *Channel* are only available when the *Oscillator Module* is active. There are numerous different operating modes to choose from the *Oscillator Modules*, which effect the synthesis process. In the following sections, you will learn more about these individual operating modes.

#### General Functions

Some control features are always displayed in the *Oscillator Module* independently of the selected operating mode: the *Edit Popup Menu*, the *Frequency Popup Menu* and the three *Tabs Main, Mod, and Uni*.

The *Edit Popup Menu* in the upper left-hand corner of the *Oscillator Module* provides the following options:

- Copy Oscil copies the installations of the selected Oscillator Module to the Clipboard.
- Copy Channel copies to the Clipboard the installations of all active Modules of the selected Oscillator Module's Channel.
- Paste Oscil places installations, previously copied o the Clipboard using the command Copy Oscil, into the selected Oscillator Module.
- Paste Oscil and Envelopes places the installations, copied into the Clipboard (with the command *Copy Oscil*), into the selected *Oscillator Module*. Any envelopes linked to the Oscillator are also placed in the *Oscillator Module*.
- Paste Channel places the installations of all of the active Modules of a given Channel into the Channel.
- Load Oscil Template activates a Dialog, which allows you to choose from a list of Templates with preinstalled Oscillator Modules (Universal Library). Click on an entry in the list to choose a Template. Then click OK to load the Template.
- Load Channel Template activates a dialog where you can choose from a list of Templates with pre-configured Channels (Universal Library). Click on an entry in the list to choose a Template. Then click on OK in order to load the Template.
- Save Oscil as Template allows you to save the installations that you have viewed in the Oscillator Module as Templates in the Universal Library.

Choose this option to activate a Dialog where you can choose names and saving locations for the Template. In this dialog, click OK to save the Template.

- Save Channel as Template allows you to save the installations that you have viewed in a *Channel* as Templates in the *Universal Library*. Choose this option to activate a Dialog where you can choose names and saving locations for the *Template*. In this dialog, click OK to save the *Template*.

## Universal Library

The Universal Library in ABSYNTH 4 makes it easier to bring together complex sounds. Besides individual waveforms, envelopes and effects, you can save and download complete modules with the appropriate envelopes as well as entire Channels from the Universal Library. You will find the library installation folder of ABSYNTH 4 on the hard drive.

In the Patch Window you can save and activate Channels, Modules, and Effect Presets together with all of the relevant envelopes. When you save a Channel, a Module, or an Effect Preset as a Template in the Universal Library, the envelopes are automatically filed with it. In order to load Templates, choose the category you want from the Edit Popup Menu: In the *Oscillator Module*, select the option *Load Oscil Template* in order to load a pre-configured *Oscillator Module*. The command Load Channel Template allows you to choose from all the completed Channels. In the *Edit Popup Menus* under *Filter Module*, *Modulation Module*, and *Waveshape Module* you will find the Load Template option. ABSYNTH sorts the Library automatically for you: For example, you cannot load a Filter Template into an *Oscillator Module*.

To save module installations or an entire Channel, choose *Save Template* in the *Edit Popup* Menu of *Filter Module*, *Modulation Module*, and *Waveshape Module*. In *Oscillator Module*, you can use the command *Save Oscil as Template* or the command *Save Channel as Template* to save the entire Channel with all of its modules and their installations.

The *Patch Window* is not the only location with access to the Universal Library. In the *Envelope Window* and in the *Wave Window* you can also load and save Templates. For example, you can store individual envelopes (separately from their modules) and waveforms in the Library. In *Envelope Window* and in *Wave Window*, you can access the Universal Library via the *Transform Popup Menu*.

ABSYNTH 4 includes an extensive Library of *Channels*, *Modules*, *Envelopes*, *Effects*, and *Waveforms*. To see how quickly the prefabricated channels from

the Library can build a complex Patch, simply click on the margin of an empty *Oscillator Module Slot* in the Patch Window. It opens an Oscillator Module. Choose the entry *Load Channel Template* for *Edit Popup Menu* on the upper left-hand side in *Oscillator Module*. Once there, the list *Channel Templates* will open immediately; choose the entry from *Channel Templates* whose name you find most to your liking. When you deal with the other two channels, you will see how to create a sound in just a few seconds that could have taken hours “by hand”.

## Tabs

The *Tabs* allowing access to the bottom views *Main*, *Mod*, and *Uni* are also present in the *Oscillator Module* (albeit occasionally inactive). Click on a *Tab* in order to activate the appropriate view .

All of the parameters that deal with the *Main Oscillator* of an Oscillator Module can be found under the *Main Tab*. The most important element in Main Tab is the Synthesis Popup Menu, which allows you to perform the synthesis process for the Main Oscillator. The synthesis processes that are available for selection from the Synthesis Popup Menu are sorted into three groups (separated with a horizontal line).

- Wavetable Synthesis (Single Mode, Double Mode, FM Mode, Ringmod Mode, Fractalize Mode, Sync Granular Mode): The Oscillator Module produces Signals using monocyclic waveforms as the foundation.
- Sampling (Sample Mode, Granular Mode): The Oscillator Module produces signals on the foundation of a sample.
- Externally produced Audio Signal (Audio In Mode): The Oscillator Module delivers an Audio Signal, which itself comes from an external source to the Module.

We will now examine the operating modes of the three synthesis processes and their individual parameters in greater detail.

All parameters of the Modulation Oscillator (*Mod Oscillator*) can be accessed via the *Mod Tab*. The parameters that you can access depends on which operating mode is selected in the *Main Tab* for the Main Oscillator. Information about these specialized parameters can be found in the sections on individual operating modes.

In the operating modes *Single*, *Double*, *FM*, *Ringmod*, and *Fractalize*, the *Uni Tab* allows you to choose from the following Parameters:

- num voices establishes the number of voices produced by the notes played. The highest value is 8.

- *trans* controls the degree of detuning in half-tones (which can only be selected if the value selected under *num voices* is larger than 1).
- *rand trans* limits the permitted quota of accidental detuning (upwards or downwards) in half-tones.

You can select the function Unisono in order to “stack” voices quickly and produce fuller, stronger sounds. If you raise the value installed under *num voices* by one, a new voice will be added and mixed with the output signal of the Oscillator. The number in the Value Field *trans* determines what interval you desire between the original sound and the tone pitch of the additional voices. Even-numbered additional voices are transported downwards, odd-numbered voices upwards. If, for example, you were to set the value for *num voices* at 3 and the value for *trans* at 1, every note would be accompanied by a voice that has been transported deeper that sounds a half note higher. If you raise the number of voices under *num voices* to 4, a new (even-numbered) voice will be attached which is a half-tone under the last even-numbered voice (that is, two half-tones under the basic tone). If you were to set the value for *num voices* at 5, a new (odd-numbered) voice would be attached, which would be one half-tone lower than the last odd-numbered voice. The Option *rand trans* produces accidental detuning of the voices with every note in the sequence. Subtly put to work, with a low value for *num voices*, *rand trans* can produce the effect of a sloppy or imprecise intonation (in order, for example, to imitate a string instrument without tension or to give atonal percussion sounds some natural variation). You can get some unpredictable and exciting results by playing around with different selections of notes— so have fun!

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**Tip:** In the operating modes Sync Granular, Sample, Granular, and Audio In the Unisono function is not available and the Uni Tab is inactive.

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## Waveform Popup Menu

In the Waveform Pop Menu, you choose the waveforms (*Waveform*, *Wave*) for the Oscillators in ABSYNTH 4. This is not only the case for the Oscillators Main and Mod in the *Oscillator Module*, but also for all of the other functions in ABSYNTH 4 for which waveforms provide a foundation. You will also find the *Waveform Popup Menu* in an identical form in the LFO Window in the LFO area of the Envelope Window. In contrast to the other Popup Menus in ABSYNTH 4, the options in the Waveform Popup Menu do not appear as a self-contained list, but rather are indicated in their own window due to the limited space in the window.

This window, which you activate from the Waveform Popup Menu, essentially contains a list of available waveforms. Using three buttons, you can switch the list between three categories of *Waveforms*:

- Simple Waves are single cycle waveforms that are read from a *Wavetable*. This relates to the tiny Samples that contain very precise information about a period of a particular Waveform. In this rubric, you also find next to the standard forms *Sine*, *Triangle*, *Saw*, and *Square* instrumental and atonal Waveforms.
- Morph Waves are Waves that use the function Wave Morph (see Section 4.6.5). From a technical point of view, Morph Waves are two waveforms saved in one unit of data, which seamlessly blend (“morph”) with one another.
- Library Waves are the Waves from the Universal Library of ABSYNTH 4.

In order to load the *Waveforms* of a particular category into the list, click on the Button with the name of the desired *Waveform* category. You can load a waveform into the Module by clicking on entry in the list. The new *Waveform* becomes immediately active, so that the effects on the sound can be heard as soon as you push a button on your MIDI keyboard. The small waveform display next to the Waveform Popup Menu also displays the new waveform straightaway. When you have chosen a waveform, click OK on the place in ABSYNTH 4 from which you activated the *Waveform Popup Menu*.

In order to produce a new Waveform, click on the Waveform Popup Menu on the New Wave Button. A new waveform will be produced and loaded into the Wave Window. ABSYNTH 4 switches the window display automatically to the Wave Window. In the process, the selected *Waveform* is loaded as the template for the new waveform. (Remember that your work does not affect the original *Wave*, but rather produces an independent copy of it.)

If you want to work on a Waveform that already exists, click on the Edit Wave Button. In this case, ABSYNTH 4 loads the selected waveform automatically into the Wave Window and switches the display in an according fashion. You can only work on *Waveforms* that you have already produced for this sound, by clicking on the *New Wave Buttons*.

## Frequency Popup Menu

The Oscillators from the groups of Modes of the different Wavetable synthesis processes can be regulated in such a way that they react to the input of notes. This process is known as Frequency Modes. Using the *Frequency Popup Menu* in the *Main Tab*, you can choose the following Frequency Modes:

- **Trans:** The Oscillator follows the tone of a played note in halftones. For example inputting 1.5 in the Value Field Frequency Control corresponds in this operating mode to transportation upwards by one whole and one half-tone. you can achieve changes to 1/1000 of a half-tone.
- **Ratio** changes the Oscillator in a selectable frequency folder (for example along the harmonic strip: “2” corresponds with a value of 12 half-tones, “3” with a transposition of 10 half-tones, etc.). This mode is especially useful when using frequency and ring modulation.
- **Hz fixed pitch in Hertz.** In this mode, also useful for frequency and ring modulation, the Oscillator ignores the pitch played. Rather, in this Frequency Mode, the pitch of a tone reacts not to information like Pitch Bend or to Signals from an LFO, but can be determined using an envelope.
- **Notes Fixed pitch** that corresponds with a variable MIDI note. This mode functions similarly to the Frequency Mode Hz, but is more appropriate when you want to use the Oscillator on a note-bound frequency (e.g. 60.5 = C3 plus a quarter-tone).

---

**Tip:** You can switch between the Frequency Modes Hz and Notes to determine the exact frequency of particular notes.

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## Anti-Alias Switch

The *Anti Alias Switch* enables you to remove sharp frequencies in the modes for the Main and Mod Oscillator. Anti-Aliasing provides a smooth, almost analogical sound. In order to turn on the Anti-Aliasing, click on the Anti-Alias Switch – the small steps/ramp button in the upper left-hand corner of every Oscillator Module. When the symbol displays “steps”, it means that the function to smooth over of edges is off. A smooth line (“Ramp”) means that the function is on for this Oscillator. This makes a big difference with high frequencies. Without it, you would probably hear something called Foldback – a not-so subtle form of digital distortion that makes high tones sound coarse or harsh (two properties that are sometimes desired, but usually not ). Anti-Aliasing reduces the Foldback to a large extent. Keep in mind that when an Oscillator smoothes over edges, it uses more CPU power. If you can discern no difference between times when the smoothing over of edges is on and when it is off, it would be best if you left it turned off. For reasons of compatibility, all of the Patches equipped with ABSYNTH 1 are opened with *Anti Alias Switch* deactivated. With ABSYNTH 4, you can create Patches, where for some *Channels* the *Anti Alias Switch* is on, and for others it is not.

## Single Mode



In the *Single Mode* a single Main Oscillator is active.

Under the *Main Tab*, you will find all of the control features linked to the *Main Oscillator*:

- Synthesis Popup Menu: To choose the desired synthesis process.
- Waveform Popup Menu: A click on the Waveform Popup Menu opens a dialog where you can select the Waveform for the Oscillator.
- Anti-Alias Switch: Turns the Anti-Aliasing on and off.
- Frequency Popup Menu and Frequency Control: Enables you to enter the Frequency as half pitches (Trans), as a relationship (Ratio), as a Frequency (Hz) or through a MIDI note (Note).
- Phase Sync Switch: Setting the Phase Sync Switch to Sync will reset the phase of the Oscillator with every incoming MIDI note. When the Phase Sync Switch is set to Free, the Oscillator will not be reset. When only one Oscillator is active and you have selected the number of voices in the Uni Tab, Free mode has almost no effect. When you have a higher Unisono number of voices or multiple active Oscillators, every note in the change of the sound is audible.
- Phase Control: Sets the phase of the Oscillator. The effect is only audible if a second Oscillator is active. This parameter is useful when using integral frequency ratios between carrier and modulator, as is the case in FM.

## Double Mode



In *Double Mode*, a pair of Oscillators - consisting of the *Main Oscillator* and the *Mod Oscillator* - is active. The signals of the two Oscillators are mixed.

Under the Main Tab, you will find the same Oscillators appear in the same way as they do in *Single Mode*; more precise information can be found later in the section *Single*.

The following parameters are available to the *Mod Oscillator*:

- Balance Control controls the balance of the Oscillators Main and Mod within the Oscillator Module's output signal.
- Waveform Popup Menu This opens a dialog where you can choose the waveform for the Oscillator.
- Frequency Popup Menu and Frequency Control Using the Frequency Control, you can enter the Frequency in halftones (Trans), as a relationship (Ratio), as a Frequency (Hz) or through a MIDI note (Note).
- Phase Control: Here you set the phase of the Oscillator. The Effect can only be heard when a second Oscillator is active. This parameter is useful when dealing with frequency proportions, for example between carrier and modulator in FM.

---

**Tip:** An Oscillator Module in the operating mode Double uses less CPU power than two Oscillator Modules in single operating mode.

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## FM Mode



In FM Mode, the *Mod Oscillator* modulates the Frequency of the *Main Oscillator*. Under the *Main Tab* you find the same Parameters as in *Single Mode*; more detailed information about this is available in the section *Single*. The Parameters of the *Mod Oscillator* are:

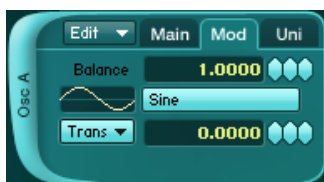
- FM Index: This determines the depth of the Frequency Modulation
- Waveform Popup Menu: Clicking the Waveform Popup Menu allows you to choose the waveform for the Oscillator.
- Frequency Popup Menu and Frequency Control: With the Frequency Control you can enter the Frequency in half-tones (Trans), proportionally (Ratio), as a Frequency (Hz) or with a MIDI note (Note).
- Phase Sync Switch: When you use the Phase Sync Switch in the position

Sync, the phase of the Oscillator is reset with every note-on-command entered via MIDI. When the Phase Sync Switch is on Free, the Oscillator is not reset. When only one Oscillator is active and the number of voices in the Uni Tab is set at 1, the operating mode Free has almost no effect. With additional Unison numbers of voices or multiple active Oscillators, the sound changes with every note.

- **Phase Control:** In Phase Control you determine the Phase of the Oscillator. The Effect can only be heard when a second Oscillator is active. This parameter is useful, for example, when balancing out frequencies between carrier and modulator in FM.

Frequency modulation was discovered in the late 1960's by John Chowning and, achieved great popularity in the 1980's through Yamaha's DX7 synthesizer. Much has already been written about FM synthesis so we will not go into detail here.

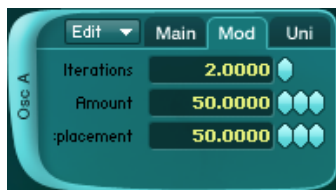
## Ringmod Mode



In Ringmod Mode, the Signals from the *Main Oscillator* and the *Mod Oscillator* are multiplied with one another. Under the Main Tab you find the same parameters as in *Single Mode*; more precise information can be found in the section Single. The *Mod Oscillator* has the following parameters:

- **Balance Control** controls the proportions of the two Oscillators, Main and Mod, within the of the Oscillator Module's output signal.
- **Waveform Popup Menu:** Click on the Waveform Popup Menu to open a dialog where you can choose the waveform for the Oscillator.
- **Frequency Popup Menu and Frequency Control** With the Frequency Control, you can enter the frequency in half-tones (Trans), as a relationship (Ratio) as a Frequency (Hz) or with a MIDI note. For a "classic" ring modulator sound, set the Oscillators either to Hz or Note.

## Fractalize Mode



Experienced ABSYNTH users will recognize the Fractalize Mode as a real time edition of the function Fractalize from the Waveform Editor of the Wave Window (which also functions very similarly). In Fractalize Mode, the selected waveform is copied to itself, so that you can see smaller elements of the waveform that are similar to the image of the whole. You can use the Fractalize Mode to add overtones to a plain waveform.

Under the Main Tab you find the same parameters as in the Single Mode; more precise information can be found in the section Single. The Mod Tab provides access to the following parameters:

- **Iterations:** With this parameter you can choose the number of similar repetitions that you want of the same sound, and how much you want to deviate from the original waveform. The value area is between 1 and 8; higher values lead to more complex, lighter-sounding sounds – and to a heavier CPU load.
- **Amount:** With this you can define the mixing relationship between the original waveform and the copies.
- **Displacement:** With this parameter you can define the proportion that the areas differ from the waveform: 0 corresponds to a position before the waveform, 1 to a position after the waveform. With a value of 0.5, the area is directly central to the waveform. If you modulate this parameter with an LFO or an envelope, interesting movements inside the sound will result.

---

**Tip:** The function Fractalize in Wave Window gives you an idea of what happens. Load a simple waveform, such as a sine, into the Wave Window. Check under Wave View: so far nothing has happened. Choose the entry Fractalize from the Transform Popup Menu. Set Iterations to value 2 and Displacement to 9. Slowly increase the value for Displacement up to 25. You see how the waveform distends. Change the value for Iterations; the higher the value, the more dislocated the waveform becomes.

---

In *Fractalize Mode* under the *Uni Tab* you will find a somewhat different combination of parameters than in the *Modes Single, Double, RM* and *Ringmod*: *Trans* and *rand trans* work in exactly the same way as in the other Modes. Instead of the Parameter *num voices*, the parameter *Iterations* operates a similar function in setting the number of voices in Fractalize Mode.

---

**Tip:** Fractalize functions particularly well with Waveforms that contain limited, yet strong harmonics: you will see new overtones emerge around the basic harmonics. By choosing the right Waveform you can achieve interesting, formant-style effects. With harmonically dense waveforms (e.g. saw from the ABSYNTH 4 Waveform Library) the effect is not as striking.

---

## Sync Granular Mode

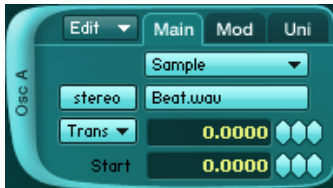


The Sync Granular Mode works along the same lines as the Granular Mode (also the section Granular Mode for more): It divides a waveform into the smallest parts (*Grains*) and then brings these parts back together. The difference between the granular synthesis processes in ABSYNTH 4 relates to used output material: In *Granular Mode*, the Grains are taken from a Sample, whilst *Sync Granular Mode* uses a waveform from the Library. In Sync Granular Mode, you can take your own waveforms or an existing waveform from the library, tear it apart, and then put it back together again in a new way. Before putting the Grains back together through a process known as resynthesis, you can influence the Grain “cloud”: You can change the frequency of the grains, change the value in Density Control to determine how individual Grains overlap, and use the parameter *Scatter* to manipulate the level of diffusion of the Grain cloud. These options allow you to create very effective sounds and, for example, convincingly simulate the blowing sound of a wind instrument such as a pipe or flute.

Under the *Main Tab* you find that *Sync Granular Mode* has the same parameters as in the *Single Mode*; more precise information can be found in the section Single. The following parameters can be accessed through the Mod Tab:

- **Balance:** Here you set the mix relationship between the original Waveform and the Waveform produced by resynthesis. With a value of 0 only the original Waveform can be heard, with a value of 1 only the resynthesized Waveform.
- **Dens:** Here you define the density of the Grain cloud by setting a value for how individual grains overlap. The values ranges from 3 to 8; small values give a raw sound.
- **Scatter:** With this you can control the diffusion, that is, the accidental scattering of the Grain cloud.
- **Frequency Popup Menu and Frequency Control:** With the Frequency Control, you can enter the frequency in half-tones (Trans), proportionally (Ratio), as a Frequency or with an MIDI note (Note).

## Sample Mode



The Oscillator Module rules two sampling-based *Modes*: *Sample* and *Granular*. These modes make it possible for you to use ABSYNTH as a Sampler, playing back previously uploaded sound data in the WAV or AIFF format. The basic control is the same in both modes, so the following instructions on the Sample Mode also apply to *Granular Mode*.

In contrast to conventional Sampling instruments, ABSYNTH lacks the usual functions such as Key Mapping, Velocity Layering, and AKAI import. Unlike the conventional samplers, ABSYNTH's emphasis is not on the realistic reproduction of sampled instruments, but rather the creative possibilities that sample-supported synthesis provides. All three Oscillator Modules can load a Sample; in a single Preset you can use up to three different samples.

---

**Tip:** Before you experiment with ABSYNTH's sampling possibilities, you should first load a neutral patch. Choose the New Preset option in the File Menu of the Navigation Bar, and then open the Patch Window.

---

In order to load a *Sample* into an *Oscillator Module*, choose the *Sample* option from the *Mode Popup Menu*. On the *Waveform Popup Menu* you will see '(none)' displayed.

Then click on the Waveform Popup Menu. This activates a dialog that allows you to open a Sample. Choose a Sample that you would like to load. Click on *Open*. The Sample is loaded, and the *Waveform Popup Menu* indicates the names of the loaded Samples.

ABSYNTH 4 can read AIFF and WAV data (stereo or mono) ranging from 16 to 32 bit and any Sampling rate. Stereo samples can be reproduced in stereo or mono, depending on your choice. On the left of the waveform Popup Menu, you can see the Mono/Stereo Switch. If you have loaded a Stereo-Sample, you can use the Mono/Stereo Switch to shift between mono and stereo reproduction. If your Sample cannot be converted to Stereo, then it becomes a Mono-Sample.

In *Sample Mode*, the *Main Tab* allows you to change the following parameters:

- Frequency Popup Menu and Frequency Control: With Frequency Control you can enter the Frequency in half-tones (Trans), proportionally, as a Frequency (Hz), or using an MIDI note. The Sample will be reproduced with its original speed when the MIDI Note C3 is played. Lower Notes produce a slower, lower sound, while higher notes sound higher and faster.
- Start Control establishes to what percentage each Sample plays in relation to the total amount of time.

