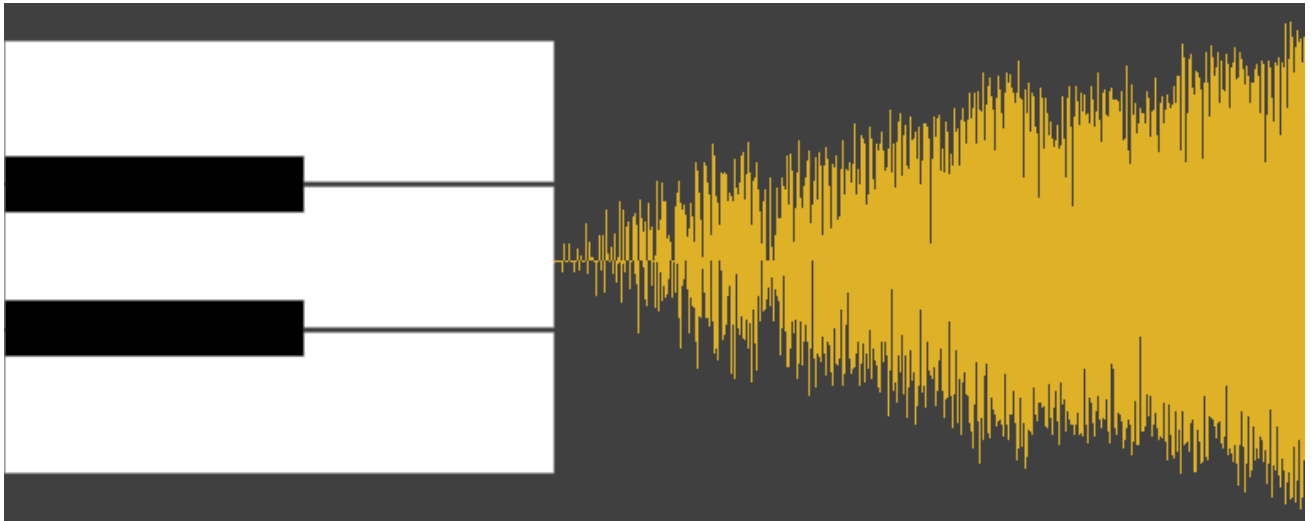


Sampler



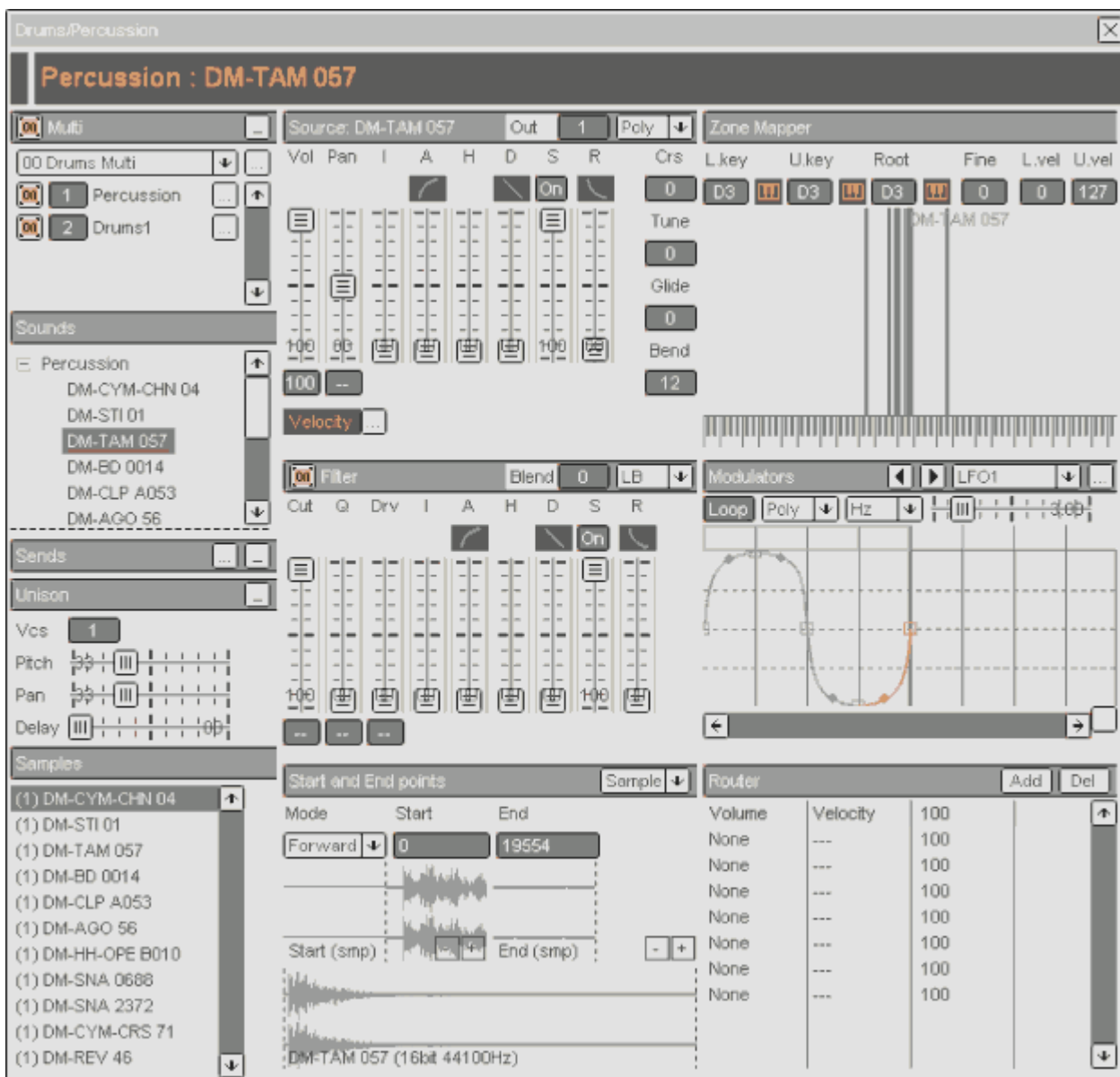
Covering Sampler component functionality in EnergyXT version 1.35