The following options can be reached via the Mod Tab:

- No Loop: The Sample is played once (good for percussion sounds).
- Loop All: The entire sample is played as a loop. This works best if you edit the loop beforehand to create a seamless loop.
- Loop Edit: Two additional parameters are available if you choose Loop Edit: Loopstart is the start point, Loopend the end point of a loop.

## Granular



A Sample is fundamental to sound creation in Granular mode. However, ABSYNTH 4 divides the Sample into many small *Grains*, each containing a tiny fragment of the sound. In this way you can independently control pitch and time within the Sample. In Granular mode, the duration of a Sample remains

the same over the entire keyboard, whilst the notes determine the pitch. You can choose from the following options under the Mod Tab:

- Time % determines the playing speed of the Sample. 50% corresponds to half of the original speed while 200% doubles the speed of your sound. If you set this value to zero, the Sample for that length of time will “freeze”. When you have frozen a Sample, you can use the Parameter Sample Start to establish when exactly it should freeze.
- Dens determines the number of Grains played simultaneously. Here you can set values between 1 and 8. A lower value produces a thinner sound, whereas a value of 8 or 9 produces a dense Granular “cloud”. Remember: Big dens values use a lot of CPU power.
- Size determines the length of every Grain (in Samples). Smaller values are good for percussive sounds, whereas higher values function well for pad-like sounds or string instruments. Bear in mind that small values tend to conceal the character of the Sample and produce typical granular artifacts in the form of noise. The maximum value for the Parameter is 9,999 samples (approximately 225 milliseconds at a sampling rate of 44.1 kHz).
- R Time establishes how often the Grains are played randomly. 0 corresponds to no randomness during grain playback, whilst 100 means that the grains are played completely at random.
- R Freq changes the pitch of individual Grains randomly. 0 means no randomness, whereas 100 assumes complete randomness concerning pitch.
- R Amp controls the amplitude (“loudness”) of the individual Grains played at random. 0 equals “no randomness,” whilst 100 means complete randomness.

## Audio In



In the operating mode Audio In, an Oscillator Module does not produce a signal itself, but rather receives and then treats audio signals from elsewhere, as its own output. That makes it possible for any audio signal to work with

the other modules in ABSYNTH 4 in real time. ABSYNTH 4 can thus be used as an effects instrument and work with live audio signals being played elsewhere. You can also load ABSYNTH 4 as an Effect-Plug-In in its Audio MIDI Sequencer and insert any traces of audio. When you have established a Preset, in which *Oscillator Modules* work in the *Audio in Mode*, you should attach this Preset to the Attribute Effect so that the Preset in *Browser Window* reacts to the right search instructions.

You can access all of the Audio In parameters through the *Main Tab*:

- In: Choose from one of six possible audio inputs, which you can choose by selecting the Audio and MIDI Setup option under the Stand Alone Menu in the Stand-Alone version of ABSYNTH 4. .
- Db: strengthens or weakens the input signal. At the standard value of 0 db, the Signal passes through the entry level unchanged. As in Sampling-operating mode, by operating the Mono/Stereo Toggle (Ring-/Double-ring symbol) you can choose between Mono- and Stereo signals. If you choose Mono, you will only see one Popup Menu. If you choose Stereo, then a second, identical In Popup Menu appears below the first.

---

**Tip:** External audio signals run through ABSYNTH's signal path in exactly the same way as internally created signals and so are also influenced by ABSYNTH's envelopes. This means that you do not hear audio signals from external sources unless ABSYNTH 4 has received MIDI notes and used them to trigger the envelopes!

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### 4.4.3. Filter Module

The Filter Module provides a number of Filters to work with. You can work on the frequency spectrum of a sound and, for example, emphasize the high frequencies while reducing the lower frequencies.

#### General Functioning

Turn on the *Filter Module* by clicking the extended left margin on a Module Slot. Choose the *Filter* option from the *Type Popup Menu*. In the Popup Menu Mode, you can choose one of the filter types below:

## Lowpass



### Lowpass Filter LPF 2 pole

In the Lowpass section you can find the Lowpass Filter, which weakens the signal above an adjustable Cutoff Frequency. The slope gradient of a filter, which dampens a signal, is given in dB per octave. A value of -12 dB /octave means that the filter dampens the signal by 12 dB. Other values for slope gradient are -6, -18, and -24.

The slope gradient is often referred to as the  $n$ -pole with relation to synthesizers and other electronic sound producers,. On most occasions,  $n$  stands for an even number between 1 and 8. This data can be easily translated into the dB/Octave schema if you remember that every filter pole corresponds to a steepness of -6 dB/Octaves. So a 1-pole Filter has a gradient of -6 dB/Octave, a 2-pole Filter dampens the signal by -12 dB/Octave, and so on. ABSYNTH's Lowpass filter *LPF 2 pole* and *LPF -12dB* have the same gradient as the *LPF 4 pole* and *LPF -24dB*. Yet they sound different because of their different internal constructions: The first three filters in the list below have a softer, rounder character, whereas the filters in the second group sound rougher and more aggressive.

The following Lowpass Filters are available in ABSYNTH 4:

- LPF 2 pole, 2-pole lowpass filter with resonance controls with an analog design.
- LPF 4 pole, 4-pole lowpass filter with resonance controls with an analog design.
- LPF 8 pole, 8-pole lowpass filter with resonance controls with an analog design.
- LPF -6dB 1 pole lowpass filter with resonance controls
- LPF -12dB 2-pole lowpass filter with resonance controls
- LPF -24dB 4-pole lowpass filter with resonance

All of the Lowpass filters in ABSYNTH 4 contain the following parameters: Frequency Control allows you to enter the cut-off frequency in half-tones (*Trans*) or as Frequency (*Hz*). You can set the resonance through the Resonance and

Control (*Res*). With the Damping Control (in dB) you can balance out the volume level. If the signal level at the filter output seems too weak, increase the value.

## Bandpass



### Bandpass Filter BPF

Bandpass filters combine Highpass and Lowpass filters: They dampen all frequencies that lie outside a frequency range, which is defined by two cut-off frequencies. This means a particular frequency range is allowed to pass through, whilst lower and higher frequencies outside the range are suppressed.

ABSYNTH's Bandpass Filter *BPF* has the following parameters: Using the *Frequency Control*, the middle frequency is given in halftones (*Trans*) or as Frequency (Hz). With the *Q Control*, the limits on the bandwidth of the filter are established between 0.2 Hz and 1000 Hz.

## Highpass



### Highpassfilter HPF –6dB

Highpass Filters permit all frequencies *above* a cut-off frequency and suppress the frequencies below it. Their remaining functions are identical to those described in the section on “Lowpass.”

- HPF -6dB 1 Pole Highpass Filter
- HPF -12dB 2-Pole Highpass Filter with resonance controls

Using the *Frequency Control* you can give the cut-off frequency in halftones (*Trans*) or as Frequency (*Hz*).



### Highpass Filter HPF -12dB

The filter variant HPF -12dB provides the *Resonance Control (Res)* the additional possibility of adjusting the resonance.

## Allpass



### Allpass Filter Allpass 4

Allpass Filters, like ABSYNTH's Filters Allpass 2, Allpass 4, and Allpass 8 allow all frequencies through the output with equal strength, but reverse the phase of the signal. Allpass Filters allow you to be creative, as they can easily produce Phasing or Resonance effects. With Allpass Filters, the number of poles define the number of peaks in the frequency spectrum of the filtered signal. With high resonance values, an 8-pole Allpass Filter can sound very similar to a *glockenspiel*.

ABSYNTH 4 offers three Variants of Allpass Filters to choose from:

All Pass 2 2-pole Allpass Filter

All Pass 4 4-pole Allpass Filter

All Pass 8 8-pole Allpass Filter

Every Allpass variant shares the following two Parameters: Frequency Control allows you to choose the Cut-Off frequency in half-tones (*Trans*) or as Frequency (Hz). The Resonance Control (*Res*) allows you to insert the Resonance.

## Notch



### Band Elimination Filter Notch

*Notch* is a band rejection filter with resonance. Band Elimination filters work in the opposite fashion as Bandpass Filters: They only weaken frequencies within a particular frequency range, established by two cut off frequencies. Higher and lower frequencies can pass through unhindered.

Notch offers access to several Parameters. Using Frequency Control you can set the cutoff frequency in halftones (*Trans*) or as a Frequency (*Hz*). Use Resonance Control (*Res*) to set the resonance. **With the Bandwidth Control** (*b-width*) you can set the width of the suppressed bands in octaves.

## Comb



### Comb Filter

Comb Filters like ABSYNTH's Filter Comb change the sound by delaying the signal by a few milliseconds and then mixing the delayed signal with the original. Certain tones may increase in volume or be cancelled out as a result. Effects such as the Phaser and the Flanger use this phenomenon. With the Comb Filter, you can produce a Flanging Effect by modulating your parameters.

The Comb has the following parameters: With the Frequency Control you can set the cut-off frequency in halftones (*Trans*) or as Frequency (*Hz*). Feedback Control sets the level of the reverted, delayed signal and therefore defines to what extent a signal increases in volume or is cancelled out. With the option Damping Control (in dB), you can balance out any volume level fluctuations caused by the filter.

#### 4.4.4. Modulation Module

The Modulation Module uses its own built-in Oscillator in order to change and modulate incoming Signals.

##### General Function

As with the Oscillators in the *Oscillator Module*, use the *Waveform Popup Menu* to select or produce a Waveform. The Oscillator of the Modulation Module never produces an audible signal on its own – what you hear is the result of interaction between input Signal and the Oscillator of the *Modulation Module*.

##### Ringmod

The function Ringmod produces Ring modulation and is very similar to the Ringmod Mode of the Oscillator Module. The amplitude of the incoming Signal and the Signal produced by the Mod Oscillator are multiplied with one another. In *Ringmod Mode* the *Modulation Module* contains the following elements:

- Waveform Popup Menu: Click on the Waveform Popup Menu to open a Dialogue and select the Waveform for the Oscillator.
- Frequency Popup Menu and Frequency Control: Here you can define the frequency of the ring modulators. You can choose between different units (Hertz, Pitch, etc.) to change the Frequency.
- Balance Control: This control balances the incoming original signal and the modulated Signal.

##### Frequency Shift

In Frequency Shift Mode the Modulation Module produces a frequency shift. This resembles the frequency shift of the ring modulation, and it can also bring similar sonic results. From a technical point of view, there is the following difference: While a Ring Modulator produces sum *as well* as difference frequencies, the Frequency Shifter limits itself *either* to sum or difference frequencies. Practically, this means that the operating mode *Freq Shift* produces subtler, better to control effects than the operating mode *Ringmod*.

The Parameters in *Frequency Shift Mode* are:

- Direction Switch: If this button is on “+”, it produces Frequency Shift Control: Sum frequencies. If the button is on “-” the Module will produce difference frequencies.
- Waveform Popup Menu: Click on the Waveform Popup Menu to open a dialog where you can choose the waveform for the Oscillator.

- **Frequency Popup Menu and Frequency Control:** Here you can define the frequency of the modulator that is responsible for the shift in frequency of the input Signal. You can choose different units (Hertz, Pitch, etc.) to change the frequency.
- **Feedback:** Light dissonance (relative to the input frequency with low Feedback can cause a steadily rising or falling Phasing effect. Very low frequency settings (e.g., 1 Hz) can lead to similar effects.

Because there is no interference between sum and difference frequencies, Freq Shift frequently sounds cleaner than Ringmod in situations involving complex input signals (e.g. Samples, saw tooth waveforms).

---

**Tip:** Frequency shifting is not the same as Pitch Shifting. In Pitch Shifting the Pitch Shifter multiplies the frequencies contained in a Signal by a known factor, as a result, harmonious relations between the frequencies remain. A frequency shifter, by contrast, attaches a known value to the frequencies contained within a signal and thus alters the harmonious relations.

---

#### 4.4.5. Waveshape Module

The Waveshape Module uses a waveform to form an input signal. This idea is used in guitar amplifiers and distortion effects. Waveshaping reacts to the amplitude of the input signal; the sound changes depending on the volume envelope of the Oscillator or an Oscillator-Volume controller in some other form. Additionally, waveshaping emphasizes Phasing and Detuning Effects in the Signal.

#### General Function

You can always use the Waveshape Module when you want to enrich a signal with harmonics. The spectrum goes from subtle density to cutting distortion. The waveshaper reacts to changes in the amplitude. The level of distortion changes with every fluctuation of the input signal so the effect sounds very energetic. The value can be modulated in *Phase Control*.

#### Parameters

- **Waveform Popup Menu:** With a click on the Waveform Popup Menu open a dialog in which you can choose the waveform for the Oscillator. The selected waveform defines the character of the distortion. Produce a new waveform for the wave shaping and work on it in Spectrum Mode,

in the Wave Window, in order to make yourself more comfortable with the effect of the module.

- In dB Control: Defines the input level of the waveshaper in decibels. An increase in value usually strengthens the distortion. This strengthening is not linear, however, and depends on the selected waveform and the value in Phase Control – experiment on an individual basis with the different settings to get the sound you want.
- Out dB Control: Defines the output level of the waveshaper in decibels. Here you can reduce the level of a signal when the waveshaper makes it very loud.
- Phase sets the phase of the waveform. This parameter has an extreme effect on the sound especially when working with complex waveforms. These react very sensitively to any manipulation of Phase.

## 4.5. Effect Window



In the *Effect Window* you can manipulate all of the settings for ABSYNTH 4 effects: Here you find the switch allowing you to assemble the Effect-section in the signal flow. You can further determine which effect should be applied to the signal produced by the Oscillator Modules. The individual parameter settings can be determined here as well. The Input-Mixer allows you to adjust the level of the Patch Window's individual channels. On the output side, the *Effect Window* informs you on the currently selected Surround Configuration. Lastly, it also allows you to establish a link between the effects and the ABSYNTH 4 functions for automation and control.

### 4.5.1. General Interaction

The *Effect Window* is divided into several sections: on top you find the elements for using the basic functions, e.g. the On/Off button for the entire Effect section and the Input Mixer. In the lower *Master* section you have access to the different parameters, which allow you to regulate the active effect's main parameters. In the case of the effect called *Echoes*, we have the maximum delay time. The lower section features the special parameters allowing a more differentiated intervention into the sound event, such as the delay times for the single delay lines of an echo-effect.

### Change of Status and Selecting an Effect

The *Effect Section On/Off Switch* turns the Effect section on and off. If you use a simple sound without effects, you can reduce the CPU load caused by ABSYNTH 4. To turn the Effect section on or off, click on the colored field labeled *Effect* (directly underneath the *Navigation Bar's File Popup Menu*). If you turn the *Effect Module* in the *Patch Window* on or off, it has the same effect on the operating status of the Effect Window.

In the same section you find the *Effect Mode Selector*, a list of five available types of effects. To choose an Effect mode, click on the name of the desired effect. Only one effect can be active at any given time. In the list, the currently active effect mode is marked by a status light and is highlighted. Each newly selected effect is reflected in the lower section of the Effect Window, where the individual parameters of the selected effect are indicated.

### Signal Pathway

The *Input Mixer* on the right next to the *Effect Mode Selector* controls the level of the signals produced by the oscillators in the *Patch Window*. The *Patch Window* is, as you know, divided into three *Channels* and a *Master Channel*. Usually the *Effect Module* always occupies the last place in the *Master Channel* and is hence the last module in the signal path for the three *Channels A, B* and *C*. Additionally or alternatively you can also feed the signals from *Channels A, B* and *C* directly into the *Effect Module*. The individual *Channels'* and the *Master Channel's* levels can be regulated with *Input Mixer's Channel Input Level Controls*. The levels of all four signals linked to the *Input Mixer* can be modulated through *Macro Control*, creating a very lively sound – see also the two sections below and chapter 4.9 of this manual.

If you select the signal-flow variant going through the *Input Mixer*, the signal runs, after the mix, through two series of connected filters, which define the frequency bandwidth to be manipulated. A Lowpass first defines the upper

cut off frequency for the frequency band: all frequencies below the Cutoff frequency selected in the *Input Lowpass Frequency Control* can pass through freely. Subsequently a Highpass defines the cut off frequency at the lower end, by only letting through frequencies lying above the Cutoff set in the *Input Highpass Frequency Control*.

With its two Parameters Wet and Dry, the *Input / Output Mixer* controls the level segments of the manipulated and not manipulated signal at the Effect Module's output signal: With the *Wet Level Control* you can regulate the part of the effect-manipulated signal, with the Dry Level Control the part of the not manipulated input signal.

In the *Surround Area* – the section with the central ring – you can see which surround configuration has been selected for the hardware. Depending on the number of active audio-output channels, the ring features up to eight points. The arrangement of points corresponds to the selected channel configuration. Further details on the available surround configurations can be found in Chapter 1.1.

## Macro Control Area



In the *Control Area*, on the right in the Effect Window's upper section you can select one of the *Macro Controls* and define how the effect should react to the arriving control information. You can regulate two parameters: *Depth Control* fine-tunes the modulation depth, that is, the intensity affecting the incoming control information. The depth of this modulation can be regulated through the several *Sensitivity Controls*, which will be described in the next paragraph. The *Lag Control* values determine the sluggishness with which the effect parameters react to the control information.

You can use the *Macro Control* function to modulate certain parameters depending on the effect type, for example the delay time in the types *Multitap* and *Echoes*. Related details can be found in the following section.

You can assign the Parameters of each effect type in the Master section independently of special Parameters to a Macro Control. Right-click and select the desired *Macro Control* from the context menu.

## Modulation and Sensitivity Control

The *Sensitivity Controls* limit the signals received via *Macro Control* to a certain value. With the *Sensitivity Controls* button marked *Ctrl Sens*, you can set the percentage of a parameter value to be changed through the control signal.

This can be best explained through an example: In the case of the Effect Type *Echoes* the settings could be:

- Master Time Control = 0.5 seconds
- Time Control Echo 1 = 0.5
- Sensitivity Control Echo 1 = 0,75

This has the following consequence: Echo 1 has a delay of 50% of the value of half a second set in the *Master Time Control*, i.e. 0.25 seconds. The modulation signal received through the *Macro Control* can change this value to 75% (hence :  $0.25 \cdot 0.75 = 0.075$  seconds, at a maximal signal value of 0.25%. If you click on the *Inversion Switch*, the parameters act in exactly the opposite fashion: a minimal value of the control signal sets the delay to 0.25 seconds, the maximum signal value results in a delay of 0.075 seconds.

### 4.5.2. Pipe



The effect type *Pipe* replicates the physical qualities of resonating bodies and resembles a simple waveguide application. Unlike waveguides based on physical modelling, ABSYNTH's pipe algorithm does not attempt to realistically simulate existing instruments or other natural resonating bodies. It is helpful to imagine *Pipe* as a kind of string or pipe.

Let's stay with the image of a string. A loudspeaker (a contact loudspeaker) is connected to a string, which begins to vibrate as a result. You can determine the position of this virtual loudspeaker on the string via the parameter *Input position*. Above the string are two pickups, similar to an E-Guitar. The pickups' positions can be determined through the parameter *Output positions*. Changing

those two parameters can be compared with changing two microphones. You can modulate the string's length and the pickups' position through the LFOs or a MIDI Controller. This way, various Flanging-, Pitch-Shifting- und Rotary-Speaker effects can be achieved. These effects are particularly apparent when the modulation of the pickups are modulated in opposite directions.

When modulations are applied to the Parameters of the *Pipe* effect, consider the following: When one of the *Output* positions crosses the *Input* position (when loudspeaker and pickup would directly be facing each other) a muffled side tone can be heard. By modulating the Parameter called *Length*, which relates to the string's length, the crossing values for *Length* and *Input* can produce a muffled click. However, it is not a problem to cross the *Output positions*. The graphic representation of the effect *Pipe* shows the current settings of the parameters for *Input position*, *Output position* and *Length*, as well as for the adjacent modulations. It should help you to prevent undesired crossovers with the *Input position*.

---

**Tip:** LFO modulation in opposite directions of the output positions deliver interesting Panning effects. If the two points intersect, the sound characteristics become mono.

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## Parameter

Parameter for the *Master Section*

- **Beat Switch:** With the Beat Switch you select, whether the value in Time Control should be indicated in seconds, or tempo-related in beats (quarter-notes) per minute.
- **Master Length Control:** determines the virtual string's maximum length. In terms of application this means: that's where the maximal delay can be set.
- **Master Sensitivity Control:** defines the Macro Control's impact on the value of the Master Length's parameter in its percentage.
- **Inversion Switch:** If you turn on the Inversion Switch, the effect of the control signal received via the Macro Control is inverted (see the section on Modulation und Sensitivity Control)
- **Master Feedback Control:** determines the level of the feedback signal in percentage of the original level; at higher values, the virtual string resonates longer, at lower values it is silenced faster
- **Lowpass Control:** defines the cutoff-frequency of the Lowpass filter, through which the feedback signal passes (in Hz). It changes the string's sustain characteristic.

Parameters for the Pipe Section:

- Input Position: Control defines the position for the element that animates the virtual string to vibrate
- Output Position Control: L/R defines the position for the two pickups L und R.
- Sensitivity Control: determines the impact of the control signal received via the Macro Control on the value of the output position controls, i.e. the position of the pickups in percent.
- 

4.5.3. Multicomb



Der The effect *Multicomb* offers up to six independent Delay Lines, that are based on combfilters that use Lowpass filters in the feedback loop. Multicomb specializes in modulation effects, and with the parallel series combfilters and an appropriate modulation source, you can easily achieve flanging and other effects based on phase shifts. For subtle to moderate phase modulations, choose medium values. High feedback rates meanwhile, produce tuneable resonance effects that sound like accords.

Parameter

The parameters in the *Master Section* are:

- Beat Switch: By selecting Beat Switch, you can determine whether the value in Time Control is indicated in seconds, or is tempo-related and measured in beats (quarter-notes) per minute.
- Master Time Control: determines the maximum delay of the feedback signal, i.e. the combfilter's frequency. A high value results in a long delay and thus a long vibration, i.e. a deep frequency.
- Master Feedback Control: defines the maximum level of the feedback

signal, as a percentage value related to the original signal's level. At high levels, the combfilter has a high resonance, and the sound's overtones produce a saw-tooth curve.

- Master Lowpass Control: determines the cut-off frequency of the Lowpass filter, which is run through via the feedback signal (in Hz).

The parameters in the *Comb Section* are:

- On/Off Switch: allows each of the six comb filters to be turned on or off.
- Time Control: defines the frequency (and hence the delay time) of the respective comb filter. This is measured in percentage, and correlates to the value you have selected in the Master Time Control.
- Sensitivity Control: defines (as a percentage) how the Macro Control's control signal affects the Time Control of the comb filter.
- Inversion Switch: If you turn on the Inversion Switch, you invert the effect of the Macro Control's control signal (see the section on Modulation und Sensitivity Control)
- Feedback Control establishes the feedback signals' level of every individual filter as a percentage, which correlates to the value you choose in the Master Feedback Control.
- Lowpass Control: controls the cut-off frequency of each Lowpass filter. This is measured in percent, which again correlates to the value set forth in the Master Lowpass Control.
- Gain Control: determines the level of each respective comb filter signal at the output signal in dB.
- Pan Control: positions the signal of the respective comb filter within the panorama of the output signal. The value 0 corresponds to the position on the extreme left and 1 corresponds to the position on the extreme right. 0.5 corresponds to the middle position.

## 4.5.4. Multitap



*Multitap* is a simple delay with three taps. The delays vary from one sample to 10 seconds. The input signal is delayed and transferred to the output according to the time set for the tap. This triples the transmitted signal. *Multitap* requires slightly more CPU power than *Multicomb*, but offers longer delay times and more modulation options.

Interesting effects can be achieved by re-routing the delayed signal after the first tap back into the input. This way, dense delay clusters can be produced. For the modulation sources of ABSYNTH 4, *Multitap* is an attractive option: Try to shift the positions of the three taps during the tonal progression through an envelope or an LFO. By setting the modulation source on the three taps' *Pan Controls* and feeding the *Effect Module* with short, differentiated sounds, the signals will move around in a more powerful way.

### Parameter

Parameters in the *Master Section*:

- Beat Switch: With the Beat Switch you can choose whether the value in Time Control is given in seconds or is tempo-related in beats (quarter notes) per minute
- Master Time Control: determines the maximum delay of the three taps
- Master Lowpass Control: determines the cut-off frequency of the lowpass filter, which the feedback signal runs through (in Hz).

Parameters in the *Tap Section*:

- Time Control determines the delay of each respective tap in percent of the value selected in the Time Control in the Master Section
- Sensitivity Control: defines the impact of the control signal received via Macro Control of each tap's Time Control (in percent).

- Inversion Switch: Turning on the Inversion Switch inverts the impact of the control signal received via Macro Control
- Gain Control defines the signal proportions for each tap at the output in dB. For example, a value of  $-6\text{dB}$  reduces the level by half.
- Pan Control positions the respective combfilter's signal in the panorama of the output signal. A 0 value corresponds to a position at the extreme left, 1 to a position at the extreme right and 0.5 to the middle.
- Feedback Control: This parameter exists only for the first Tap. It regulates the level of the signal, which is re-routed to the input, as a percentage of the original signal's level.

### 4.5.5. Echoes



The *Echoes effect type*, as its name indicates, manages the classic echo-effects. The input signal can be delayed individually in up to three signal paths. This means the signal for each active delay path runs successively through the Lowpass, Highpass and Allpass filters. The three Panorama switches enable the three delay paths' output signals to be separated. The signal manipulation here is particularly interesting: the adjacent signal is directly routed to the output (Parameter *Gain*). At the same time, it is sent back to the input of the respective echo path by way of the *Feedback* function. An echo can lose high and low frequencies when sent through a filter and thus sound duller or more **ethereal**. **The Allpass filter can produce phase shifts, which produces** some interesting results, particularly using short delay times. These filter parameters can also be modulated using the *Macro Controls*, which increases the number of possibilities.

The user components in the *Master* section (*Time*, *Feedback* and *Beat Switch*) function in the same way as the *Multicomb* effect. Each of the three delay lines has the same set of parameters: *Tie*, *Feedback*, *Sensitivity Control*, *Gain* and *Pan*, which work in the same way as their equivalents in the effect types *Multicomb* and *Multitap*. The allpass filter's parameters in the *Echoes* effect achieve the most striking results if modulated by an envelope.

## Parameters

### Parameters in the *Master Section*:

- **Beat Switch:** With the Beat Switch you can choose whether the value in Time Control is given in seconds or in beats (quarter notes) per minute
- **Master Time Control:** determines the maximum delay of the three taps
- **Master Feedback Control:** defines the feedback intensity. Range: 0.0 to 0.999.

### Parameters in the *Echo Section*:

- **Time Control** determines the delay of each echo (in percent) relative to the value set in Time Control in the Master Section
- **Sensitivity Control:** changes the impact of the control signal (received via Macro Control) on the echo's Time Control (in percent), by the value you set.
- **Lowpass Control:** determines the cut-off frequency of the Lowpass filter that is applied to the signal in the feedback loop. The value in Lowpass Control can range from 1.0 to 22050 Hz.
- **Highpass Control:** determines the cut-off frequency of the Highpass filter that is applied to the signal in the feedback loop. The value in Highpass Control can range from 1.0 to 22050 Hz.
- **Allpass Control:** determines the cut-off frequency of an Allpass filter, which is similar to the Allpass 4 function in the Filter Module in the Patch Window. Allpass filters let all frequencies pass through, but change the signal's phase depending on the filter frequency. The Allpass filter produces its most impressive results when the parameters are modulated, thus creating phasing effects.
- **Gain Control:** defines the output signal's level of the respective echo (in dB). A value of -6dB reduces the signal level by half.
- **Pan Control:** positions the respective echo signal in the panorama of the output signal. A 0 value corresponds to a position at the extreme left, 1 a position at the extreme right and 0.5 to the middle.
- **Feedback Control:** sets the level of an echo's signal, which is routed back to the input, as a percentage of the original signal's level.

## 4.5.6. Resonators



The effect type *Resonators* offers access to three “resonating bodies” (*Resonators*). These *Resonators* can produce delay- and hall-effects, or simulate the sound of specific objects such as metal bars, brake drums and bottles.

ABSYNTH 4 actually offers you three *Resonators*, which allows you to combine many different effects. Imagine for example an almost infinite hall-like effect, accompanied by a shorter, brighter sounding Room effect.

### Parameters

There are six Master parameters that affect all three resonators:

- Size Control: sets the maximum delay-length between 0% and 100%
- Feedback Control: controls the feedback quotient from: 0 to 100.
- Tone Control: controls the filters inside the resonators. The effect this has depends on which feature is selected in the Mode Popup Menu (see below).
- Drive Control: regulates the input’s recording level. This parameter determines the input signal’s degree of saturation. If a high recording level distorts the signal, the resonators react differently to when stimulated by a clean signal. This is a very powerful setting, since it also affects all other parameters.
- Predelay Control: sets the delay in milliseconds, before the onset of the resonator-effect.
- Diffusion Control: creates random delay variations. A good adjustment will reduce how much the resonator “rings” less, and higher values make it sound grainier. Range: 0 to 100.
- ER Switch: turns the “early reflections” on or off.

Additionally, each resonator has its own parameters:

- Mode Popup Menu: Select one of the following main features:
- Raw: dampened delay. The sound flutters and is less diffuse
- Natural: more diffuse variation. Sounds rather dark.
- Resonant: more diffuse, brighter sound.
- Synthetic: like resonant, just more extreme. The parameter Tone Control (see above) produces very different effects depending on which operating mode you are using. Have an experiment with this parameter's extreme settings.
- Size Scale Control: The resonator size is determined by the value set by the Master-Parameter Size multiplied by the setting selected under Size: Scale.
- Size Shape Control: allows you to adjust the various delay ratios. For a hall effect, changing this value would be like changing the space volume or -form.
- Size Ctl Control: adjusts the sensitivity of the parameter. Size reacts to LFO or MIDI modulation commands. The Invert Switch inverts the sensitivity.
- Tone Scale Control: The sounds created here are the result of a fixed Master Tone value multiplied by the setting selected in Tone Scale Control.
- Tone Spread Control: Increasing the value of this produces a more diffuse sound and also reduces feedback.
- Tone Ctl Control: Defines how sensitive the parameter Tone reacts to LFO or MIDI modulation commands. The Invert Switch inverts the sensitivity.

## 4.6. Wave Window

In the *Wave Window* you can manipulate your own waves with one of the *Waveform Popup Menus*. As you may remember, *Waveform Popup Menus* can be found in the *Oscillator Modules*, in the *LFOs* and in the *Waveshaper Module*. Through them, you can select existing waves or create new ones. They are divided into three categories:

- Simple Waves: are monocyclic waveforms, read from a wave table. In principle, they are tiny samples containing exactly one period of the relevant waveform. Next to the standard forms Sine, Triangle, Saw and Square you can also find atonal and instrument-like forms.

- **Morph Waves:** are waves using the function Wave Morph (see section 4.6.5). Technically speaking they are two waveforms stored in one file that have been “morphed” together.
- **Library Waves:** are the Factory-waves of the ABSYNTH 4 Universal Library.

#### **4.6.1. Waveform View, Spectrum View, Morph View**

In the *Wave Window*, the tabs give you access to three views: *Waveform View*, *Spectrum View* and *Morph View*. Click on one tab to access the work area you want to view.

In the *Waveform View* you can edit the time component of a waveform, and in the *Spectrum View* you can edit its harmonic component. In the *Morph View* you can merge two waves into a *Morph Wave*. You can find out more on the *Morph Wave* in section 4.6.5. **All the instruments that we will now look at, work in real-time.** You can play a sound, edit a waveform and hear the results immediately.

#### **4.6.2. Creating new Waves**

To create a new wave, click on the *Waveform Popup Menu* in a module using *Waveforms*. A window opens. First click on the button marked *Single*, *Morph* and *Library*. This is where you can create a new *Wave*. Then click on the *New Wave Button*. A new *Wave* is created. It is a copy of the waveform selected in the *Waveform Popup Menu*. This allows you to quickly create variations of already existing waveforms. Please note however, that this is in fact a new waveform. It is completely independent for editing after being copied from the original. To edit the original, select *Edit Wave Button* in the *Waveform Popup Menu*. After a click on the *New Wave Button*, ABSYNTH 4 switches to the *Wave Window* and displays in it the newly created *Wave*. Each Preset can contain up to eight waveforms that you have created yourself. User-defined waveforms are only available in the Preset where they were created. Other Presets cannot access them. You can however easily manage them centrally in ABSYNTH’s 4 Universal Library.

### 4.6.3. Editing Waves



In *Waveform View* you can edit the amplitude and the envelope of the waveform on display. You can create your own *Waves* completely from scratch using different tools, or change existing *Waves*. In the section below you will learn about the instruments and options available to you in the *Waveform View*.

#### Tools in the Waveform View



- **Line Draw Tool:** This tool allows you to build a waveform with straight lines. The line starts at the point of origin, marked by a vertical bar through the waveform display. On the time-axis displayed at the top of the window, you can move the point of origin with the mouse.
- **Curve Draw Tool:** constructs the waveform using semi-cosine curves. This functions exactly like the Line Draw Tool.
- **Stretch Tool:** If you select this tool, two vertical lines appear at once. Clicking on or dragging the wave with the mouse stretches or compresses it within the lines. The squares can be moved along the time-axis to select different areas.
- **Amplification Control (dB):** sets the wave's amplitude (in dB)
- **Offset Control:** allows you set the amplitude's offset in relation to the zero-axis. A double-click on Offset Control centers the waveform around the zero-line.

## Transform Popup Menu (Waveform View)

- **Normalize:** normalizes the waveform's amplitude: the current waveform's minimum and maximum values are adjusted to the maximum value range. If you normalize each waveform you will always obtain the same volume, no matter which waveform is selected.
- **DC Offset:** this function assures that the waveform's energy will be evenly distributed between its positive and negative sections. This is different from centering the waveform through the Offset Control.
- **Offset Phase...:** allows you to programme a phase offset for the waveform.
- **Invert Phase:** inverts the waveform's phase.
- **Reverse:** reverses the waveform.
- **Mix...:** opens a window where you can mix the waveform with another one, selected from the Waveform Popup Menu. The following parameters are available in the Mix... Dialog:
  - **dB A:** determines the level of an existing waveform.
  - **dB B:** determines the level of the waveform to be mixed.
  - **Phase B:** defines the phase position of the waveform to be mixed, in relation to the existing waveform.
  - **Freq Ratio B:** defines the frequency ratio between the waveforms.

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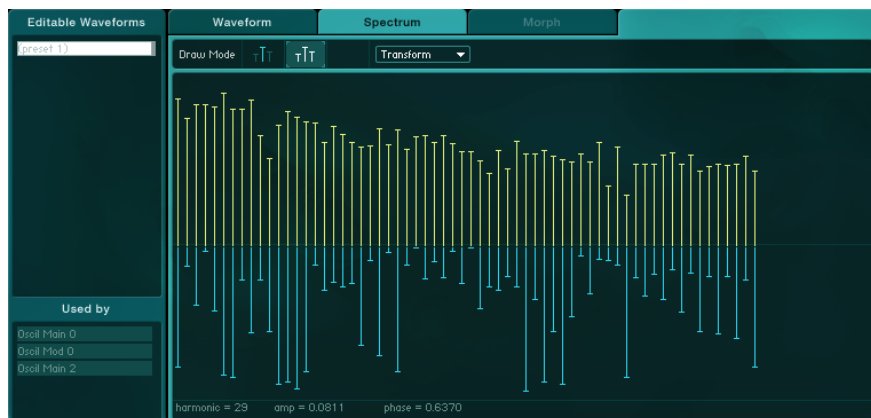
**Tip:** You can use the parameter Freq Ratio B to produce accords based on intervals of harmonic series. If you repeat the mixing procedure several times with a different frequency setting, you will add new notes to the accord.

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- **Fractalize...:** The Fractalize function allows for extraordinary waveform manipulations and is particularly good for creating powerful, organic waveforms. The parameters are:
  - **Iterations Control:** controls how detailed the waveform's manipulation is.
  - **Displacement Control:** changes the fractalized waveform's basic shape.
  - **dB Control:** controls the fractalization's intensity – the higher the value, the richer the sound in overtones and noise.

- Filter: applies a filter to the *Wave*. In the *Filter Popup Menu* you can select one of the following filter types:
- Lowpass 1st order: is a Lowpass filter with a slope gradient of – 6 dB per octave.
- Lowpass 2nd order: is a Lowpass filter with a slope gradient of – 12 dB per octave.
- Highpass: is a Highpass filter with a slope gradient of – 6db per octave.
- Frequency Control enables you to set the filter's cut-off frequency. Lowpass filtering of waveforms is the best way to prevent undesired aliasing effects.
- FM: Frequency modulation; the current waveform serves as carrier. This dialog allows you to change the following features:
- Waveform Popup Menu: select a modulator waveform from the Waveform Popup Menu
- Modulator Frequency Control: defines the frequency ratio between modulator and carrier.
- Modulation Index Control: determines the FM's intensity.
- Carrier Frequency Control: defines the carrier's frequency ratio
- Mod Phase Control: regulates the modulator's phase.
- Load...: loads a waveform and replaces the existing waveform.
- Import from audio file...: loads the first 1024 samples from an AIFF- or WAV file as a waveform.
- Load Template...: retrieves a saved waveform from ABSYNTH's Universal Library.
- Save as Template ...: saves a waveform in ABSYNTH's Universal Library.
- Clear: produces silence.

## 4.6.4. Spectrum Edit



The *Wave Display Area* in *Spectrum View* displays the edited waveforms' first 64 harmonics. The top half of the display shows the harmonics' amplitude, the lower half their phase. At the bottom of the window you can see – depending on the mouse position – the harmonic's number as well as its amplitude and phase. Harmonics above the 64<sup>th</sup> will be retained, although they can not be accessed in *Spectrum View*.

Hint: Some might think that a harmonic's phase is not perceptible, but this is incorrect. Although the phase is less audible than the amplitude, a change of a harmonic's phase with a complex waveform can be clearly noticed in the sound. In the following section you will learn about the tools and options available in *Spectrum View*.

### Tools in Spectrum View



- Single Harmonic Draw Tool: This tool enables you to draw different amplitudes and phases for a harmonic. This can be used for precise manipulations.
- Multi Harmonics Draw Tool: This tool enables you to draw the amplitudes and phases for several harmonics at the same time.

### Transform Popup Menu (Spectrum View)

- Invert phase: inverts the phases of harmonics.
- Shift harmonics: shifts the entire form of the spectrum to the left or to the right.

- Load...: loads a random waveform and replaces the existing waveform.
- Load Template: opens a dialog and lets you select and load a Wave from the Universal Library. Select the Wave you want to load. Click OK to load the Wave into the Wave Editor.
- Save as Template: saves a waveform in ABSYNTH's Universal Library.
- Clear all: sets all amplitudes and phases to zero.
- Clear amplitude: sets all amplitudes to zero.
- Clear phase: sets all phases to zero.

#### 4.6.5. Wave Morph

A new addition to ABSYNTH 4 is the Wave Morph function, which allows you to “morph” two waveforms into one new Wave. The two Waves combined in a Morph Wave remain completely independent however, and can still be edited individually in the Wave Window. If you load a Morph Wave into an Oscillator Module or into a similar module, the new waveform (created via morphing) will be the one used. You can, of course, freely modulate the Wave Morphing's parameters. That way, you create lively, dynamic sounds that can change subtly or even take on a completely new character while being played. It's up to you!

Loading a *Morph Wave* differs from loading a *Simple Wave*. First, you have to enter *Morph Wave* as the *Wave* type in the *Waveform Popup Menu*. Click on *Morph Wave* in the *Waveform Selection Dialog*. The list of *Morph Waves* appears. When you click the *New Wave Button*, you create a new waveform that uses the selected waveform as its model. As a result, the *Morph Wave* is loaded into the *Wave Window* automatically. You have the same options for editing the two waveforms as with *Simple Waves* (previous chapter): you can edit the simple waves in *Waveform* and in *Spectrum View*, and you can switch between the two waveforms using the *Wave 1* and *Wave 2* buttons in the tab bar. The distinguishing feature of the *Simple Waves* is in *Morph View*. It determines how ABSYNTH merges both waveforms into a single one.

Click the *Morph Tab*, to show the *Morph View*. The *Wave Display* in this view is divided horizontally into three sections: At the top you can see *Wave 1*, in the middle *Wave 2*, and at the bottom the resulting *Morph Wave*.



The morphing happens over two parallel processes, which are controlled by *Transition Control* (between *Wave 2* and *Morph Wave*). At a 0 value only *Wave 1* will be used, at the value of 100 only *wave 2* is active. In between, the waveforms can be cross-faded, compressed and extended.

The first step is quite simple – it is the usual method for mixing both waveforms: if the *Transition Control* is set at 50, exactly 50% of each original wave is contained in the resulting *Morph Wave*.

Cross fading becomes more flexible through the *Anchor Points*, and can be used in various ways for designing waveforms. As you can see in the picture, two vertical *Anchor Points A* and *B* divide the *Wave* in the upper sections *Wave 1* and *Wave 2*. Through these *Anchor Points*, you can determine the segment of both waves: both waveforms are divided into segments A to B and B to A. Please note, that the waveforms are single cycles of one continuous vibration. The waveforms don't end at the display's left and right sides, but are continued on the opposite side. That is how segment B to A is created. During morphing, equivalent segments are put into correlation with each other, i.e. segment A to B from *Wave 1* with segment A to B in *Wave 2*.

This becomes important when you move the *Anchor Points*: click and drag the *Anchor* on the upper end to move it. This allows correlated segments to vary considerably in length. By adjusting the segment's length with the *Transition Control*, this change in length is now integrated into the morphing. On a practical level, this means that at a value of 0, the wave quotient of the segment between A and B from *Wave 2* will be compressed or extended to fit the length of the corresponding segment of *Wave 1*, depending on aspect ratio. Inversely, at a value of 100, the wave quotient between A and B from *Wave 1* will be stretched or compressed to fit the segment length in *Wave 2*. The same applies to the segment between B and A.

You can make these distortions even more flexible, if you increase the number of Anchor Points. In the *Anchor Points Popup Menu* you can select whether you want two, three or four Anchor Points to appear in each of these waves, allowing you to create more segments.

The effects of manipulating the waveform-segments are not as apparent as you might assume after reading the section above - since the usual mix of both waveforms takes place at the same time: if *Wave 2* is compressed and extended to a maximum, it is also simultaneously leveled down to 0% in its resulting wave. Correspondingly *Wave 1* is not present in the mix, if it is manipulated by a *Transition Control* value of maximal 100.

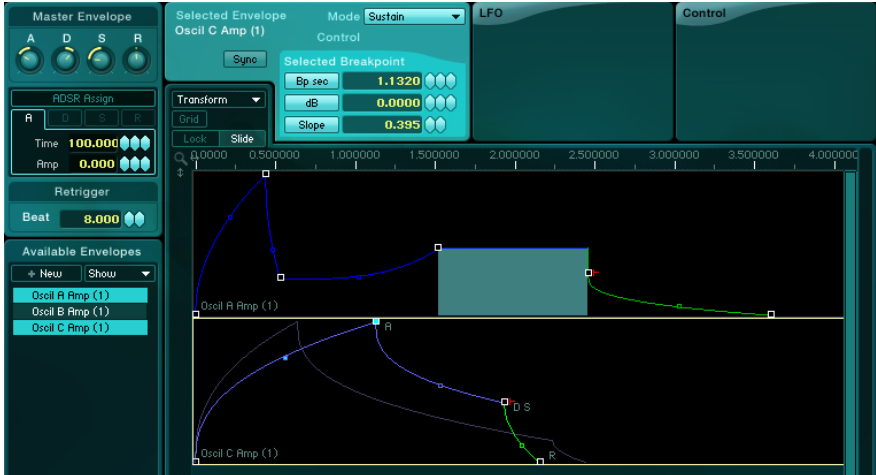
The quick introduction in section 3.4.3 is also devoted to Wavemorph, and the technical description is accompanied by illustrations of the resonating result.

The switching of the anchor points has a useful effect on the resulting waveform; it makes morphing a subtle design tool. The modulation of *Transition Control* through a *Macro Control* (see section 4.9.2) is particularly interesting. You can, for example, switch easily between two very different waveforms that you want to use as sound source in an oscillator. There are many more possibilities than simply fading in and fading out. Both waveforms are mixed in a non-linear way.

As another example, you can also use a *Wavemorph* in a *Waveshape Module*.

The *Waveshape Module* reacts in a very sensitive way to jumps in the waveform (such as those present in a square wave), Morphing enables you to achieve an extensive sound variance by continuously stretching and compressing - i.e. shifting and distorting those jumps.

## 4.7. Envelope window



ABSYNTH 4 provides *Envelopes* with up to 68 *Breakpoints* for modulating the parameters. These *Envelopes* are extremely flexible and offer a variety of extraordinary options.

### 4.7.1. Fundamentals for Operation

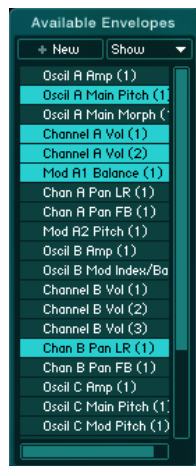
It is standard that every oscillator has an amplitude envelope. The amplitude envelopes have a special status because they define whether or not a voice is calculated or not. As soon as all amplitude envelopes of one voice have reached their last Breakpoint, the calculation is stopped, reducing the CPU burden.

When an envelope modulates a parameter, the value set in the Patch-Window, represents the maximal value of the envelope. The envelope can reduce this value but cannot increase it. For example: If a filter that has a frequency of 5000 Hz is modulated by the envelope, then the envelope works between the range of 5 Hz to 5000 Hz.

### Zoom-Function

You can see the scales for amplitude and time on the top-left of the envelope representation, marked by the magnifying glass icon. Move the mouse in these zones to zoom in on the horizontal and vertical representation of the envelopes. It is possible to zoom in on the time-axis to such a degree, that one pixel corresponds to one sample.