Table of Contents

Sampler.....	3
Layers and Slices.....	5
Source Controls, Unison and Audio Routing.....	9
Filter Controls.....	11
Sample and Loop Editing.....	13
Zone Mapping for Layers.....	15
Slice Mapping for Slices.....	16
Modulators.....	18
Envelope/LFO:.....	18
Gate:.....	19
Random Generator:.....	19
Router (Modulation Matrix).....	20
Send Effects.....	21
Multi-Timbrality.....	23
SoundFont Import.....	24

Sampler

EnergyXT has its own internal Sampler component. This device is both sophisticated and efficient in the creation of complex sampler patches. The Sampler has multi-timbral capabilities, a large number of modulation options, the ability to use VSTis as sends on multiple layers of the Sampler's voice structure, multiple audio outputs, the ability to operate as a beat slicer exporting midi slice files and the ability to import SoundFonts and make use of drag-n-drop to quickly build up patches.



As is usually the case with EnergyXT, the interface operations may appear a little opaque initially, but once understood - the mechanisms to create patches are logical and efficient. However, given the complexity of the device itself, its description will span multiple sub-chapters:

- Layers and Slices
- Source Controls, Unison and Audio Routing
- Filter Controls
- Sample and Loop Editing
- Zone Mapping for Layers
- Slice Mapping for Slices (Beat Slicing)
- Modulators
- Router (Modulation Matrix)
- Send Effects
- Multi-Timbrality
- SoundFont Import

Note: The Sampler uses a default patch to find samples for inclusion when inserting samples and creating new layers. Initially this is set to the root directory of the drive in which EnergyXT sits. When attempting any initial operations via context sensitive menus for the first time, the sampler will scan the configured directory. If the directory is the root for that drive, this can be a painfully long process.

To ensure that this pain is not re-experienced with every sampler instance loaded into a project, these steps should be followed:

- Right-click in the "Sounds" section of the Sampler
- After the first long scan is completed a context-sensitive menu should appear - select "Open"
- Select "Folder.."
- Navigate to a more appropriate top folder to limit the scan when opening a new instance of the Sampler component

This process should prevent the significant delay each time a new instance of the Sampler is loaded in.

The configuration of the default path for the Sampler is stored in the energyxt.ini file situated in the Windows directory. Here the path can also be edited manually:

```
[Folders]
lastsamplepath=C:\Music\Projects\currentproject\
Sampler=C:\Music\Samples\
clickwav=E:\Music Computer\Wav Samples\click.wav
```

Layers and Slices

The Sampler in EnergyXT has basically two different types of instrument or patch, the Layer and the Slice. These differ from each other in the way the engine handles the audio files and key mapping, but otherwise they share most controls.

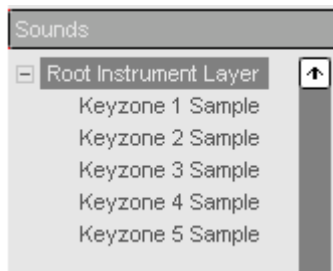
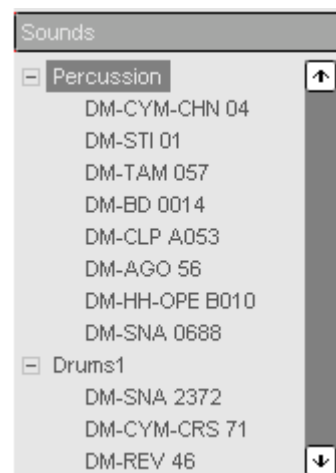
The Layer in the Sampler refers to the more traditional sampler patch with multiple samples mapped across the keyboard and across velocities if necessary. The Slice is one audio file where the mapping across the keyboard is determined by slice markers within the audio file. The Slice functionality within the Sampler is used for Beat Slicing.