## Envelope List



The *Envelope List* contains all assigned *Envelopes*. Selected *Envelopes* are displayed in the *Envelope Display*, while deselected ones are blanked out. The names of the envelopes inform you about the module type (*Oscil*, *Filter*, *Mod*), *Channel* (A, B, C, Master) and target parameter. To choose an envelope for viewing in the *Envelope Display*, just click on it with the mouse. You can select consecutive entries from the list by holding down the Shift key and clicking on the highest envelope followed by the lowest. To select several non-consecutive entries from the list, hold down the option-key (Mac OS) or Ctrl-key (Windows).

The *Envelope List* has two menus:

- **New Envelope Popup Menu:** here you can create a new envelope. Click on the New Envelope Popup Menu to open a window where you can select a Parameter to create an envelope. Choose the Module by clicking on the desired entries, first in the left column, then on the Parameter in the middle column. Only the relevant Parameters appear in the Parameter List. For example, if an oscillator is working in Single Mode, the parameter FM index is not displayed. If you switch the oscillator to FM Mode, the Parameter is visible. You can see a preview of the currently selected Envelopes below the three columns.
- **Show Popup Menu:** The Show Popup Menu offers a quick way to fade in and fade out different groups of envelopes in the Envelope Display. This way you can always keep an eye on the envelopes you want to see at any given time, and do not have to constantly consult the scroll bar

in the Envelope Display. Click on the Show Popup Menu to access a list of following display options:

- All displays all Envelopes that are used in the current preset.
- None blanks out all Envelopes that are used in the current preset.
- Channel A displays all Envelopes that belong to the Modules in Channel A of the current preset.
- Channel B displays all Envelopes that belong to the Modules in Channel B of the current preset.
- Channel C displays all Envelopes that belong to the Modules in Channel C of the current preset.
- Master Channel displays all Envelopes that belong to the Modules in the Master Channel of the current preset.
- All Oscil displays all Envelopes that belong to the Oscillator Modules of the current preset.
- All Filter displays all Envelopes that belong to the Filter Modules of the current preset.
- All Mod displays all Envelopes that belong to the Modulation Modules of the current preset.
- All Waveshape displays all Envelopes that belong to the Waveshape Modules of the current preset.
- All Effect displays all Envelopes that belong to the Effect Window of the current preset.

### **Selection of a Envelope**

You can select an envelope for editing by clicking on the envelope image. The name of the selected envelope is then highlighted.

### **Copying and Inserting of Envelopes**

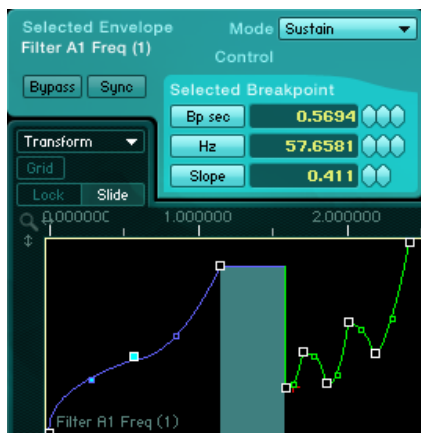
To copy an envelope, select the entry *Copy Envelope* in the *Edit Menu*. Then click on the targeted envelope and choose *Paste Envelope* in the *Edit Menu*.

### **4.7.2. Breakpoints, Transitions/Steps, Sync**

The Breakpoints represent target points on the time axis and therefore affect the previous gradient-segment. Click on a designated envelope to select it for editing, and choose from the following features in the *Selected Breakpoint Area*.

- Abs/BP Time Control: determines the duration (in position Bp sec) that the parameter lasts before reaching the Breakpoint on the amplitude value. Enter the duration in seconds. If you click on the Toggle that is labeled with Bp sec, you can insert the duration as an absolute value (based on the beginning of the Envelope).
- BP Amplitude Control: defines the amplitude for the selected Breakpoint. You can either insert a value directly in dB (on a scale of 0 dB to -96dB) or adjust a percentage with 0 dB as the relation point. To switch between dB and %, click the BP Amplitude Toggle.
- Slope/Step Switch with Slope Control: With the Slope/Step Switch you can influence the transition between the previous Breakpoint in the envelope path and the selected Breakpoint: The position Slope represents the typical wave shape; with the value in Slope Control you can determine the slope of the curve progression. In the position Step, the change in value jumps, and instead of the curve you will see a colorful rectangle between the previous and the selected Breakpoint. Drag the rectangle upward, with the mouse button held down, to boost the value in the specified division. Drag it downward to diminish the value. You can also change the horizontal dilation (i.e. how long the value lasts), by moving the Breakpoints, which mark the corners of the Step-rectangle. Just hold down the mouse button.

These three parameters allow you to position the Breakpoint very precisely. You can also move the Breakpoint with the mouse to determine its amplitude and position directly. You can move several Breakpoints at the same time by using the Shift-click or by clicking and drawing the selected area above the part of the Envelope that contains the relevant Breakpoint. Every editing step influences all selected Breakpoints and the parameter *amp*, *abs time* and *slope* as well as the MIDI and LFO-settings. The absolute time and the adjusted parameter are displayed below *Time Control* and *Amp Control*.



In the illustration above shows, the envelope modulates the filter 1 parameter. For this reason the filter frequency is displayed in the parameter-division of the selected Breakpoint. *Slope* determines the wave shape according to the sequence of the Breakpoints. A value of 1 creates a linear progression, and lower values create different exponential sequences.

## Creating and Deleting Breakpoints

To create a Breakpoint simply hit a command-click (Mac) or a right-click (Windows). To delete a Breakpoint, perform a Ctrl-click (Mac) or respectively repeat the right-click (Windows).

## Grid Switch

Click the Grid Switch to turn the grid in the envelope-representation on and off. If the grid is turned on, then the Grid Popup Menu appears on the right side next to the Grid Switch. Choose the favored resolution of the grid from the Grid Popup Menu. The default value is 1/8 (the grid amplitude corresponds to \*\*eight notes). Other possible resolutions are 1/16 (sixteen notes) and 1/32 (thirty-two notes). If the grid is being displayed, the Breakpoints automatically register on the lines. You can overwrite the registering by drawing the Breakpoints with a depressed Ctrl-key (Mac), respectively Alt-key (Windows).

## Lock/Slide Switch

With this you can determine how the Breakpoints react to movement with the mouse: you can only move a Breakpoint to the next step of the grid if

you have chosen a *Lock*. The move does not affect the parts of the envelope that follow the next Breakpoint. All of the following Breakpoints can also be moved if *Slide* is selected.

*Lock* is especially useful for rhythmical envelopes, where the Breakpoints are supposed to be synchronized with beats.

## Free/Sync Switch

<image: Free Sync Switch

Apart from *Control Driven Envelopes* (which are independent of time), you can synchronize to the tempo of the Host-Software by switching the *Free/Sync Switch* to *Sync*.

## Sustain/Release Marker

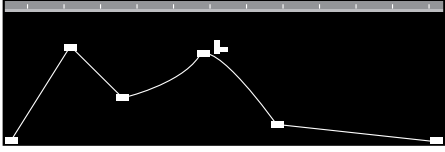
The *Sustain/Release Marker* determines which Breakpoint represents the Sustain/Release-point of the envelope. The exact function of the marker depends which envelope mode you select (see below). With the exception of the first and last, you can drag the marker of every Breakpoint.

### 4.7.3. Envelope Modes

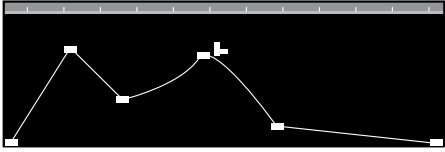
You can choose from several *Envelope Modes*, named *Release*, *Sustain*, *Loop* und *Retrigger*, from the *Envelope Mode Menu*. A special case is the *Control Driven Envelope*, which is controlled by MIDI. The envelope mode *Sample Jump* also works in a different way to the other variations. We will deal with that later together with the Link Mode, where two *Envelopes* can be connected to one other.

## Release Mode

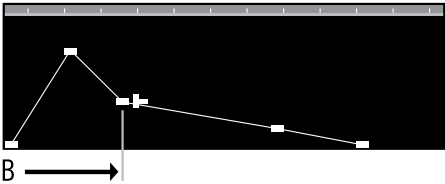
displayed envelope



release mode: note held



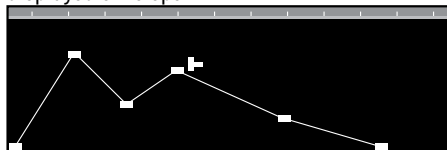
release mode: note released



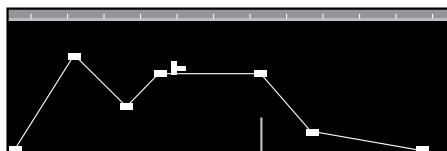
If you have chosen *Release Mode* and play a note, the envelope will run from the beginning until the last Breakpoint. If you release the note before the Sustain/Release-point is reached, the envelope jumps to the position of this point and proceeds on its path from there until the end. The *Release Mode* is advisable with percussive sounds and piano-like sounds with sustain. If the Sustain/Release point placed near the beginning, the envelope always progresses in the same way, independent of the length of the releasing note.

## Sustain Mode

displayed envelope

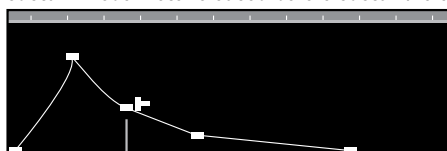


sustain mode: note held



B →

sustain mode: note released before sustain/relea

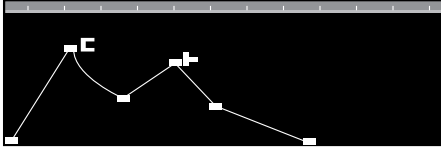


B →

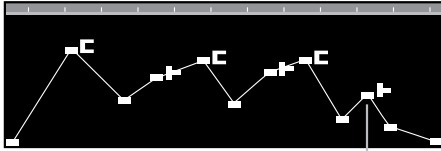
In Sustain Mode the envelope works similarly to a classical ADSR-envelope. If you have selected this mode and then play a note, the envelope will proceed to the Sustain/Release point and its value will remain constant from then on. If you release the note, the envelope runs through the remaining sequence to the last Breakpoint. If the note is released before the Sustain/Release point is reached, the envelope jumps to the position of this point and proceeds on its path from there until the end.

## Loop Mode

displayed envelope



loop mode: note held

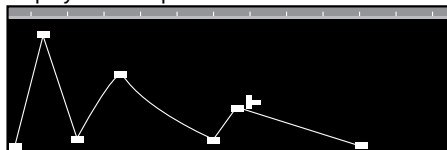


B

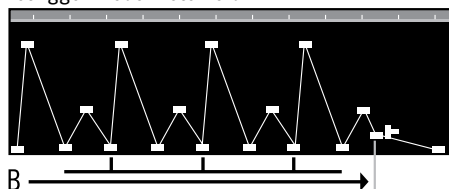
If the *Loop Mode* is selected, a *Loop Start Marker* that looks like a sideways-tilted U will be displayed together with the red *Sustain/Release Marker*. You can use this Marker to select all the Breakpoints prior to the Sustain/Release point, right up to the first one. Segments of path inside the Loop are blue, while segments outside are green. Consider that Breakpoints are target-points of the path – therefore the segments of path prior to the Loop Point also belong to the Loop. In *Loop Mode*, the envelope jumps to the *Loop Start Marker* as soon as it has reached the *Sustain/Release Marker*, and repeats the section in between until the note is released. The complete duration of the looped section is the Delta-time of the Loop-starting-point.

## Retrigger Mode

displayed envelope

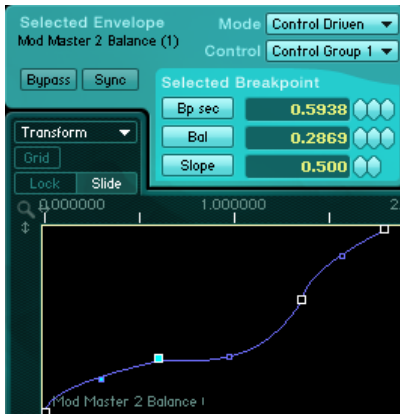


retrigger mode: note held



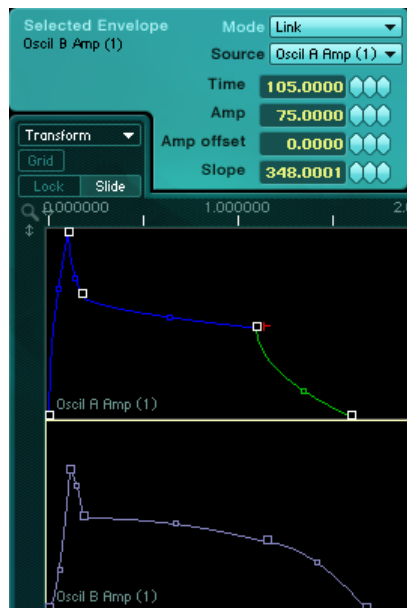
In *Retrigger Mode*, the envelope is restarted according to the *Retrigger*-value when a note is held. If the note is released before the *Sustain/Release* point is reached, the envelope jumps to the position of this point and proceeds from there until the end. If the *Sustain/Release Marker* is located inside the *Retrigger Loop*, the envelope keeps its position. The *Release Mode* is especially useful for creating rhythmic, looped paths. You can feed the retrigger speed as number of beats into the *Retrigger: Beat Control*.

## Control Driven Envelopes



Even though *Control Driven Envelopes* look like all of the other envelopes, the way they function is significantly different. Compared to normal envelopes, the particularities of *Control Driven Envelopes* can be more readily understood: While a normal envelope is controlled by time, in *Control Driven Envelopes Mode*, a *Macro Control* allows movement on the X-axis. The MIDI-value 0 refers to the beginning of the envelope, 64 the middle, and 127 it's the end. If the minimal value and the maximal value are connected by a diagonal, straight line, changing a signal value, which is assigned to a *Macro Control* directly, will influence the dedicated parameter. The incoming signal value is translated into a change of parameter at a ratio of 1:1. If you draw a more complex form with the *Control Driven Envelope* (and in doing so establish a non-linear control type), things start to get interesting. You are now able to morph between sounds, and even create Arpeggios by turning a controller and using the modulation-wheel to control the speed of rhythms. There are many examples of using *Control Driven Envelopes* in the Factory Presets. To create a *Control Driven Envelope* yourself, select *Control Driven* in the *Envelope Mode Menu* at the top of the envelope's window that you would like to control via MIDI. of the length of the *Control Driven Envelope* and the number of points does not matter: The area that can be accessed by *Macro Control* ranges from the very beginning to the very end of the wave.

## Link Mode



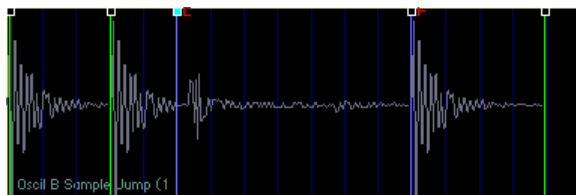
All changes made to the *Master Envelope* have an immediate effect on subordinate Envelopes if you connect two or more via *Link Mode*. To create a connected (subordinate) Envelope, select the *Link* in *Mode Menu* at the top of the envelope's window that you wish to connect. Even though you cannot directly edit a subordinate Envelope, you can still assign certain characteristics to it. You will notice that all changes will be reflected in the visual representation of the connected Envelope. You choose the Master-Envelope under the *Source Popup Menu*:

- Source Popup Menu: select the master-envelope
- Time % Control: scales the temporal progression of the subordinate Envelope. 50% corresponds to double the speed of the Master Envelope, 200% half the speed.
- Amp % Control: scales the amplitude of the subordinate Envelope.
- Amp Offset Control: boosts or diminishes the zero-line of the subordinate Envelope.
- Slope % Control: scales the escalation of the subordinate Envelope.

The *Link Mode* not only saves you time when editing similar Envelopes, but serves for creative purposes as well. You could, for example, alter the Cut-off

Frequencies of the filter of multiple channels by choosing a slightly different scaling of escalation or time, which creates a more organic sound. Similarly, you can evoke interesting detuning-effects by connecting the *Oscillator Pitch* to the parameter.

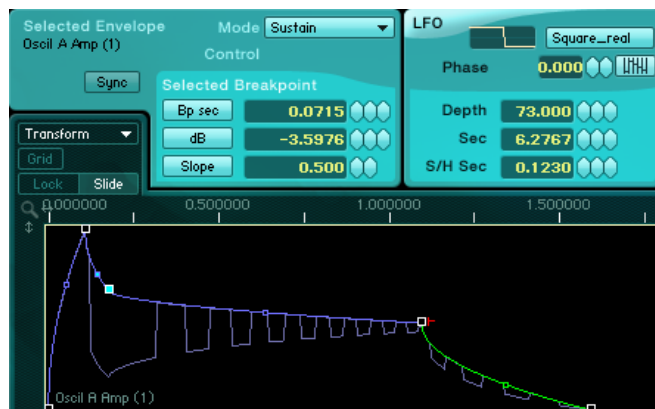
#### 4.7.4. Sample Jump



The *Sample Jump Envelope* retriggers a sample in a synchronized tempo. You can set an individual Retrigger position in the sample for every *Breakpoint*. Envelopes of this type look different from normal Envelopes because they do not have real Breakpoints. Instead they show the actual wave shape of the sample. The *Sample Jump Envelope* only works when one oscillator is in *Sample Mode*.

To create a *Sample Jump Envelope*, you first have to set at least one oscillator to *Sample Mode* and load a sample. Even though the *Sample Jump Envelope* is suitable for a variety of material, its operating mode is best understood using a drum loop or a similar kind of sample. To create a *Sample Jump Envelope*, click on the *New Envelope Popup Menu* in the *Envelope Window*. Then select the oscillator *oscil A* (or any other oscillator containing the loaded the sample you wish to edit). Then choose the parameter *oscil A sample jump* from the middle column. Now you should see the *Sample Jump Envelope* and the wave shape that has been loaded into the *oscillator module* in a wave shape window. In *Sample Jump Envelopes* you can create new points the same way you did in other Envelopes: via Ctrl-click (Mac) or via right key click (Windows). In *Delta Time/Abs Time Control* you can determine the moment when the sample is retrIGGERED. The Retrigger-position in the sample changes with the value in *% Control*, which sets the position as a percentage of the full length. The Envelope-type *Sample Jump Envelope* allows you to retrigger the various divisions of a sample, and can be synchronized by tempo.

## 4.7.5. Envelope LFO



It is possible to integrate a *Low Frequency Oscillator* (LFO) in every Envelope. You can draw the wave shape of the *LFO* in ABSYNTH's *Wave Window*. The same *LFO Wave* influences the entire *Envelope*. However, every Breakpoint of the *Envelope* can have different *Depth* and *Speed* values. All LFO settings for Envelopes are visually displayed in the Envelope Window.

To practice activating an LFO, select the Envelope and click on the LFO section at the top of the window. LFO settings are carried out individually for every Breakpoint. Select a Breakpoint with a click and increase the value of the *Depth* until you see the sketched LFO-form. Different settings between Breakpoints are smoothed out. For instance, if a Breakpoint has an LFO *Depth* of 100 (maximum) and the next one an LFO *Depth* of 0 (minimum), the LFO *Depth* parameter would completely blank out. Differences in the speed setting are similarly interpolated. This allows you to create organic LFO-Speed-Ups and Speed-Downs. Every Envelope can have its own LFO with independent parameters for each Breakpoint. The parameter for the LFO's can be set at the top of the LFO-window.

The LFO-parameters that apply for the entire Envelope are:

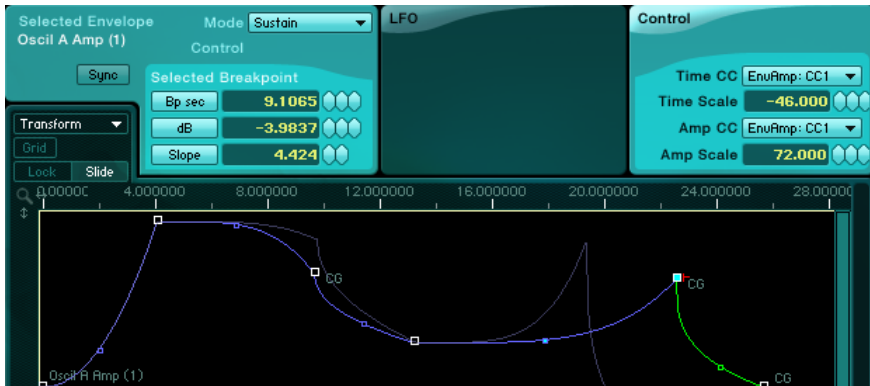
- Waveform Popup Menu: here you can choose the Waveform for the LFO.
- Phase Control: sets the primary phase of the LFO.
- Wave/SH Toggle: if a triangle wave appears, the LFO adopts the shape of the chosen wave. If the Sample&Hold Symbol is displayed, the LFO operates as a random Sample&Hold-function.

The LFO-parameters that are specific for the Breakpoint can be assembled directly beneath the global parameter. They only appear when you have selected the desired Breakpoint.

- Depth Control: adjusts the Depth of the LFO ranging from 0 to 100.
- Sec Control: adjusts the speed of the LFO (in seconds). A fast LFO has a low value for example.
- S/H Sec Control: with this you can determine the Sample&Hold-speed (in seconds). A low value corresponds to a high speed. This option is only active if the Wave/SH Toggle is set to Sample&Hold in the global parameters section.

#### 4.7.6. Envelope Modulation

Every Breakpoint position in an Envelope can be set via *Macro Control*. It is even possible to control every Breakpoint of an Envelope with its own *Macro Control*. This enables the shape of an Envelope to change dynamically and in synch with the information that comes in through *Macro Control* or *MIDI Velocity*. Each Breakpoint responds individually to control signals for time and amplitude. It is therefore possible to dynamically change the form of the Envelopes using either *Velocity* or the signal that is transmitted through *Macro Control*.

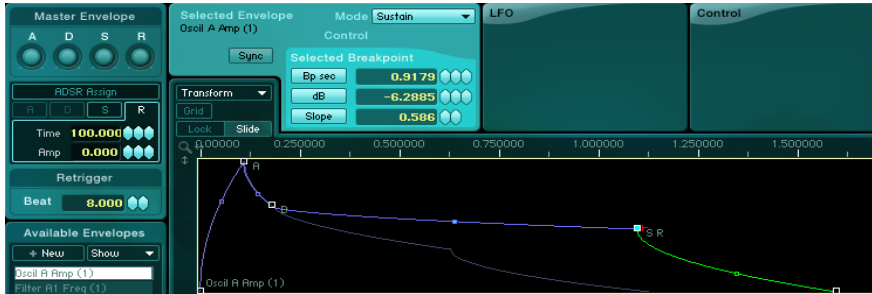


You can activate the remote control of a Breakpoint by clicking on the colored *Control Switch* at the top-right of the *Envelope Window*. There are no global *Macro Controls* for the envelope (other than the start and stop functions in the remote control). Now click on one Breakpoint to display the following Breakpoint-specific features:

- **Time CC Popup Menu:** In this menu you determine which Macro Control is responsible for controlling the temporal positioning of the Breakpoints. The Time CC Popup Menu offers the following sources of navigation:
- **Not assigned:** No Macro Control is assigned.
- **Macro Control 1 to 16:** If you select one Macro Control from the list, this will be the one that navigates the parameter.
- **Velocity:** The MIDI-Velocity-information is evaluated for the navigation of the parameter.
- **Pan LR (Left/Right):** The left and right-axis position of the stereo-panorama is evaluated for the navigation of the parameter.
- **Pan FB (Front/Back):** The position of the front and back-axis of a surround-panorama is evaluated for the navigation of the parameter.
- **Time Scale Control:** Defines the strength of the time scale. Positive values move the temporal position of the Breakpoint to the front, even if the value of the Macro Control is positive. Negative values reverse the polarity of the reaction to the MIDI-Controller.
- **Amp CC:** With this you can determine from which Macro Control the amplitude of the Breakpoints will be controlled. The list of the possible options is identical with the list of options from parameter *Time CC*.
- **Amp Scale Control:** Strength of the amplitude scale. Negative values lower the amplitude while positive values boost the amplitude. The spectrum ranging from -100 to 100 relates to amplitudes from zero to the graphical value of the Breakpoint.