The sound structure within the Sampler is represented like a file tree within the "Sounds" section of the Sampler display.

Each parent layer within this structure is either a Layer or a Slice and the children components themselves are the individual samples or slices of samples. In the Sampler component you are not limited to a specific number of layers/slices or even a specific depth of levels within a given instrument. Additionally, it is possible to mix layers and slices within an instrument if desired.

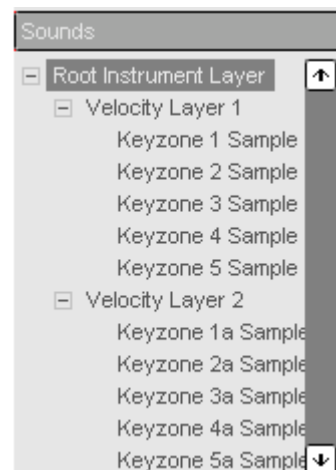
Within the structure itself it is easy to determine which is a layer or slice and which is a sample or slice reference. All layers and slices act like a container for the samples or slice references within and therefore can be expanded or collapsed via '+' or '-' symbols respectively whereas samples or slice references are the base element within a given instrument and cannot contain any further elements.

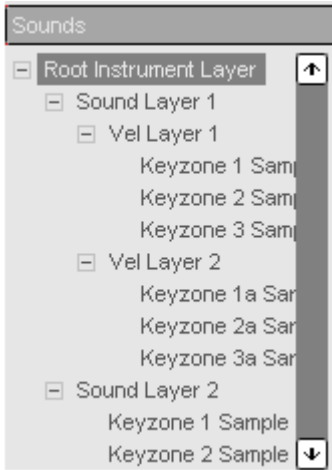
It is a good idea to plan out how an instrument is going to be structured before creating it. Here are some sample blueprints that can assist in conceptualising an instrument prior to building it:



A single layer instrument with multiple key zones and no velocity zones.

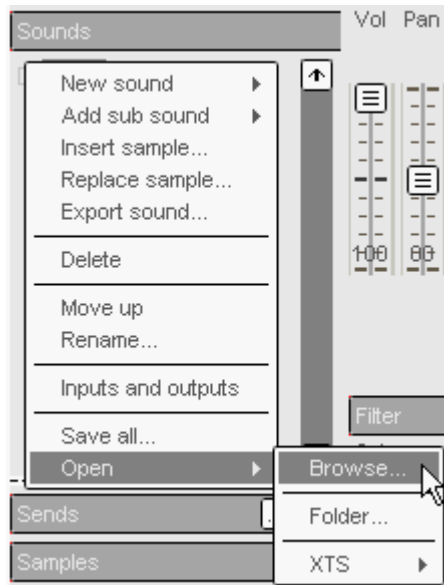
A single layer instrument with multiple key zones and multiple velocity zones.





A multi-layer instrument with multiple key zones and multiple velocity zones.

There are various methods to import instruments created for the Sampler component. EnergyXT allows drag-n-drop of any Sampler instruments (.xts) or banks (.ext) directly from the EnergyXT Browser into the "Sounds" section in the Sampler component.



Additionally, a right-click in the "Sounds" section will bring up a context-sensitive menu with an Open option.

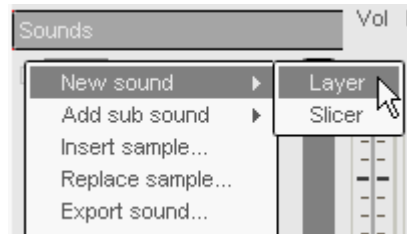
The Folder option allows configuration of a "root" directory in which EnergyXT will expect to find all Sampler instrument or bank files. All folders directly under this root folder will show below the Folder option for rapid navigation to Sampler instruments/banks.

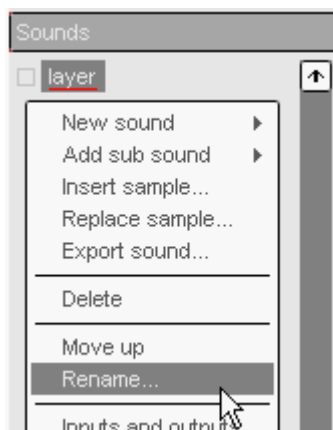
The Browse option will open a File Browser on the root directory specified.