To create playable sounds, you can control the amplitude of the Oscillator Envelope or the Attack Time of a Filter Envelope via Velocity.

## 4.7.7. Master Envelope



It is often desirable to hear obvious audible changes in an Envelope with just a little bit of work. This is the case when using the MIDI controller and playing live. For this reason, ABSYNTH 4 has the central envelope *Master Envelope*, which follows the traditional envelope model with the four-step phases Attack, Decay, Sustain and Release: with this *Master Envelope* you can change the amplitude progression fast and effectively. This opens up new possibilities for real-time sound composition, especially in live situations.

### Assigning Breakpoints

To use the four *Master Envelope Knobs* in the navigation of Envelopes, you first have to connect every *Knob* to a Breakpoint on an Envelope. In order to do this, proceed as follows:

Click on the *ADSR Assign Switch* to put the *Master Envelope* into learning mode. Then click the division A (the *A Tab*). Now you can select a Breakpoint for the attack phase of the Envelope. To achieve this, click on a Breakpoint in the *Envelope Display* of the Envelope representation. Next to the Breakpoint you will see a little A. Now you have connected the Breakpoint with the *attack Knob (A)* of the *Master Envelope*. To undo the connection, click on the Breakpoint again and the A disappears.

To connect the remaining three *Knobs* of the *Master Envelope* with Breakpoints of the selected Envelope, repeat the process but first select, with the help of *Tabs D, S and R*, which *Master Envelope Knob* you wish to assign to the Breakpoint. When you have assigned the desired Breakpoints to all the *Master Envelope Knobs*, click the *ADSR Assign Switch* again to turn off the learning-mode. If you move one of the *Master Envelope Knobs A, D, and R* with the mouse, the darker “ghost”-envelope shows you how the duration of the curve progression towards the selected Breakpoint, is stretched or jolted depending on the direction of rotation. Every Breakpoint can be connected to exactly one of the *Master Envelope Knobs A, D und R*. You can also connect several

Breakpoints with the same *Master Envelope Knob A* to create complex control curves for the attack-phase. This also applies to the other *Master Envelope Knobs D, S* and *R* and the associated phases of the Envelope.

You can also connect the *Master Envelope Knob S*, which regulates the amplitude during the *Sustain*-phase, with several Breakpoints at the same time. This way you can influence the amplitude during the stand still period. The *Envelope Display* shows you the changes in real-time here as well.

You can perform your own assignments for every Envelope and then navigate several Envelope-progressions with the four *Master Envelope Knobs* simultaneously.

To develop a classical ADSR-Envelope, create an Envelope with five Breakpoints in *Sustain Mode*. Assign the first Breakpoint the *Master Envelope Knob A*, the second the *Master Envelope Knob D*, the third and fourth the *Master Envelopes Knobs S*, and the fifth *Master Envelope Knobs R*. In addition, the four Master Envelope Tabs allow you to influence the reaction of the corresponding *Master Envelope Knob* with the *Value Fields Time Control* and *Amp Control*. The value in *Time Control* lets you to determine the transitional period between the phases of the Envelope; the default value for the *Master Envelope Knobs A, D* and *R* is 1, for the *Master Envelope Knobs A* 0. Through the value in *Amp Control* you establish the strength with which the *Master Envelope Knob* influences the amplitude. Here, the default value for *A, D* and *R* is 0; for *S*, it is 1. The expected ADSR-performance is achieved with these default values. Depending on the musical situation, other values might make sense, for instance, if a short attack-phase should simultaneously lead to lower amplitude. In this case, the value of *Amp Control* would have to be increased on the basis of the default settings. At a value of 1, the Knob *A* would not only control the duration of the attack-phase, but also the amplitude.

## Controlling the Master Envelope

Several options are provided to control the values of the four *Master Envelope Knobs*. You can move the four *Knobs* with your mouse. Since the *Master Envelope Knobs* are especially suitable as a tool for real-time editing of sounds during play, you can teach those four *Knobs* to react to information from external MIDI sources, such as rotary controllers and sliders.

To start teaching the *Master Envelope Knobs* to work with a MIDI controller, switch to *Perform Window*. There you will see the four *Master Envelope Knobs* as well. Make a Ctrl-click (Mac OS) or a right-click (Windows) on one of the *Master Envelope Knobs* to put the *Knob* into MIDI Learning Mode. A small sign will appear indicating *Learn Status*. Now move the desired control ele-

ment to remotely control the *Master Envelope Knob*. Then click the little sign *Learn* to finish the MIDI Learn Mode. If you now move the control element that was assigned previously, you will see how the *Knob* follows the movements on the screen.

#### 4.7.8. Transform Commands

The *Transform Popup Menu* offers you access to eight different functions that you can use to quickly transform the selected Envelope(s). Every function opens its own dialogue and has specific parameters. Through the *Transform Popup Menu* you have access to the following functions:

##### Scale...

This function scales the various parameters of the selected Envelope(s). If you choose the entry *Scale...*, the *Transform Envelopes Popup Menu* opens with the following elements:

- **Envelope List:** Here you choose the Envelope you wish to transform.
- *Time Scale Control:* Scales the horizontal intervals between Breakpoints as a percentage related to the status prior to applying the function. Enter a percentage value here.
- *Amp Scale Control:* Scales the amplitudes of the B in relation to the status before appliance of the function.
- *Amp Offset Control:* Determines the offset of the amplitudes in dB in relation to the status before appliance of the function.
- *Slope Scale Control:* scales the slope of the envelope's progress. Smaller values close to 0 lead to a change of form toward angled ranks, high values lead to cantilevered curves. The domain ranges between 0 and 1600.

##### Expand to Rhythm...

The new function *Expand to Rhythm...* allows you to adjust the steps of the Envelope to a rhythm grid. You can easily create definite rhythmic modulations or completely independent rhythms. As with the Step Sequencer, the steps here are organized in patterns. Before you start using the function *Expand to Rhythm...*, turn on the grid for the Envelope representation by clicking the *Grid Switch*.

If you choose the entry *Expand to Rhythm...*, the *Transform Envelopes Popup Menu* opens up with the following elements:

- *Envelope List*: Select here the Envelope to which you would like to apply the transformation.
- *# of Beats Control*: Enter here your desired amount of steps for the pattern. Between 2 and 16 steps can comprise a pattern.
- *BPM Control*: Determine here the speed of the created rhythm in beats per minute (bpm).
- *Beat Duration Control*: With this you can set the interval between the individual applications of envelopes in beats. This also determines how much of your initial Envelope will be used for the pattern.
- *Pattern*: Here you can determine the consecutive steps for the created rhythm. Like a Step Sequencer or a Drum Machine, you can turn individual steps on and off by clicking the appropriate division.

### **Generate AR Pulse...**

The function *Generate AR Pulse...* automatically creates a progression of attack- and release-pulsewaves. This can be extremely helpful if you want to create rhythmical Envelope-forms, for instance, to use them in *Retrigger Mode*. If you choose the entry *Generate AR Pulse...* the *Transform Envelopes Popup Menu* opens up with the following elements:

- *Envelope List*: Select here the Envelope to which you want to apply the transformation.
- *# of Beats Control*: Enter here the number of pulses that you would like to be generated.
- *BPM Control*: Determine here the speed of the pulsewave that you have created in beats per minute (bpm).
- *Beat Duration Control*: You can use this to adjust the interval between the individual pulses in beats.
- *Attack time Control*: Use this to adjust the *Attack Time* of the pulsewave.
- *Min amp Control*: Use this to regulate the lowest amplitude value that the pulsewaves will reach in their path.
- *Slope Control*: Use this to determine the slope of the curve progression.

### **Set Duration...**

This command determines the duration of the selected Envelope(s). This means that the complete duration of the Envelope can be clinched or expanded here.

If you choose *Set Duration...*, the *Transform Envelopes Popup Menu* opens up with the following elements:

- *Envelope List*: Selects the Envelope to which you would like to apply the transformation.
- *Seconds Control*: Determines the duration in seconds for one cycle.
- *BPM Control*: Determines the duration for a beat in beats per minute (bpm). This serves the conversion of *Seconds Control* to *Beats Control*.
- *Beats Control*: Determines the duration for one cycle in beats. The beat reference is the speed installed in *BPM Control*.

### **Load Template**

Activates a dialogue through which you can select and load an Envelope from ABSYNTH'S Universal Library.

### **Save as Template**

Calls up a dialogue through which you can save an Envelope in ABSYNTH'S Universal Library.

### **Initialize Selected Envelope**

Repositions the selected Envelope(s) to the custom form provided by ABSYNTH.

### **Delete Selected Envelope**

Removes the selected Envelope(s) from the *Envelope List* and the *Envelope Display*.

## **4.8. LFO Window**

ABSYNTH has three LFO's, which can be used for modulation. In many ways the LFOs (low frequency oscillators) are – with respect to the technical foundations and Control Elements – identical to the *Oscillator Modules* in the *Patch Window*: You can adjust the oscillation rates and use any Waveform – including a *Morph Wave* – for this oscillation. Because of the low oscillation frequencies, however, the LFOs, in contrast to the aforementioned Oscillators of the Patch Window, make no audible sounds. Instead, the slow oscillation rates can be used in order to modulate the parameter of the sound cyclically, similar to a swinging pendulum.

The musical utilization possibilities are numerous. A Vibrato effect, which consistently and periodically changes its pitch around the tone that is actually being played, is a common application. By contrast, in a Tremolo effect the volume is repeatedly increased and decreased. The circling movement through a space can also be achieved easily through modulation of the panorama position of a sound using an LFO.



The three Oscillators of ABSYNTH 4 are built in the same way. They each have at their disposal an *Oscillator Section* in the upper margin as well as three *Modulation Sections* beneath. The oscillation properties of each LFO in the upper section can be adjusted while the primary two *Modulation Sections* define which sound parameters are modified using the LFO Signal. The lowest *Modulation Section* determines how the LFO can modulate itself using the *Macro Control*.

### 4.8.1. Oscillator Section



The *Oscillator Section* of an LFO is where its oscillation properties are determined: You can determine waveforms, oscillation rates and phases, and utilize a Sample4Hold Module in the *Oscillator Section*. This Module delivers the signal of the LFO at regular intervals and maintains this value until the next value is delivered. This process delivers a signal patterned after a staircase model, which emerges from the continual, round oscillation of the LFO. The following Control Elements can be found in the *Oscillator Section*:

- LFO Switch: The LFO can be turned on or off. If it is not necessary for it to be on, turn it off to preserve the CPU of your computer.
- Mono/Poly Switch: In Mono Mode an LFO modulates all the voices; in Poly Mode every voice has its own independent LFO. If you use the LFO to produce a Tremolo, for instance, the monophone LFO will let the volume of every individual voice rise and fall simultaneously, which in most cases is the desired effect. In polyphonic mode, every voice changes its volume independently of the others, and the resulting sonic impression is more diffuse – which, in some cases, is of course equally desirable. (An even more important Parameter in this connection is Phase, see below)

**Waveform Popup Menu:** Click on the Waveform Popup Menu to open a Dialogue in which you can select the Waveform for the Oscillator. You can use *Simple Waves* or *Morph Waves*. The latter in particular produces clearly audible effects when combined with the modulation of *Transition Control*.

- Phase: Here, set the Phase with which the LFO waveform in *Poly Mode* is started when a note is struck. It begins with a value of 0 at “Start” (as seen in the *Wave Window*: left), the middle begins when a value of 50 is reached, and the “End” begins with 100 (as seen in the *Wave Window*: right). Since a waveform passage immediately returns to “Start” after the “End” is reached, 0 and 100 produce identical results. You can use this controller when you want to start at a specific point in a waveform: If, for example, you want to use a Sine to modulate pitch (Vibrato), but first you want to lower the tone rather than raise it, you can do this with a Phase of 50: This way, the oscillations begin in the middle of the sine curve. Make sure the LFO in Mono Mode does not

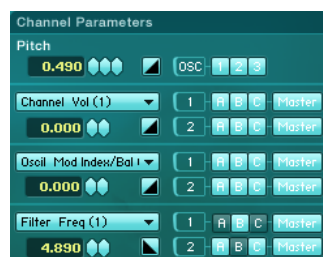
restart the set Phase through the struck note. In this case, you can use the *Retrigger Button*.

- **Rate:** The speed of the LFO is defined in beats per minute according to the condition of the Rate Mode Switches. In a set time frame, the selected Waveform will be passed through once.
- **Sample&Hold:** Turn the Sample&Hold Module on and off. A Rate Control parallel to the LFO Rate Control controls the tapping points as long as the Module is active. The lower the frequency, the longer an individual value belonging to the LFO Waveform will stay constant.

## 4.8.2. Modulation Sections

There are three *Modulation Sections* set above one another. The two at the top determine which Parameters of ABSYNTH 4 will be modulated with the Signal of the LFO. The section at the very top contains the parameters that are available by *Channel* or *Module*, for example, the pitch tones of the *Oscillator Modules*. Underneath that section follow the parameters that have global influence, such as the ADSR Controller or the Effect Parameter. The section on the very bottom establishes how the LFO itself can be modulated through *Macro Controls*.

### Channel Parameter Section



Here you can allocate three parameters, other than pitch, for LFO Modulation. These three parameters are chosen through a Popup Menu. Nevertheless, you do not choose the Channel in the Menu itself, but rather separately from the parameters and to their right. In addition, the signal can be doubled: If you press the Inversion Switch, the phase turns by 180 degrees (“Valleys” in the Waveform become “Peaks” and vice versa). You can also assign this altered Signal to other channels using the *Channel Select Buttons*. For example, if you were to use a Bandpass Filter in Channels A and B, you could modulate the bandwidth of both filters using the LFO. If you wish for both bands to time their opening and closing so that one always opens when the

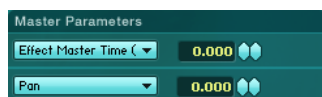
other closes, you can activate the *Inversion Switch*, and, in the upper lines of the *Channel Select Buttons*, deactivate the second Channel during which you choose *Channel A* in the line below. As a result the bands of both filters are alternately narrow and wide.

In the *Channel Parameter Sections* you will find the following control elements:

Pitch Modulation Depth Control and Inversion Switch: Use halftones to determine the extent to which the LFO has changed the pitch tones. Use the Inversion Switch to reverse the signal of the LFO.

- Pitch Channel Select Buttons: Selects the Channels of the Patch Windows, the pitch tones of which are modulated by the LFO. Click on the Buttons in order to select and deselect the individual channels. All Channels are modulated for preinstallation.
- Modulation Target Popup Menu: Chooses the parameter that is to be modulated by the LFO. The parameters are grouped according to the Modules of the Patch Windows.
- Modulation Depth Control and Inversion Switch: Determines the extent of the Modulation by the LFO as a percentage of the desired value. The Inversion Switch returns the Signal of the LFO.
- Target Channel Select Buttons: Selects the Channels of the Patch Windows, including the Master Channels, the parameters of which are modulated by the LFO. Click on the Buttons in order to select or deselect the individual channels.

## Master Parameter Section



The Master Parameters behave almost identically to the Channel Parameters. They have global effects so the *Channel Select Buttons* escape, and the *Inversion Switches* escape with them.

Make sure the second Master Parameter is configured to the Panning. This type of Modulation influences the left/right position as well as the front/back position in the surround sound field. The wave position in the front/back modulation is positioned at 90° relative to the wave position of the left/right modulation. This produces a rotation with a sine wave. Other waveforms produce more complex movements and curves. Waveforms with interruptions (e.g. sudden leaps, as in sawtooth and square Waveforms) tend to be heard with

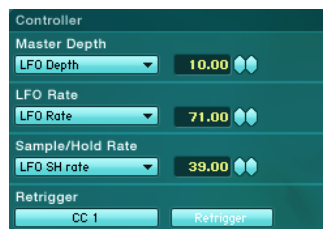
at least some surprise at first. This derives from the fact that the front/back panning reaches the interruption in the waveform at a different point in time as the left/right panning. As a result, the position of the sound source, for example, can make a leap from left to right while the leap to the front from behind follows later.

You have the following setting possibilities:

*Modulation Target Popup Menu:* Selects the parameter that is to be modulated by the LFO. Diverse effect parameters, such as the *Master ADSR Controller*, are at your disposal.

*Modulation Depth Control:* Determines the extent of Modulation by the LFO as a percentage of the desired value.

## Controller Section



This last section turns the direction of modulation around: rather than what the LFO controls, this section is about that which controls the LFO itself. You can use the general amplitude of the LFO (*Master Depth*) to scale all of the modulations that come from this LFO. Additionally, you can change the speed of the LFO and the Sample&Hold Module. All three options are organized under *Macro Controls* that you can choose in the Modulation Source Popup menus. You will find more Macro Controls in Section X.

Here in detail are the following parameters:

- Modulation Source Popup Menu: Chooses the Macro Control that modulates any LFO Parameter
- Modulation Depth Control: Defines the scope of the Modulation by the Macro Control as a percentage of the desired value

In the bottom margin of the LFO Window you will see the Retrigger Button. It is only applicable when the LFO is in Mono Mode. As mentioned, each voice in the LFO is reset in polyphonic mode with every new note struck. In the monophonic mode, this does is not the case. Here the LFO is reset to the position set by the *Phase* as soon as a MIDI Continuous Controller exceeds the value of 0. This can be caused by a sustain pedal, which the MIDI-CC

values broadcast. However, releasing the pedal has no effect.

If the Retrigger Button is activated, a further Modulation Source Popup Menu appears beside it. Here you can directly choose one of the 128 Continuous Controllers that the MIDI specifications put at your disposal. All three LFO's use the same Controller. If you change settings in one LFO, the values for all the other LFOs are changed as well.

## 4.9. Perform Window

In the *Perform Window* all of the Signals that should be controlled by parameters in ABSYNTH 4 run together, and this is an example of the success of the distribution in its goals. Additionally, global installations meet here that have effects on all of the Presets. The *Perform Window* is divided into multiple areas: Above, under the *Navigation Bar*, you see the *Global Settings Bar*. This tab, like the bottom views of the Perform Window, can be seen on all six Pages. You can reach the pages using the Tabs under the Global Settings Bar. Click on a Tab in order to change to the appropriate *Page*.

Starting on the left, the first three *Pages* are *Controls*, *Assignments*, and *MIDI*. You can configure the control Signals and connect them with targeted parameters. The *Page* entitled *Note* enables you to undertake various smaller installations that influence the behavior of ABSYNTH 4 in playing particular note values. The *Tuning Page* selects the tuning and for making your own tunings. On the *Audio Mod Page*, you set an Envelope Follower that derives control signals from audio signals. Next, you will learn how to understand the different elements and *Pages* of the *Perform Window* more clearly.

### 4.9.1. Global Features

Some elements of the *Perform Window* can always be seen independently of the selected *Page*: the *Global Settings Bar*, the *Master Envelope*, the *Onscreen Keyboard*, and the *Audio In Area*.

#### Global Settings Bar

The *Global Settings Bar* provides you with access to the following global settings:

- Polyphony Control: This installs the number of voices to be produced by ABSYNTH 4. This installation is valid for all Presets.
- dB Control: This sets the output level for the current Preset (in dB). If you use multiple Presets with the same level, but with different resulting volume effects, you can adjust the differences in volume here. You can

raise the output level by up to 24 dB or lower it by any amount.

- **MIDI Channel Popup Menu:** This sets the MIDI channels, which effect ABSYNTH 4. You can select one of the MIDI Channels between 1 and 16 so that ABSYNTH only reacts to the MIDI messages received on this one channel. If you select Omni, ABSYNTH 4 gives all MIDI messages a value independent of which channel they were transmitted on.
- **Tempo Control (BPM):** This determines the global tempo. This setting affects, for example, the effects that depend on tempo.
- **Transpose:** This transports the global pitch into half tone steps. The reduction amounts to 1/100 Cent, which is the minimal step width and can also be described as one ten-thousandth of a halftone.
- **Tuning Popup Menu:** With this you select a global Tuning. You can select one from the preinstalled Tunings or create your own Tuning on the Tuning Page (for more information on this, see section 4.9.6).

## Master Envelope

The superordinated envelope Master Envelope is present in all of the *Pages* of the *Perform Window*. The setting of the four *Master Envelope Knobs* on the Perform Page is always identical with those in the *Envelope Window*: When you place a *Knob* in one of the two *Windows*, you will always also see this change when you switch to the other *Window*. More specific information on the possibilities of the Master Envelope can be found in Section 4.7.7.

## Audio In

In the *Audio In Section*, ABSYNTH 4 establishes the level of the input signal. Here you can adjust the threshold level by changing the *Threshold Controls*. If the threshold value is exceeded, the note set in the adjacent *Pitch Control* will automatically be deactivated. The prerequisite for this is that the *Auto Trigger Popup Menu* must be set to *Audio*. If *Always On* is selected instead, the note selected by *Pitch Control* will be held permanently. (If *Off* is chosen, then both functions are deactivated.)

This functionality is useful if you use ABSYNTH 4's *All Effect*. As was explained in the section about envelopes (4.7), the program only calculates when the amplitude envelope of an Oscillator is active. If a MIDI envelope does not activate the amplitude envelope, ABSYNTH cannot process the input signal. Choosing the option *Always On* solves this problem. By using *Audio* you can depend on us to calculate the effect input signal – and flexibly define the starting point of the envelope.

More on this topic can be found in the section about *Audio Mod* (4.9.8).

# Onscreen Keyboard

You can superimpose a Keyboard on all of the *Pages* of the *Perform Window*. This *Onscreen Keyboard* is especially useful when you want to edit a sound yet no MIDI keyboard is available. You can play the Onscreen Keyboard by clicking on the buttons with your mouse. The notes play until you let go of the mouse button. To show the Keyboard, click on the small triangle in the lower middle of the margin of the window. The row of buttons appears directly underneath the triangle. An additional click on the triangle and the Keyboard disappears.

Pushing the *Hold Switch* button adjacent to the buttons on the left switches on a click on one of the buttons on the Onscreen Keyboard. The note will continue to sound until the button is clicked again.

The *Sustain Switch* – the switch with the pedal symbol – allows the notes to fade out naturally with the release of the button, just as they would with the use of a pedal while playing a piano. In this way you can also play chords with the mouse by playing the tones one after another. The *Sustain Switch* also affects the arriving MIDI notes such that you can use the *Sustain Switch* when you play ABSYNTH 4 over a real MIDI keyboard. Remote use of the *Sustain Switch* is possible with MIDI Controller #64, which is reserved for the Sustain Pedal.

## 4.9.2. Automation in ABSYNTH 4: Macro Controls

Controllers

Assignments

MIDI

Note

Tuning

Audio Mod

Macro Controls

Ambience Lw: CC27  
Sawtooth Lw: CC28  
Dry/Wet (28): CC29  
FX HiCut: CC30  
FX Time: CC31  
FX Fbck: CC32  
Rttonalise: CC1  
Intensity (11): CC11  
Pan LR: CC10

Midi CC# 26 Learn

Control Value

Parameter

Add

Delete

Depth %

Lag

Inv

Filter A1 Freq (2) 99.00 101

Filter B1 Freq (2) 99.00 101

Filter C1 Freq (2) 98.00 101

Filter C2 Freq (1) 47.10 101

Filter Master 2 Freq (1) 60.00 112

With the Macro Controls, you can organise all of the Signals that are controlled by Parameters inside of ABSYNTH 4. First, we will take a look at the different types of control signals:

- Envelope and LFO are modulation sources within ABSYNTH 4. They automatically control Parameters of sound production with their Signals

and the effect of division. If you activate, install, and assign such a Modulation Source to a destination, the Control Signals will also be created without any additional effort on your part. The possibilities are limited to the sound path, meaning that they are limited to the period of time between hitting and releasing the button that activates a particular sound (between the MIDI “Note On” and the MIDI “Note Off,” in other words).

- To change a sound over the course of an entire piece of music without having to interfere with the piece while it is playing, send the Control Signals from “outside” to ABSYNTH 4. Additionally, use the automation of our Audio MIDI sequencer in the Plug-in Program. All modern programs, such as Cubase, Logic, Sonar, or Digital Performer offer the possibility to record Automation data or to create them by mouse click. In the graphic presentation can work on the Automation comfortably. You can send the Automation data to ABSYNTH 4 and make sound changes to several bars or entire compositions. Automation tracks can be assigned to the parameters inside of ABSYNTH 4 using a list of available Automation goals, of which ABSYNTH 4 notifies the host software.
- You can control ABSYNTH 4 in real time by connecting it to the MIDI keyboard. The simplest form of using MIDI to control ABSYNTH 4 is the communication of note values using Note-on and Note-off commands. The Pitch Bend and the Modulation Wheel are also Standard Controllers, which almost every MIDI keyboard sends and which ABSYNTH 4 utilizes. Moreover, many modern MIDI keyboards and controllers offer control elements that also send MIDI Signals; rotary controllers, sliders, and switches are only three of the many possibilities. You can use these MIDI Signals flexibly together with Parameters to change the sound during play.

These three types of Control Signals distinguish themselves in their possibilities as well as their origins. In ABSYNTH 4 they are the same in some ways: In order to design the administration of the individual Control Signals as unitarily and as flexibly as possible, ABSYNTH 4 has the *Macro Controls*.

In other software instruments the distribution of Control Signals mostly takes place through the use of an unchanging list of Parameters that exclusively allow rigid assignments of signal sources to particular elements of the user interface. The disadvantage of such definite connections between source and goal is namely that a controller of your MIDI control element always controls the same parameter independently of the desired sound. This approach is often not sensible, since there can always be other parameters in every Preset,

a change in which would have the desired effect upon the sound.

For this reason, ABSYNTH 4 offers a possibility in the Macro Controls to distribute incoming Control Signals among the parameters with flexibility. The fact that you can design the assignment of every Preset on an individual basis is only one advantage of the *Macro Controls*, however. It is also very advantageous that you can control multiple goals from a single source. That is best explained through the use of an example:

Assume we want to change the Cutoff and Resonance Parameters of Lowpass Filter at the same time as the Modulation Wheel of your MIDI keyboard: At high frequencies the resonance should be low, at low frequencies high. To control both parameters simultaneously, build a *Macro Control*: by activating a Filter Module in the Patch Window and select the Filter *LPF -12dB* from the *Filter Mode Popup Menu*. Right-click on the *Frequency Control*. It opens a list with the available *Macro Controls*. Choose Macro Control 1. Assign the Parameter *Resonance Control* to *Macro Control 1* as previously described. Now change to the Perform Window. There you can choose the *Controllers Page* with one click on the *Controllers Tab*. This is where all 16 *Macro Controls* are found. Every Macro Control is represented on the *Controllers Page* through a *Popup Menu* and a level indicator (*Slider*) that indicates the current value of the *Control Signal*. Click on the name field of *Macro Control 1*, in order to use the computer keyboard to enter a somewhat more memorable name, “Filter 1,” for example. When you activated auto naming under the point General in the Options Menu earlier, every new Macro Control was named after the first assigned Parameter.

Assign *Macro Control* “Filter 1” as the source for the control information. Click on the *Popup Menu* of the *Macro Control* and select the entry MIDI Learn from the list. Now, move the Modulation Wheel. You have assigned the control source: the status bar of the *Macro Control* will now change its value when you move the Modulation Wheel. Simultaneously, the values of both of the *Controls* to which the *Macro Control* has been assigned also change.

The value changes of the two parameters should have gone in opposite directions so we must change the direction for the filter resonance. We will switch to the *Assignments Page* for this purpose. On the left, you will see a list of *Macro Controls*. Click on the *Macro Control* “Filter 1.” In the area on the right next to the list with the *Macro Controls* you will now see the two parameters that you have assigned to the *Macro Control* “Filter 1”, namely *Filter A1 Freq* and *Filter A1 Res*. You need not change the values in Depth Control and in Lag Control for the purposes of our example, more on this in the Section after next. In order to reach the opposite changes in values for the Resonant, click on the *Inversion Switch* of the Parameter *Filter A1 Res*. You have now

reversed the interpretation of the incoming Control Signal for this Parameter, the Filter should illustrate the posture formulated in the input. More precise information about the functions of the Assignments Page can be found in the Section after next.

You already know the concept of bundling parameters, in which a superordinated controller influences multiple internal parameters from the *Master Envelope*: There you can change the position of multiple Envelope Breakpoints with only one of the four *Master Envelope Knobs*. Learning via MIDI also has Macro Control and *Master Envelope* in common. In the next section you can find out more on the functions of *Master Envelope*.

### 4.9.3. Controllers Page



The *Controllers Page* gives you an overview of the *Macro Controls* and the Parameters to which it has been assigned. In the standard installation you will see a field with a *Popup* and a *Slider* for 14 of the 16 *Macro Controls*. The remaining two *Macro Controls* are both bound to an XY Control. We will discuss this more later on. In the output form, the *Macro Controls* are simply numbered, given names such as *Macro Control 1*. You can name the Macro Controls in a more entertaining fashion by clicking on the name field of *Macro Control* and using your computer keyboard to enter a new name.

To control a Macro Control using a MIDI instrument, you must first assign a MIDI control source. Use the function MIDI Learn in the way already explained in the practical example: Choose MIDI Learn from the Popup Menu of the Macro Control that you want to assign to one of the control elements of your MIDI instrument. Now move the desired control element. As soon as you change the position of the controller, the Slider of the *Macro Control* follows the change in values, representing the parameter bundled under this *Macro Control*.

If you want to use a joystick, a touch pad, or another control source that can convert movements on two axes into control information and can disperse information independently of one another, you can combine any two Macro Controls with an *XY Control*. This square field presents the values of two parameters in a two-axis system of coordinates. A yellow cursor marks the current position. The named input devices usually send the information for the x- and y-axes separately as MIDI Control Change Messages. In a case of a corresponding parameter assignment, this permits you to change two values simultaneously with a single movement. Naturally, this also the case when you would rather not to change the cursor position of the XY control in real time with a MIDI control instrument, but rather using the Automation of your Audio MIDI sequencer.

In order to combine two Sliders to an *XY Control*, select the entry *Make into XY* from the *Popup Menu* of a *Macro Control*. This will allow you to connect the selected *Macro Control* with the next *Macro Control* to an *XY Control*. In order to dissolve the connection, choose the entry *Make into Sliders* from the *Popup Menu*. In the standard setting (shown in the *Controllers Page* after opening a new, empty Preset), the Macro Controls 15 and 16 are already connected to an XY Control and are assigned to control of global Panning: Use the x-axis to control the right/left position, the y-axis to control the front/back position. Learning via MIDI Learn functions in the same way as the “simple” *Macro Controls*: Select the entry *MIDI Learn* from the *Popup Menu* of *XY Control*.

If you use ABSYNTH 4 as a Plug-in within an audio MIDI sequencer, all Macro Controls are available as targets for automation information. Information on how to use the Automation in an audio MIDI sequencer can be found in the handbook delivered with the sequencer.

## 4.9.4. Assignments Page

Parameter	Add	Delete	Depth %	Lag	Inv
Filter A1 Freq (2)			99.00	101	<input type="checkbox"/>
Filter B1 Freq (2)			99.00	101	<input type="checkbox"/>
Filter C1 Freq (2)			98.00	101	<input type="checkbox"/>
Filter C2 Freq (1)			47.10	101	<input type="checkbox"/>
Filter Master 2 Freq (1)			60.00	112	<input type="checkbox"/>

On the Assignments Page you can fine-tune every individual Macro Control. On the left you see the list of all *Macro Controls*. The Parameters for every *Macro Control*, once selected, are superimposed, as you can see on the Controllers Page in the individual fields: The *MIDI CC# Control* shows the current assigned MIDI Control Change Number (*MIDI CC#*). You can change the assigned MIDI CC by clicking on the indicated value and entering a new number. Alternatively, you can use the *Edit Comb* to the right of the *Value Field*. You can also use MIDI Learn to assign a new MIDI Control Change Number, by clicking on the *Learn Button* and moving the preferred control element on your MIDI control instrument. The horizontal Slider with the label *Control Value* indicates the current value of the Macro Control. You can change the value by clicking on the *Control Value Slider*.

In the *Assignment Table* in the middle of the *Assignments Page* you can use different settings for every parameter assigned to a *Macro Control*. The list always shows the parameters that are assigned to the *Macro Control* selected from the *Macro Controls List*. You can add additional Parameters to the list by making a right click on the parameter to be affected (for example, *Filter Cutoff* in a *Filter Module* of the *Patch Window*) and then select *Macro Control* from the context menu that the parameter is to control from that point on. In order to separate the parameter from the *Macro Control*, select the entry *Not assigned* from the context menu. The entry then be removed from the *Assignment Table*.

For every parameter assigned to a Macro Control you can use the following setting:

- **Depth % Control:** determine the depth of the Modulation carried out by the Macro Control as a percentage of the current value of the parameter under its control.

- Lag: determines the delay with which the parameter reacts to the changes in value communicated by the Macro Control
- Inversion Switch (Inv): reverses the direction of the Modulation. High Controller values produce a low parameter value, low Controller values lead to high parameter values.

Instructions on how to use the installation possibilities on the Assignments Page can be found later on in this chapter (Section 4.9.2).

### 4.9.5. MIDI Page



On the *Pages Controllers* and *Assignments*, MIDI has been limited to issues concerning Control Change Information. On the *MIDI Page*, you can set the remaining MIDI parameters and assign functions to MIDI control elements.

### Pitchbend

In this section, you can set how a Preset reacts to Pitchbend information: In Depth Control you can limit the region of upward and downward Pitchbendings on a set number of halftones. In Lag Control you can determine the delay (in milliseconds) with which ABSYNTH 4 evaluates the incoming Pitchbend information for this Preset.

### Volume

Here you can set how ABSYNTH 4 uses incoming information from a volume pedal or another MIDI control source as a level control.

- CC Control: Here enter the number of Controllers that you want to use for control of the entire level; in the standard setting, ABSYNTH 4 reacts using Control Change #7, designated in the MIDI specification the control of the total level.

Pre/Post Toggle: Determines whether changes in the level should come before or after the Master Channel

- Macro Control Popup Menu: If you want to make the entire output level dependent upon the signal value of a Macro Control, you can select a Macro Control from the Macro Control Popup Menu.
- Depth Control: Determines the strength with which the incoming control information influences the level.
- Lag: Establishes the delay before ABSYNTH 4 reacts to changes in the signal value responsible for the level control.

## Pan

*Macro Controls 15 and 16* (both of which are combined with an *XY Control*) are designed to control the Panorama Position by simultaneously placing the output signal on a left-right axis and front-back axis. In order to use a two-axis control instrument like a joystick or a touch pad to adjust the panorama position, learn the instrument as described in Section 4.9.3. For control of the Panorama you can also determine the strength of the control signal (*Depth Control*) and the hesitation in the assessment (*Lag Control*).

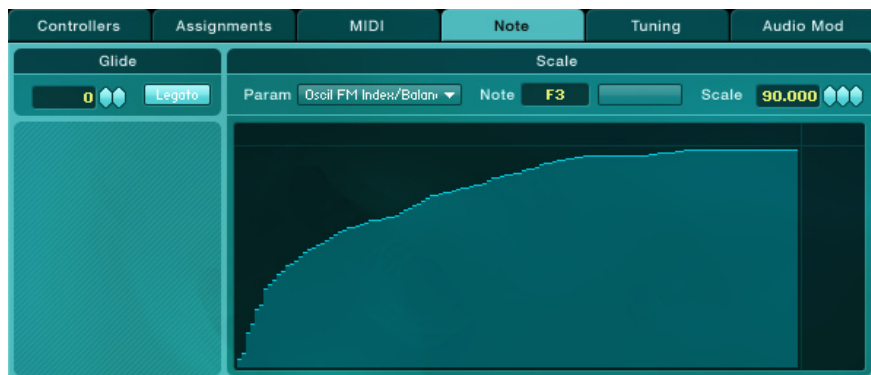
## Velocity

With the options in the Velocity Table you can determine how particular Parameters can be influenced via velocity values communicated via MIDI, that is to say, the force with which you hit the note. You can determine, for example, that a “loudly” struck note increases the frequency of a filter and as a result not only changes the volume of the tone, but also its characteristics.

For every parameter you can set the percentage value in *Depth% Control* (abbreviated *Depth%*) around which the velocity values can change the value of the parameter. With the *Inversion Switch* (abbreviated *Inv*) you can reverse the velocity values so that a quiet push of the button results in a strong change of the parameter, but a loud push of the button has only modest effect.

Further parameters can be added to the velocity table by selecting the desired parameters from *Add Parameter Popup Menu* in the title line of the *Velocity Table*.

## 4.9.6. Note Page



On the Note Page you can establish how much a parameter is modulated depending on the played note. That is, you can establish an individual relationship between the modulated parameter and every button on your keyboard. You can make a Filter open wider for higher notes. Three groups of parameters can be modulated dependently of notes:

- Oscial Amp A, B, C: are the volume envelopes of the Main Oscillator in the three Oscillator Modules.
- Oscil FM Index/Balance A, B, C: controls the ratio between the channels' main oscillators and their modulation oscillators.
- Filter Freq A, B, C, Master: are the corner and middle frequencies of the Filter Modules in Channels A through C and master.

### Note-dependent Modulation

In order to set up a note-dependent modulation for a parameter, first choose the desired parameter from the Parameter Popup Menu on the upper left-hand side of the Note Page. In the curve presentation in the center of the Note Page you see the progress of the modulation value over the entire tone; in the standard setting, the values of all notes are the equal. For which reason you see a horizontal line. To adjust the Modulation Attitude, draw the desired curve in this presentation using your mouse. This way, you can establish a modulation value for the all MIDI note values very quickly.

If you find this process too inaccurate, you can also set the target values for individual notes. First determine the note to which you want to assign an individual value. You have two possible ways to select a note: Either change the value directly in Note Control, or click on the Keyboard Switch using your MIDI keyboard or the Onscreen Keyboard. With *Notescale Control* you can enter the value of the Modulation directly in the manner previously described for the selected MIDI note.

## Glide

The function Glide produces gradual transitions between multiple notes following after each – known as Glissando. You might know this function under the name Portamento from other instruments.

In Glide Control you can determine the duration for pitch transitions. The standard value is 0; with this the function Glide is not active, but the tones are produced without a Glissando. If you enter a higher value, you thereby determine the value of the Glissando in milliseconds.

With the Keyed/Glide Switch (Keyed) you can switch between the Portamento variants: in the mode Glide (when the Keyed/Glide Switch is not pressed) the transition of the pitched notes is gradual and independent of the manner of play. If you push the Keyed/Glide Switch, the notes are only produced with a gradual transition when you are playing Legato. When you play Staccato – that is, without overlapping the hold time – the transitions between notes are not gradual.

### 4.9.7. Tuning Page



On the Tuning Page you can tune ABSYNTH 4 in a great deal of detail: You can assign any individual key to any pitch, which does not have to follow any common scales. In this sense you can produce any desired alternative tuning. You can load different, predefined tunings from ABSYNTH's Universal Library.

### Creating a User-defined Tuning

To create your own Tuning, you must first design a new Tuning. This takes place in a manner entirely parallel to the creation of a new waveform: Open the *Tuning Popup Menu* in the *Global Settings Bar* of the *Perform Window*. There

you can choose from a series of prefabricated *Factory Tunings*. By clicking on *New Tuning Buttons*, a new *User Tuning* is created, which in contrast to the *Factory Tuning* can change as much as you want. The indicator then jumps automatically to the *Tuning Page*.

Now set the basic tone for your new *Tuning* in *Base Key Control*. Finally, select in *Note Control* the Note that you would like to tune. You can enter the tuning of the note either in note fragments (in *Note Control*), in Hertz (in *Frequency Control*) or in the form of a ratio with the note given in *Base Key Control* acting as a base. The three Value Fields, Note Control, Frequency Control (Hz), and Ratio Control, correlate; that is, if you change the value for one of the three *Controls*, the other two controls show the same value in their own unit.

After you tune all of the notes according to your desires, you can save your new Tuning using the Transform Popup Menus in the Universal Library. You can then always return to this Tuning.

## Octave Link

When you activate the option Octave Link by clicking on the Octave Link Button, ABSYNTH 4 transmits the frequency intervals determined for an octave to the other octaves within the scope of the tone. For this reason, you do not need to tune every note individually for all of the octaves. When you have turned on Octave Link and newly tuned a note, the note changes by the same amount simultaneously in all of the octaves such that the intervals in all of the octaves correspond exactly to those in the basis octave. If you want to tune all of the notes individually, turn *Octave Link* off.

In Keys per Octave Control set the number of MIDI buttons to produce an octave – from which you can recognize that an octave in ABSYNTH 4 does not necessarily have to consist of eight whole tones or twelve half tone steps. If you turn on Octave Link, set the value in (for example) *Keys per Octave Control* at 11, and then change the pitch of a particular note, then the 11<sup>th</sup> note above and below the selected button will be tuned correspondingly.

As an example, take a typical tuning with 12 half tone steps per octave. In this example, Keys per Octave Control as well as Octave Interval Control both have the value 12. For stretched tunings (e.g. the tempered tuning of a piano) you should increase Octave Interval slightly, e.g. to 12.01.

To automatically produce quartertones, set the Keys per Octave Control to 1 and Octave Interval Control to 0.5. To produce eighth tones, put the Keys per Octave Control at 1 and Octave Interval Control at 0.25.

When defining an octave, the *Octave Link* and the *Controls* only influence the operation of the other Parameters. You will not hear any changes until you change the pitch of a note in *Note Control*, *Frequency Control* or *Ratio Control*.

## 4.9.8. Audio Mod



With the function Audio Mod you can derive modulation signals from audio signals. This follows the principle of an Envelope Follower Module: Each of the four Audio Signal Analysis Paths available for parallel use, Audio Mod A to D, analyzes the level of the audio signal transmitted to it and then makes the result of the analysis available when the Signal has its output as a Modulation Signal. The progress or sequence of values corresponds to an envelope: A high level of the Audio Signal means the same thing as a high value of the outgoing Modulation Signal. Apart from using them to directly control Parameters, you can also use the Audio Mods as a Trigger to activate the envelope paths.

### Audio Mod as Envelope Follower

The Envelope Follower function is similar to a Macro Control. Rather than a MIDI source or an Automation track, the level of a signal activates the value changes of an outgoing control signal. This manner of working is best illustrated through an example: Turn on the *Waveshaper Module* in *Channel A* in the *Patch Window* and select a square Waveform for the Waveshaping. Right click in the *In dB Control* of the *Waveshaper Module* and select the entry Audio Mod A from the context menu. Increase the value in In dB Control by about 12 dB. In the *Perform Window*, change to the *Audio Mod Page* and select the entry *Oscil A* as Modulation Source from the *Modulation Source Pop-up Menu*. In *Depth% Control*, install a medium of Modulation Depth reverse the Modulation Signal by hitting the *Inversion Switch*. If the input level is low, this signal manipulation will boost (preamp) the signal in In dB Control. Conversely, the boosting will be reduced if the input level is high. In effect, a compression of the Signal results. This pretreatment is the result of a consistent signal distortion by the level-sensitive Waveshapers when dealing with various volume levels.

## Audio Mod as Trigger

The *Trigger Module* of the *Audio Mod Page* activates envelope progressions of a freely selectable Module of the Patch Window. If you use this function to Trigger any of the Oscillator Amplitude envelopes *Oscil A* through *C*, the Trigger Module produces certain Note-On and Note-Off commands without your having to push a button. Additionally, not all, but rather only certain Modules of ABSYNTH 4 and its envelopes will be restarted, which makes for a contrast between ABSYNTH 4 and traditional MIDI Trigger Signals.

This is best understood from a practical viewpoint, if you use ABSYNTH 4 as an Effect: The Trigger Module produces a Note-On command as soon as the threshold in *Threshold dB Control* is exceeded. In this case, set the Envelope Switch to Pre Rev in order to prevent the envelopes that have yet to be started from silencing the Effect Input Signal. More specific information on the envelopes and their control possibilities can be found in chapter 4.7.

## Parameters

On the Audio Mod Page you can find the following control elements:

- Audio Mod A through D: the four Audio Mods A through D are equipped identically. Click on one of the Audio Mod Tabs in order to select the appropriate Audio Mod. The settings that belong to this Audio Mod will be indicated on the Audio Mod Page. Like the Macro Controls, the Audio Mods can be assigned using the context menu that you can activate using a right click on the parameter of a Module in the Patch Window. The setting of the modulated parameters that can be seen in the Assignment Table is carried out in the same way as with the Macro Controls.
- Audio Mod On/Off Switch: use this to turn the Audio Mods on and off individually. Select an Audio Mod and click on the Audio Mod On/Off Switch in order to turn this Audio Mod on or off.
- Modulation Source Popup Menu: Use this to select the output signal of any Patch Window Module as the input signal for the Audio Mod.
- Pre/Post Envelope Switch: Use this to determine whether the Audio Signal is tapped off before or after being sent to an amplitude envelope.
- Gain dB Control: use this to set how much an input signal is boosted before measuring the level by an Envelope Follower (in dB).
- Attack Control: Determines how quickly the Modulation Signal produced by the Envelope Follower follows the upward movements of the level. High values stand for a slow reaction.

- **Decay Control:** Determines how quickly the Modulation Signal produced by the Envelope Follower follows the Modulation Signal of the level. High values stand for a slow reaction.
- **Trigger Module Popup Menu:** Use this to select the goal of the Trigger Signal when you are using Audio as an Envelope Trigger. It raises the input level of the Audio Mod over the threshold value set using the Thresh dB Control (see below) and activates the envelopes of the selected Module (as would otherwise be done by a MIDI Note-On message). More specific information on this can be found in the introductory example in the section “Audio Mod as Trigger.”
- **Thresh dB Control:** Use this to set the threshold value (in dB). Above this threshold, the Audio Mod should trigger the envelope. If the level of the input signal falls under the set threshold, the Audio Mod sends a MIDI Note-Off command.

## 4.10. The Browser and Attributes Windows

### 4.10.1. The Attributes Concept and the KoreSound

ABSYNTH provides a new and more intuitive way to save, browse and load its preset sounds. We have left behind the old paradigm of individual sounds contained in separate sound banks, with all its organizational problems. Instead, the settings for each sound are saved into single files that can then easily be ported between platforms or projects. These sound files can also be loaded directly by NATIVE INSTRUMENTS’ host application KORE. As a result, each saved sound within ABSYNTH is called a KoreSound.

To manage all these KoreSound files you need a powerful way to browse through them. Therefore, each KoreSound file also contains information about the sound in musical terms, known as the sound’s attributes. The *Attributes Window* of ABSYNTH provides a list of about 170 different attributes.

By combining these descriptive terms, each of the synthesizer’s sounds can be illustrated according to its *origin* or *source*, its *timbre*, *articulation* and *genre*. You can also enter additional *meta information* such as the name of the sound’s author and so on.

All KoreSound files placed in ABSYNTH’s user and factory library folders are automatically integrated into a database of sounds. The *Browser Window* of ABSYNTH is your interface to this database. Within the Browser you can select a combination of attributes to find a sound that fits your needs. For example, try selecting attributes Bass, Digital, Dark and Fat, Monophonic and

Techno/Electro to find exactly that -- a digitally cold yet propulsive and fat bassline sound. Different bank files at various locations on your disk won't be an issue anymore -- you'll be able to find the sounds you need for your music quickly and easily.

---

Please note that there is a differentiation between SingleSounds and MultiSounds within KORE. All KoreSounds you save with ABSYNTH will be loaded as SingleSounds in KORE, and ABSYNTH will also only be able to load SingleSounds. Please refer to the KORE manual for detailed information. This difference is of no importance within ABSYNTH itself.

---

The following sections will explain how to use ABSYNTH's attributes to browse through your sounds and load them as well as how to save your own sounds using the attributes. You can find a complete description of all available attributes in Appendix B. A detailed tutorial on how to search with the browser is available in Appendix A.

### 4.10.2. Searching and Loading Sounds with the Browser

In the *Browser Window* you can search and load your ABSYNTH sounds as well as organize them into programs.



The Browser Window of ABSYNTH can be viewed in two alternative modes that are toggled by clicking the *Sounds* button in the window's upper-left corner. When this is deactivated, you see the File Tree View. When activated, you can browse your KoreSounds in the Database View. Both views share the same structure: at the left you specify which sounds you want to see (i.e. a folder in File Tree View or a set of attributes in Database View). On the right you can

load one of the KoreSounds from the *Search Results* by double-clicking on it. When activating the *Programs* button in either view a program list is added. All views feature the Browser Control Bar at the top, which contain the *Sounds* button, the *Programs* button and additional control options.

## Database View

The Database View becomes visible by using the mouse to activate the Sounds button. It consists of the table of attributes itself as well as the *Sound Type* switch, the *Clear* button and the *Search Term* text field, these three placed within the *Control Bar* at the top.

<div> <input type="text" value="Search"/> <div> <div>Sounds ▶</div> <div>Instruments</div> <div>Effects</div> </div> <div> <input type="text"/> <input type="button" value="X"/> </div> </div>				
Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

The list of available attributes alternates depending on the sound you are searching for. In most cases this will be instrument sounds. But, as described in chapter 4.4.2, you can also route audio signals to ABSYNTH to use the application as an effect unit. Therefore, you can toggle between searching for Instruments or Effects by clicking the *Instruments* or *Effects* button in the *Control Bar*.

The attributes are grouped into columns. For instruments, the categories used are *Instrument*, *Source*, *Timbre*, *Articulation* and *Genre*.

- Instrument specifies the general type of instrument, for example Synth, Bass or Soundscape.

- Source loosely describes the sound's origin: acoustic, derived from a sample loop, synthetic, etc.
- Timbre describes the sound's general tonality: cold, warm, metallic, dissonant, and so on.
- Articulation describes how the sound develops over time (rhythmic, short, evolving, and so on).
- Genre provides a choice of musical styles with which the sound might be compatible.

Effects, can be selected using the attribute categories Type, Mode, Characteristic and Application:

- Type characterizes the effect in technical terms. Choose between reverb, distortion, delay, and the like.
- Mode deals with how the effect is applied, as in side-chain, LFO, and multi-band.
- Characteristic describes the effect's tonality (warm, intense, metallic, etc.)
- Application gives you a choice of “targets” for which an effect might be best suited. These can be different instruments, like Organ or Bass, or application areas, like mastering or surround sound.

Each of these categories contains a list of attributes describing possible characteristics, which a given KoreSound might contain. A detailed explanation of all the available attributes can be found in Appendix B. There are also several examples on how to find a specific sound in Appendix A.

To search for a sound within the database, simply select or deselect single attributes by clicking them with the mouse. Any number of attributes can be combined to narrow your search. However, you can only use one attribute of the *Instrument* (instrument sounds) and *Type* (effect sounds) categories, respectively. The *Clear* button deselects all currently activated attributes. Each additional attribute that you select reduces the total number of matching KoreSounds in the list at right. The remaining KoreSounds are displayed in the *Search Results*.

Instead of browsing the database by using the attributes you can also search for sounds by entering a search term into the *Search Term* text field. When you enter a term and press Enter, the ABSYNTH Browser searches through all KoreSound file names as well as all the text fields of *Meta-Information*. Using this feature you can search all sounds sharing the same word in their names, all sounds created by a particular author or search those sounds containing specific terms in their *Comment* fields. Note that this flexible textual search

cannot be combined with the attribute search, however; entering a search term here automatically clears the current attribute selection. It is also independent from any *Sound Type* switch setting.

The database represents the contents of the library folders (and their sub-folders) on your hard-drive. Those folders are not checked for new KoreSound files each time ABSYNTH is started, as this would significantly slow down the start-up time. Thus, if you manually place KoreSound files within your library folders using your operating system, ABSYNTH will not integrate these files into the database search until the library folders are re-scanned. Again, you can trigger the database rebuild manually within the *Options Dialog*, described in Chapter 4.2.2. The database is then scanned in a background process while you continue working with ABSYNTH 4.

## File Tree View

Deactivating the Sounds button with a mouse click brings the File Tree View into view. In this view, some of the elements within the *Control Bar* will fade. In place of the columns of attributes a common file tree is displayed, showing all the folders and drives on your computer. You can adjust the layout in File Tree View by dragging the small handle on the frame between the windows to either side.



The File Tree View is straightforward; it is similar to the way you work with files in the operating system itself. You can select a folder by clicking its name; any KoreSound files contained within it are immediately displayed within the *Search Results*. If a folder contains sub-folders, you can make them visible by clicking on the folder icon in front of the folder's name. The list of sub-folders is closed again by clicking the folder icon once more.

When all folders are closed there are three main entries here:

- At the top we find the *Explorer* entry. It contains your operating system's folder structure as sub-levels. This is particularly useful if you want to open a KoreSound file that is not within your library folders.

- In the middle we find *My Favorites*. It does not contain KoreSounds itself; instead it contains links to KoreSound files elsewhere on your computer.
- Finally, there is *My Sounds*, which links to the user content folder on your hard drive. (Read more about this below.) It reflects that directory's sub-folder structure; its handling is similar to that of the *Explorer* entry. The *My Sounds* entry contains all the original sounds that you have saved from previous sessions with ABSYNTH.

You cannot delete, rename, copy or move KoreSounds within the File Tree View as this might create inconsistencies with the database. If you need to delete or rename a KoreSound, you can do this in your operating system as you would with any other files. You'll find your sounds where they were saved by ABSYNTH (see section 4.7.3 below). ABSYNTH uses the following file locations to save your sounds depending on your operating system:

- “My Documents/NATIVE INSTRUMENTS/Shared Content/Sounds/ABSYNTH 4” on Windows XP.
- “[User]/Documents/NATIVE INSTRUMENTS/Shared Content/Sounds/ABSYNTH 4” on Mac OSX.


These are the default locations for the user content folder. You can add further locations within the *Database Tab* of the *Options Dialog*. There you can also trigger a reconstruction of the database. This is necessary after deleting or renaming a KoreSound to inform the database of the changes.

*My Favorites* is a powerful way to quickly access the KoreSounds you use most often. You can add any KoreSound from the Search Results by right-clicking on it and selecting *Add to My Favorites* from the context menu. Alternatively, you can drag it from the Search Results into the *My Favorites* folder or one of its sub-folders. You can also create sub-folders within the *My Favorites* folder to sort your favorite sounds hierarchically: right-click on the *My Favorites* entry and choose *New Favorite Folder* from the context menu. Empty Favorites folders can also be removed by using this context menu.

You can also easily browse through the KoreSounds in any folder by using the *Previous/Next Buttons*. See section 4.3 for details.

## Search Results

Independent of any Browser View you work in, the KoreSounds that match the search criteria, folder selection or attribute combination are displayed as a table within the search results.



Name
Choir To The Wind
Coiled Strings
Dancing Strings
Dawn Breeze
Decoding The Message
Decomposing Ensemble
DimResolve
Eeriality
EerieBellDrone
Firefly
FriendlyNebula
InertiaBuffer
Instrument Coalesce
Kuroshio
Mistyfied
Mutagen7B4

Each row of the table holds one KoreSound. Information about the KoreSound is displayed in several columns. You can change the table's layout by clicking on the headers at the top:

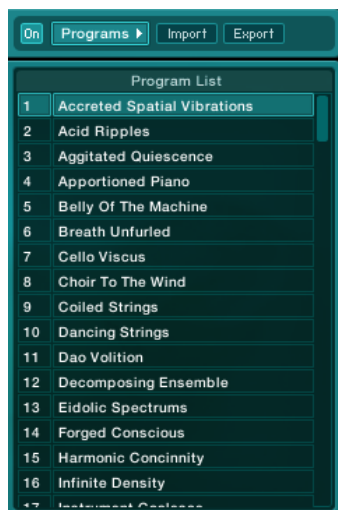
- Click onto a column's header to sort the Search Results alphabetically, according to *that* column's entries. Clicking it again reverses the order of the sort. This can come in handy if you want to search all bass KoreSounds with a high rating, for example. Simply select the Bass attribute within the Database View's Instrument column, and then click the Rating column header within the Search Results: the KoreSounds with the highest ratings will now appear at the top of the list.
- Right-click to provide a context menu of possible columns to be displayed. Clicking a column label here that is already displayed (e.g. *Name*) removes it from the display. Vice versa, clicking the label of a column that is currently not displayed inserts the column into the table.

You can now easily load an **ABSYNTH** KoreSound by double-clicking on a desired entry in the *Search Results*.

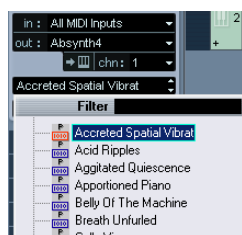
You can also load your Search Results one after another by using the *Navigation Bar*. See section 4.3 for details.

## Programs

Within the *Browser Control Bar* you will find the *Programs* button. Clicking on it removes the *Database View* (the *File Tree View* remains in this case, as it is smaller) and brings up a second list beside the current *Search Results*. You can drag any *KoreSound* to this list from the *Search Results*. You can also change the list's order by dragging the *KoreSounds* within the list up and down. If you drag a *KoreSound* to a position in the list that is already occupied, that entry and all subsequent ones are shifted down by one position.



After you press the *On Button* (next to the *Programs* button if this one is activated) this list of *KoreSounds* becomes your default list of presets, and these presets become selectable by MIDI Program Change messages and host automation from a sequencer.



Obviously, only one program list can be active at a time. You can, however, export the list to a file and create another one. All exported lists can be imported again for future use. Note that those program lists link to the actual

KoreSounds, similar to the *Favorites*. If, by any circumstance, one of the KoreSounds on the list has been lost or renamed, the program list will not be able to recall it.

4.10.3. Defining Attributes and Saving KoreSounds

Assuming now that you are familiar with searching for a sound in the Browser’s Database View (as described in the previous section), the following explanations should be easy to follow.



You access the *Attributes Windows* by clicking the *Attributes* button in the *Application Control Bar*. Its layout is similar to the Browser’s Database View, except that while you load KoreSounds from the *Browser Window*, within the *Attributes Window* you save them. Therefore, the Search Results are not needed and are replaced by the *Meta-Information*.

The Meta Information provides additional text fields to enter information about the sound to be saved:

- *Author*: the Author of a KoreSound. Fill in your name for your own KoreSounds. This field is automatically filled with a default author name, if one has been entered in the Options Dialog.
- *Company*: the commercial vendor of the KoreSound, if there is one.
- *Bankname*: the bank the sound is derived from.
- *Color*: associates a color with the KoreSound. This information is used if the sound is loaded into KORE.
- *Rating*: allows you to assign a rating the sound for future reference.
- *Comment*: this field can hold any information you want. Often it is

used to describe a KoreSound in terms of its possible usage, and also to note any special interactive features of the KoreSound, e.g. “MIDI modulation wheel controls master cutoff.”

- *Number of Inputs*: Specifies the number of inputs used in the oscillators (see chapter 4.4.2).
- *Number of Outputs*: Specifies the number of outputs set in the Output Setup (see chapter 4.2.2).
- *CPU Usage*: Displays the percentage of CPU power the sound uses on your system. The amount varies depending on the number and type of modules and voices used. Note that this value will also vary depending on how powerful your computer system is!
- *Load Time*: specifies the time it takes to load the sound on your system.

Note that the format of the Meta-Information has been unified among a number of different NI software instruments such as Massive, ABSYNTH 4, and FM8 as well as our software live host KORE in order to provide a common environment for your work. Some of the displayed values may, however, not be active within all of these instruments. For instance, *Color* is of no importance within ABSYNTH itself.

You can search through all of the entries of the *Meta-Information* with the Search Term field of the Browser. For example, you can enter the name of the project created for your sound in the first place into the *Comment* field. By using the database you can access it easily in all future projects, and if you need all sounds used in a particular project, you can find them by entering the project's name into the *Search Term* field.

All sounds you save are automatically integrated into the database. While this is very comfortable for browsing — you don't have to worry about where the KoreSound files are actually stored — you should take a moment while saving a new KoreSound to set its attributes. If you don't do this, your database will quickly become less useful, as you won't be able to find your own sounds easily. Take a look at Appendix A and Appendix B for an explanation of all attributes as well as some basic examples.

After entering the *Meta-Information* and setting the attributes according to your sound, you can save it by clicking the *Save* button within the *Application Control Bar*. This button will bring up a *Save As* dialog asking you for the new KoreSound file's name and the location to save it. If you saved the sound previously, this may overwrite the old file unless you rename it at this point; if so, ABSYNTH will ask you whether or not you really want to overwrite it. By default, the dialog box will suggest to save the sound to the user content folder

or one of its sub-folders. The user content folder is created during installation and can be found in “My Documents/ABSYNTH 4/My Sounds” in Windows XP (“[User]/Documents/ABSYNTH 4/My Sounds” in OSX). You can access this folder within the *Browser’s File Tree View* by selecting the *My Sounds* entry. As explained above, you can use your operating system to delete or rename files within these folders; please refer to section 4.7.2 for details.

## Appendix A – How to Work with Attributes

This chapter will provide several examples on how to search for sounds and effects with the sound Browser. You’ll learn the meaning and the definitions of the supplied Attributes, as well as the logic behind their arrangement. We will discuss how to search for specific sounds or effects effectively, and how to supply Attributes for your own sounds and effects. A detailed explanation of all Attributes can be found in Appendix B.

Note that you can search for both instruments and effects since the approach is the same. The following explanations will focus on instruments only.

First, switch to the Browser Window and activate the Database View by activating the Sounds button. Then click on the **Instruments** tab at the top of the browser.



The Browser is arranged in five columns. Your search should begin with the leftmost column and then filter the results as you move toward the rightmost column. Some columns have internal groupings, so work with a left to right/top to bottom protocol when searching for sounds.

### The Instrument column

The *Instrument* column acts as the starting point for your search and describes a sound’s basic instrumental quality:

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country

The first thing you probably did was to click on *Synth* to find a sound, as ABSYNTH is a synthesizer. You'll wonder why we've included so many acoustic instruments as Attributes.

The practice of imitating acoustic instruments has a long history. Synthesizing brass, woodwinds or strings in analog synths has become so familiar to sound designers, that sounds like Mellow Strings or Fat Brass have become familiar preset names for synthesized sounds.

On the other hand, there are sounds that are clearly based on acoustic instruments, yet they don't sound anything like the acoustic original. For example, you might have an ABSYNTH *KoreSound*, which uses a sample of an acoustic flute as material for granular synthesis. Clearly, this sound is only possible with digital synthesizers, but the origin of the sound is still an acoustic instrument. So you'd choose *Flute* in this column to look for such a sound.

Of course there are many sounds that have no connection to any acoustic instrument, so you'll probably find these sounds categorized as *Synth*, *Soundscapes*, *Sound Effects* or *Other*. Also, don't worry if you're looking for Pads or Leads, and can't find these Attributes under *Instruments*. You can specify this in the *Articulation* column, letting you distinguish between, for example, String and Synth Pads.

---

**Tip:** A sound can have only one instrument as an Attribute. For example, if you're looking for a sound that features a drum loop and bass loop at the same time, choose *Multitrack*. If you're searching for a nice piano sound with some strings layered on top of it, choose *Piano/Keys* and *Layered* (in the *Source* column).

---

## The Source Column

The *Source* column has the following functions:

- It defines the instrument you've chosen in the first column more specifically
- It gives you information about the synthesis technique used in the sound
- It provides information about the sound's origin

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

As you can see, this column is subdivided into seven smaller groups, each of them serving a specific purpose. We'll start from the top and make our way to the bottom of the list, so let's begin with the first group:

- Acoustic – Electric – Analog – Digital: These four Attributes define the instrumental source. Let's assume you've clicked on Bass in the Instrument column; you can then distinguish among Acoustic basses (e.g., an upright bass), Electric bass (e.g., a picked rock bass), Analog Bass (e.g., a typical subtractive synth bass sound) and Digital bass (e.g., an FM bass sound). Of course, depending on your choice in the first column, not every attribute will fit. If you chose Flute, you will probably only be using Acoustic, Analog or Digital. Note that every sound should belong to exactly one of the four types; i.e., a sound should not be Analog and Digital.
- Synthetic – Sample-based: This pair of Attributes describes the sound's

technical aspects, as it can be important to know if a sound was generated by some form of synthetic synthesis technique or through sampling. If a sound is Synthetic you will have the option of accessing many, if not all parameters that constitute the sound. If a sound is Sample-based you'll most likely not be able to change the sound's origin, but the sound might not use as much CPU. If you want to add "real" acoustic instrument Sounds to the Database, you'll probably want to select this Attribute. Synthetic also refers to patches that use samples, but have such heavy processing that the sample is perceived as an oscillator (ABSYNTH's sample and granular mode are good examples of this). Note that a sound is always either Synthetic or Sample-based (but not both).

- FM – Additive – Granular – Physical Model: These four Attributes specify the audible perception and/or synthesis technique of the sound. Note that an Attribute like FM does not necessarily mean that the sound uses the actual technique of frequency modulation, but it clearly sounds like FM. Let's assume you are looking for a typical FM bass sound. This sound could be produced by actual frequency modulation, or by using a sample. If you're sure you want "true" FM synthesis, you would check Synthetic, and then you can be confident that your FM Bass was generated using this technology.

The next six Attributes are grouped in pairs and specify the sound's source:

- Solo/Single – Ensemble/Kit
- Small – Big
- Dry – Processed

These are clearly opposites (e.g., a sound cannot be **dry** and **processed at the same time**). Please refer to Appendix B for a complete set of definitions.

## The Timbre Column

The *Timbre* column specifies a KoreSound's timbre. It is made up mostly of Attribute pairs:

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

As with the pairs in the Source column, these Attributes are opposites. It is important to realize that this column's Attributes have to be seen in relation to the selected Attributes in the *Instrument* and *Source* columns (that is why it is a good idea to always go from left to right).

For example, a bass instrument is obviously low in nature; therefore you don't have to additionally select *Low*. However, you could still do it for bass sounds that clearly exhibit low frequencies like a sub bass. Note that Attributes like *Warm* or *Exotic* are highly subjective. It is important to consider the expressiveness of such Attributes in relation to the instrument.

Please refer to the Appendix B for a complete set of definitions.

## The Articulation Column

The *Articulation* column serves two purposes: It describes how the sound progresses over time; and it gives you information regarding how to use the sound

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

In previous versions of ABSYNTH, you'd have to work with preset names like "Slow Strings," "Dream Pad (+rls)" or "Monsta Synth (lead)." But a preset name is not really the best place to indicate the sound's intended application. With the *Articulation* column you can define exactly what the Sound is about, and its intended use.

Especially in a live situation, the knowledge of how a sound is meant to be played is quite important: If for example a sound is categorized as *Chord*, you know immediately that hitting one key results in a chord, meaning that if you play a chord on the keyboard the result will be rather messy.

## The Genre Column

The *Genre* column describes the musical style with which a sound can be associated:

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

This set of Attributes is the last step in defining your KoreSound, as these are the most subjective definitions and/or interpretations.

Obviously, the definition of “What is techno?” and “What sound can be used for techno?” is always subjective because really, every sound can be used for every genre, like a harpsichord in hip-hop or a sub bass in jazz. But here, we also try to pinpoint the sound’s origin whenever possible. Therefore, a harpsichord sound should be found under *Orchestral/Classical*, as it’s an instrument used in the repertoire of the 17<sup>th</sup> and 18<sup>th</sup> century.

Again, check Appendix B for a complete list of definitions.

## Examples

In this section, we'll present some examples of typical searches. In each example, we kept the amount of selected Attributes to a minimum, just to give you an idea about the basic principle. You always can refine your search.

- Analog Kick Drum: This search will provide you with a single kick drum sound, as *Solo/Single* is selected (although the pitch of the kick drum might change when you play across the keyboard). Because *Synthetic* is checked, you know that you'll be able to modify the sound in its entirety. Try the *Genre* column to refine your search.

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- “Harsh” electronic drum kit: This search will give you complete drum kits, since Ensemble/Kit is selected

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- **FM Bass:** This is a typical search setting for an FM bass sound. You could select *Sample-based* instead of *Synthetic*; then you'll retrieve programs that sound like FM but are based on samples.

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- **Rave Lead:** Note that no Instrument is specified, so this search will give you all sounds, which could be used in the same context.

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- Soft Electric Piano: In this example, because Sweep/Filter Mod is selected the sound will have some sort of filter movement. As a result, the electric piano might have a wah-wah “feel” to it.

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- Dark Pad

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- Chord Stab

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

- Thin Bells

Instrument	Source	Timbre	Articulation	Genre
Piano/Keys	Acoustic	High	Slow Attack	Avantgarde
Organ	Electric	Low	Decaying	Orchestral/Class-
Synth	Analog	Distorted	Sustained	Film Music
Guitar	Digital	Clean	Long Release	Ambient/Electron-
Plucked Strings	Synthetic	Bright	Percussive	Drum&Bass/Brea-
Bass	Sample-based	Dark	Long/Evolving	House
Drums	FM	Warm	Pulsating	Techno/Electro
Percussion	Additive	Cold	Echoing	Industrial
Mallet Instruments	Granular	Fat	Pad	Dance/Trance
Flute	Physical Model	Thin	Lead	HipHop/Downbeat
Reed Instruments	Solo/Single	Hard	Monophonic	Funk/Soul
Brass	Ensemble/Kit	Soft	Chord	Reggae/Dub
Bowed Strings	Small	Muted	Glide/Pitch Mod	Latin/Afro-Cuban
Vocal	Big	Detuned	Sweep/Filter Mod	Rock
Soundscapes	Dry	Dissonant	Arpeggiated	Pop
Sound Effects	Processed	Noisy	Tempo-synced	Jazz
Multitrack	Layered	Metallic	Expressive	Folk/Country
Other	Sequence/Loop	Wooden	Multiple	Ethnic/World
	Surround	Exotic	Randomized	

## Appendix B – Attributes Reference

The next few pages are a reference of all attributes used in ABSYNTH's database. The attributes are identical to those used within KORE. They are ordered in categories: first those used to describe an instrument sound, then those that specify an effect sound.

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Please note that some attributes should be used mutually exclusive, e.g. a sound's source can either be acoustic or electric. Refer to Appendix A for examples.

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### Instrument Categories

#### Instrument

This column specifies a sound's basic instrumental quality. All other columns are additional descriptions of these instruments. Only one instrument can be chosen. The sound can be an emulation of the chosen instrument or a timbre which audibly refers to an instrument without trying to imitate it (e.g., granular processed flute sample).

- **Piano/Keys:** All acoustic/electric pianos, harpsichord, clavinet etc. In general all sounds that are meant to be played in a piano/keyboard fashion.
- **Organ:** Acoustic and electric organs. Also harmoniums and organ-like reed instruments, e.g. accordion, melodica, reed organ etc. Generally played on some kind of keyboard.
- **Synth:** All kinds of typical synth sounds not associated with other instruments in this column. A typical synth brass sound for instance belongs to Brass. Synth instruments which are meant to be played in the lower range are found in Bass.
- **Guitar:** An instrument that sounds like a guitar, including acoustic, classical, electric and synth guitars.
- **Plucked Strings:** Instruments that are generally played by plucking a string, like a harp, koto, banjo, etc. This also applies to synth instruments whose main sonic quality is derived from the sound characteristic of a plucked string.
- **Bass:** A sound which can serve as the bass part in a production. A synth should only be categorized as Bass if the lower range is more

convincing than the upper range. (Note that a double bass used in a classical context (i.e., bowed) would be categorized as Bowed Strings. However, if used in a jazz context (i.e. plucked), it would be categorized as Bass.)

- **Drums:** A single drum sound, a drum kit or a drum loop based on an acoustic or electronic drum kit. Typically this includes kick drum, snare, toms, hi-hat, ride/crash cymbals, claps.
- **Percussion:** A single percussion sound, a percussion kit or a percussion loop. This includes all idiophones and membranophones of indefinite pitch, such as bongo, timpani, agogo etc. It also includes electronic percussion that is not usually found in an electronic drum kit.
- **Mallet Instruments:** All instruments with definitive pitch played with mallets, like vibraphones, xylophone, marimba, bells, steel drums etc.
- **Flute:** Instruments that reproduce or simulate flutes (oscillating air tubes) or which are based on flute samples. This includes acoustic flutes, pan pipes, synthetic flute simulations, breathy sounds, etc.
- **Reed Instruments:** Instruments that reproduce or simulate reed instruments like oboe, clarinet, bassoon, saxophones etc. Note: reed organs are categorized as Organ.
- **Brass:** Instruments that reproduce or simulate brass instruments like trumpet, french horn, trombone, tuba. You'll also find a lot of analog brassy synth sounds in this category. Note that Saxophones are not brass, but reed instruments.
- **Bowed Strings:** All instruments with a playing technique defined by bowing a string, typically violin, viola, cello and double bass. Also, typical analog string pads are found here.
- **Vocal:** Choirs, vocal samples and all other instruments that sound like vocals. This also includes synth sounds that clearly make use of a formant/vowel filter or a talkbox/ vocoder to make the sound speak or sing.
- **Soundscapes:** A sound providing some sort of acoustic scenery, whether it's based on tonal timbres or noise textures (typically long compared to sound effects).
- **Sound Effects:** A sound effect (not an effect plug-in) similar to an explosion, shot or footsteps (typically short compared to Soundscapes).
- **Multitrack:** A combination of several different instruments. If you can imagine using the different instruments independently from each other, it's Multitrack. These are mostly sequenced or used in a key-split (like

a combination of drums/bass/keyboard). If the instruments blend into one sonic entity, its Source is categorized as Layered and is not categorized as Multitrack.

- Other: Select this Attribute if none of the above instruments apply.

## Source

This describes the source and/or synthesis technique with which the sound can be associated, always in relation to the selected instrument.

- Acoustic: Further defines the instrument, e.g. acoustic piano, acoustic guitar, acoustic (i.e., church) organ.
- Electric: Further defines the instrument as an electro-acoustic instrument, e.g., electric piano, electric guitar, electric organ.
- Analog: Further defines the instrument as a typical subtractive synth sound, e.g., analog bass, analog brass, analog synth.
- Digital: Further defines the instrument as a typical digital synth sound (like wavetable, FM), e.g., digital bass, digital piano, digital synth.
- Synthetic: This Attribute describes the technical aspect of how the sound was produced. Synthetic refers to all synthesis techniques like subtractive, additive, FM, wavetable, granular etc.
- Sample-based: This Attribute describes the technical aspect of how the sound was produced. Sample-based refers to all instruments in the sense of sample playback, i.e., the sounds were obtained from external sources. It should not be used for granular synthesis or sample-based wavetable synthesis. For example Absynth Patches, which use a sample for playback but manipulate it drastically, would be categorized as Synthetic.
- FM: A sound which uses FM synthesis. FM can also be used for sample-based instruments that sound like FM.
- Additive: A sound that uses additive synthesis (or sounds like it).
- Granular: A sound that uses granular sampling (or sounds like it).
- Physical Model: A sound that uses physical modeling (or sounds like it).
- Solo/Single: Used to differentiate between a single instrument and a group of identical instruments, like a solo violin (as opposed to a violin section) or a single snare drum (as opposed to a drum kit).
- Ensemble/Kit: Used to differ between a group of identical instruments and a single instrument, like a string section or a drum kit. Don't mistake Ensemble/Kit with Layered.

- **Small:** Specifies the physical size of the instrument source to help differentiate among similar instruments. Only select this Attribute to describe real instrument sizes, not the timbre itself. For example, a violin is categorized as Bowed Strings/Small; a hand drum would be found under Percussion/Small.
- **Big:** Specifies the physical size of the instrument source to help differentiate among similar instruments. Only select this Attribute to describe real instrument sizes, not the timbre itself. (For example a violoncello is categorized as Bowed Strings/Big; a taiko drum would be found under Percussion/Big.)
- **Dry:** Has no noticeable effects like reverb or delay. Distortion and/or filtering do not affect this Attribute.
- **Processed:** A sound reinforced with some obviously added and audible effects like delay, reverb or chorus.
- **Layered:** A sound where two or more sound sources contribute to one instrument. The sounds must combine to form one sonic character, like a typical Piano + String sound.
- **Sequence/Loop:** Based on a sequence or loop, like a step-sequenced synth or a drum loop. This Attribute is not used for simple repeating or retriggering of notes (see Arpeggiated).
- **Surround:** A sound using surround-sound technology.

## Timbre

This set of attributes describes the sonic composition of the sound (always considering the selected instrument).

- **High:** Used for high pitched sounds and to distinguish similar timbres by their range, like a piccolo flute, hi-hat, bells etc.
- **Low:** Used for low pitched sounds and to distinguish similar timbres by their range, like a bass clarinet, kick drum, sub bass etc.
- **Distorted:** A sound featuring obvious distortion/overdrive. Saturated and heavily bit reduced sounds are also found here.
- **Clean:** A sound featuring no distorted sound elements at all. Can be used to further specify instrument groups, e.g. clean electric guitar.
- **Bright:** A sound with emphasized high frequencies.
- **Dark:** A sound with de-emphasized high frequencies, perhaps from lowpass filtering.

- Warm: A sound with an organic, pleasing ambience, often associated with analog sounds. Technically speaking, warm sounds tend to have a bit more lower midrange emphasis and not too many highs.
- Cold: Not a natural sound, but a more electronic/digital sound.
- Fat: A “room-filling” sound, e.g., an analog super sawtooth sound, also to be used with typical unison sounds.
- Thin: A small sound or a sound with a narrow frequency band.
- Hard: A general, rather subjective interpretation of a sound. Can be used to differentiate similar instruments (e.g., vibraphone with hard mallets). Also associated with hard-synced oscillators.
- Soft: A general, rather subjective interpretation of a sound. Can be used to differentiate similar instruments (e.g., vibraphone with soft mallets).
- Muted: A sound with a muted or damped quality, like a muted guitar or con sordino strings. Usually found on acoustic instruments (a dark sound is not necessarily muted).
- Detuned: A sound with detuned oscillators to create floating tones, like saw leads used in trance music or honky-tonk piano. This is not used when the oscillators are tuned a fifth apart (see Chord), and it is not used with instruments that use micro intervals and/or non-standard tunings.
- Dissonant: A sound which in general is not playable tonally.
- Noisy: With some noise elements in the sound, but still playable tonally, like very breathy flutes. Slightly bit-reduced (not yet distorted) and lo-fi sounds are also categorized as Noisy.
- Metallic: A sound with a metallic quality. Note that several types of bells and FM often sound metallic.
- Wooden: A sound with a wooden quality, like a bamboo flute or xylophone.
- Exotic: Sounds with an extremely unusual quality fall under this category.

## Articulation

Describes how the sound progresses over time in terms of volume and timbre. Also, this column lists all the Attributes that affect the playing style.

- Slow Attack: A sound with a gradual attack or a fade-in.
- Decaying: A sound which decays while holding a key, like a piano or a guitar. It does not necessarily fade out completely; see Sustained.

- **Sustained:** A sound with a constant volume level while holding a key, e.g. an organ or sustained strings. The sound doesn't fall under this category if just a small part of the signal is sustained. A sound can be both Decaying and Sustained. A loop, although it continues to play a sound, is usually not categorized as Sustained.
- **Long Release:** A sound with a long fade out after releasing the key, like a bell or a pad. This can also indicate instruments with release samples. Don't confuse Long Release with an echo or long reverb!
- **Percussive:** A sound with a short attack and usually short decay/release, often found in the group of drums or percussion.
- **Long/Evolving:** A sound with a complex, moving or increasing envelope, which persists for more than just a few seconds.
- **Pulsating:** A sound with periodic changes in volume and/or timbre over time, e.g., a step modulator controlling volume/filter. A loop is not necessarily Pulsating - only if it is processed in a similar manner.
- **Echoing:** A sound with significant reverb or delay.
- **Pad:** A sound texture suitable for as a homophonic background. As opposed to a Soundscape, a Pad has a more uniform characteristic and is often played as a chord.
- **Lead:** A sound suitable for the main instrumental melody part.
- **Monophonic:** A sound which can play only one (MIDI) note at a time, with or without key-up action.
- **Chord:** A sound with more than one pitch played simultaneously per key, like fifth leads. This does not include sounds that simply double the octave. A Chord can also be Monophonic, as long as only one (MIDI) note is sounding at a time.
- **Glide/Pitch Mod:** A sound that uses pitch slides between note transitions. It also indicates sounds with pitch modulation, like a dropping kick drum.
- **Sweep/Filter Mod:** A sound with some kind of filter modulation, i.e., an LFO or envelope modulates filter parameters. A simple velocity to filter modulation is not sufficient (see Expressive).
- **Arpeggiated:** A sound that arpeggiates or repeats held notes. A sound that triggers a sequence is not Arpeggiated, but Sequenced/Loop.
- **Tempo-synced:** A sound which clearly changes when the host tempo changes, i.e., where certain parameters like LFO or delay times are synced to tempo.

- **Expressive:** A sound with a large and noticeable dynamic and/or tonal range, controlled by either velocity or mod wheel (a subtle velocity to amplitude routing is not sufficient).
- **Multiple:** Used to denote instruments that feature more than one articulation. Usually applies to key-switched instruments.
- **Randomized:** A sound with random elements in it, for example a random or free-running LFO modulating filter. Also indicate sequences and/or loops that give the impression of randomness.

## Genre

Illustrates the typical musical genre to which a sound would be suited. It can also stand for a particular sound's origin.

- **Avantgarde:** Sounds associated with modern contemporary music, whether acoustic or electronic. This Attribute works well in combination with other genres, e.g. orchestral + avantgarde might include extended playing techniques on acoustic instruments.
- **Orchestral/Classical:** Sounds used in a traditional symphonic orchestra or chamber group. Such sounds need not necessarily be dry, but the emphasis is placed on natural reproduction. Sample-based acoustic instruments are usually found here.
- **Film Music:** Sounds associated with film music and/or game audio. In general, sounds belonging to this category have a certain “bombastic” quality, in other words they’re ready to use for scoring, like massive orchestral brass, airy atmospheric synth textures and cinematic effects.
- **Ambient/Electronica:** Sounds that create a certain atmosphere, based on depth and warmth. Also, sounds with a kind of slow motion character or “clicks & bleeps” are often used for ambient or electronica tracks and will be found here, as well as all typical sounds for “intelligent electronic music” (opposite of cheap plastic sounds).
- **Drum&Bass/Breaks:** Prominent and deep basses combined with dark lead sounds and gloomy atmospheric hover pads. Synthetic sound effects are also a part of this genre, as syncopated drum loops are often based on polyrhythms and samples from 70s jazz and funk records.
- **House:** Typical warm and often human-sounding elements are used for this four to the floor dance music, e.g. organ chords, warm analog basses etc. Generally more analog sounds with a certain depth will be found here.

- **Techno/Electro:** Synthetic and electronic sounds and sound effects with a rather dry and dark nature are this genre's trademark. Percussion with hard attack and a very compressed character belong here as well as a wide spectrum of synthetic bass sounds, stabs and leads.
- **Industrial:** Sounds with a digital and cold/metallic character, often combined with noisy or distorted elements, belong in here.
- **Dance/Trance:** Sounds with a rather soft and warm character will be found here. Typical sounds are analog and digital synth pads, melodic elements (from soft and small to typical detuned super saw sounds for trance anthems) and commercial dance sounds like bells and arpeggiated elements go here. Sounds which are suited to create a hypnotic mood also fit here.
- **HipHop/Downbeat:** Sounds with a laid back and chilled character belong in here as well as typical sound effects like vinyl-scratching, struck drum sounds with an acoustic or analog synthetic character, and mellow pads.
- **Funk/Soul:** These instruments have that vintage funk sound, such as organs from the 60s, synths from the 70s, wah-wah guitars, slap bases, and dry acoustic drums.
- **Reggae/Dub:** For this genre, typical instruments would be dry acoustic drums and percussion, clean guitars, some acoustic flutes and smaller organs.
- **Latin/Afro-Cuban:** Sounds to be used in Central and South American music (Salsa, Son, Samba, Bossa Nova). This includes all latin percussion such as congas, maracas and timbales, as well as some acoustics guitars and djembes.
- **Rock:** Typical sounds for straightforward rock music, like electric guitars and basses, acoustic drums, and dirty synths.
- **Pop:** A rather broad musical genre that includes sounds of typical "radio-ready" music, ranging from pianos and guitars to electro-pop synths and drums.
- **Jazz:** All typical jazz instruments like piano, upright bass, saxes, brass and drums are found here. In other words, all sounds used for an acoustic jazz arrangement, ranging from small ensemble to big band. Sounds are rather natural in character with little or no processing.
- **Folk/Country:** Sounds associated with all kinds of folk and songwriter styles like bluegrass, klezmer, blues. In general, this encompasses acoustic sounds.

- **Ethnic/World:** Sounds associated with non-western musical cultures like south/north Indian music, gamelan, Arabic/Persian, Asian and African music. These sounds need not necessarily be acoustic in nature; electronic textures can also be categorized here as long as they reflect this kind of atmosphere.

## Effect Categories

### Type

Describes the basic effect characteristics.

- **Delay:** An echo effect that adds one or more delayed versions of the original signal to the sound.
- **Chorus:** An effect that mixes a very slightly delayed and pitch-shifted version of the input signal with the original input signal.
- **Phaser/Flanger:** All kinds of effects using a comb filter (delay-line) to generate phase shifting and cancellation thus creating, a phasing or flanging sound.
- **Reverb:** All effects creating an obvious room ambience.
- **Filter/EQ:** All types of effects which modify a sound's harmonics.
- **Dynamics:** Effects that manipulate the input signal's dynamic range such as compressor, limiter or expander.
- **Enhancer:** All types of effects that enhance the sound through psycho-acoustic means, e.g., to add brilliance and/or depth.
- **Vocoder:** Effects based on traditional vocoder technology where the signal present at one input modulates the signal present at another input.
- **Distortion:** All types of effects that distort the incoming signal, from discreet to heavy distortion.
- **Resonator:** A special effect containing a (comb) filter that rings at a resonant frequency when it is excited by an input signal. A short input pulse creates a significantly longer decaying oscillation at the output.
- **Lo-Fi:** An effect that creates lo-fi sounds from the incoming signal, like a bit or sample rate reducer.
- **Pitch Shift:** All effects altering the pitch of a sound without affecting the playback tempo.
- **Gate/NR:** All types of gate and noise reduction effects.

- **Panning:** Effects that modulate the incoming signal's stereo/surround placement.
- **Re-Sampler:** All effects that re-sample the incoming signal for the purpose of altering it via granular synthesis, making sequence changes, etc.
- **Amp Simulator:** An effect that simulates the sound of an analog amp.
- **Speaker Simulator:** An effect that simulates the sound of a particular speaker/cabinet combination.
- **Restoration:** Effects used to restore vintage or otherwise damaged recordings, e.g., click, hiss, or scratch removal.
- **Combination:** All effects including the character of several different effects of the above list (e.g., a combination of delay, filter and reverb effects).
- **Other:** Select this Attribute if it's not possible to specify an effect type.

## Mode

Specifies the effect's mode of operation.

- **Synced:** All effects that can sync to the host sequencer's tempo.
- **Side-chain:** All effects controlled by an external signal via side-chain.
- **Gated:** Effects that including "gating" (rapid amplitude changes) as an integral part of their sound.
- **Tuned/MIDI:** Effects that are tuned or controlled via MIDI.
- **Envelope Follower:** All effects that follow an amplitude envelope to modulate certain Attributes like filter cutoff, pitch, volume and so on.
- **Random:** Effects with random parameters.
- **LFO:** All effects with parameters controlled by low frequency oscillator(s).
- **Step:** All effects with parameters controlled by a step-modulator.
- **Granular:** Effects that re-synthesize the signal by using a micro-sound time scale.
- **Impulse Response:** All effects working with impulse responses, e.g., convolution reverb effects or filters.
- **Overdriven:** For effects with potentially overdriven inputs or outputs.
- **Vintage:** An effect that creates a vintage character, mostly associated with warmth and positive sound alteration.

- Multi-band: For effects working with more than one level or band, e.g. a multi-band compressor.
- Selective: All effects that operate on certain selective scopes of the signal, e.g., on selective frequencies like an exciter or de-esser.
- Adaptive: Driven by parameters that are extracted from the sound itself. The goal of this effect's class is to provide a changing control signal to an effect.
- Channel strip: A combination of effects designed for processing incoming audio, similar to a hardware mixing console.
- Parallel: The signal routing of effects is parallel.
- Chain: The signal routing of effects is serial.
- Stereo: All effects work in stereo mode.
- Mono: All effects work in mono mode.

## **Characteristic**

Describes an effect's special sound characteristics.

- Long: Describes the release time of an effect, e.g., a long reverb or delay.
- Short: Describes the release time of an effect, e.g., a short reverb or delay.
- Fast: For effects that need to treat the incoming signal immediately upon receiving it (e.g., a compressor) or the effect itself sounds or acts fast.
- Slow: An effect that treats the incoming signal slowly, or the effect itself sounds or acts slow (e.g., attack-delay effect).
- Bright: A general, rather subjective interpretation of an effect. Can also be used to differentiate similar effects.
- Dark: A general, rather subjective interpretation of an effect. Can also be used to differentiate similar effects.
- Warm: An effect that adds warmth to the processed sound.
- Cold: An effect that adds coldness to the processed sound.
- Intense: An effect that changes the sound in an intense way, e.g., a heavy distortion effect.
- Discreet: An effect that changes the sound in a discreet way, e.g., a subtle delay.
- Nasty/Evil: An effect that modifies the sound in a nasty or evil way, e.g. a distortion effect with high intermodulation distortion.

- **Enhancing:** An effect that generally enhances the incoming sound.
- **Coloring:** An effect that adds color or character to a sound. Often found in vintage compressor or equalizer gear.
- **Neutral:** A transparent effect that doesn't alter a sound's essential character.
- **Alienating:** An effect that modifies the sound completely, e.g., vocoder.
- **Clean up:** An effect that cleans up the incoming signal, e.g., an equalizer that reduces or removes unwanted frequencies like hum or hiss.
- **Metallic:** An effect that adds metallic elements to the sound, e.g., a ring-modulator or frequency shifter.
- **Ambience:** An effect that creates an atmospheric mood, e.g., a room reverb.
- **Spacious:** An effect that creates an evocative mood, e.g. a very long delay.

## **Application**

Describes the type of instrument, track, or field of application with which the effect is typically used.

- **Acoustic Piano:** For effects typically used with acoustic pianos, e.g., reverb or compressor.
- **Electric Piano:** For effects typically used with electric pianos, e.g., phaser or tremolo.
- **Organ:** For effects typically used with organs, e.g., speaker simulator or distortion.
- **Pads/Strings:** For effects typically used with pad or string sounds, e.g., chorus or phaser.
- **Guitar:** For effects typically used with guitar sounds, e.g., amp simulator or distortion.
- **Bass:** For effects typically used with bass sounds, e.g., equalizer or filter.
- **Drums/Percussion:** For effects typically used with drum/percussion instruments, e.g., small reverb or compressor.
- **Brass/Woodwinds:** For effects suitable for brass or woodwind sounds, e.g., reverb or delay.
- **Lead:** For effects typically used with lead instruments, e.g., chorus or reverb.

- Vocal: For effects typically used with vocal tracks, e.g., vocoder or reverb .
- Sequences: For effects typically used with sequenced lines, e.g., delay or gate.
- Loops: For effects typically used with drum or other loops, e.g., flanger or lo-fi.
- Experimental: For effects that change the signal so extensively it becomes unrecognizable.
- Surround: For effects that could be used for surround applications, e.g., panning etc.
- Mastering: For effects intended for mastering applications, e.g., multiband compressor or FIR equalizer.

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