In the "Sounds" section the context-sensitive menu will aid in the building of an instrument's sound structure. Recreating a Multi-layer instrument like the example above would involve the following process.

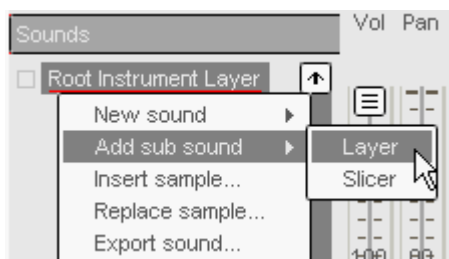
Right-click in the Sounds section and select New Sound->Layer.

The New Sound option adds either a layer or a slice at the top level of the sound structure and would therefore be reserved for the instrument patch being created.





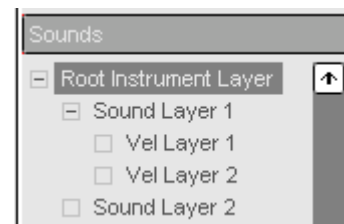
A new layer is created with a generic name. Bringing up the context-sensitive menu again will enable the layer to be renamed to something more appropriate.



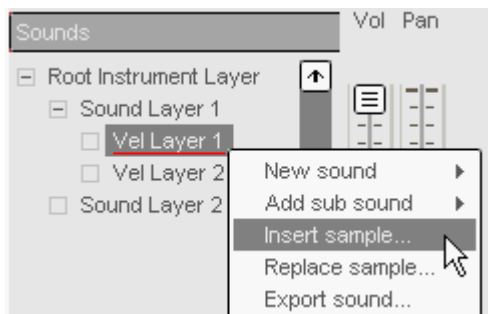
Select Add sub sound->Layer in the context-sensitive menu.

The Add Sub Sound option adds either a layer or slice directly underneath the selected layer or slice.

Adding another Sub-layer will give the basic containers for the two multi-layers in the instrument.



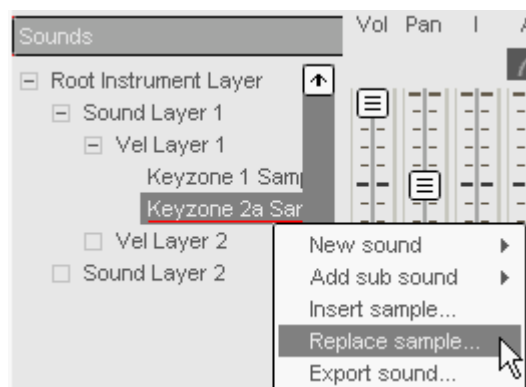
Now that the basic 'layer' structure is in place, the samples need to be added to the appropriate container layers.



The Insert Sample function within the context-sensitive menu will provide a file browser to navigate to the desired samples that will complete the instrument structure. Each sample selected will be added to the selected layer or slice.

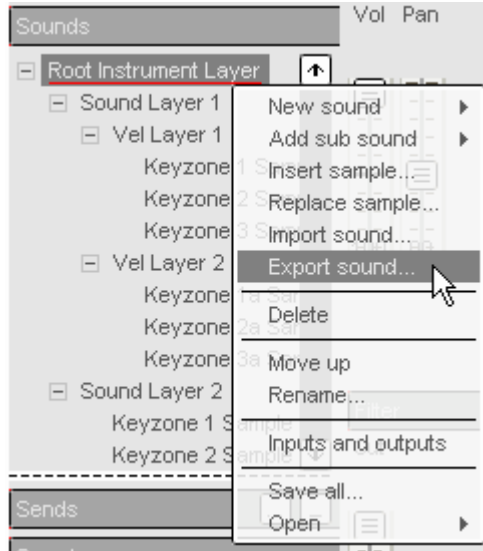
It is also possible to exchange samples within the instrument structure by using the Replace Sample function within the menu. This function provides a file browser and any sample selected in the instrument structure will be replaced by the chosen sample in the browser. If a layer or slice is selected at the time rather than an individual sample, all samples will be replaced with the chosen file.

Other instrument construction tools to note are Delete to remove either the sample reference or a complete layer/slice with all associated sample references. Additionally, the



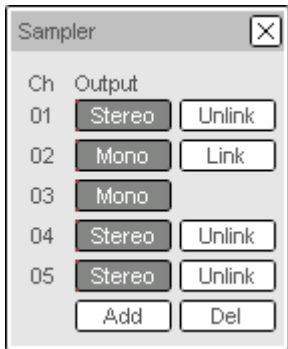
Move Up function allows a given sample reference to be moved up the list of samples in a given layer or slice. You can not use it to reorganise layers/slices themselves or to move samples out of one layer into a parent layer.

When a complete instrument is built you have to options for saving this instrument for later use in other projects.



The Export Sound option within the context-sensitive menu will allow a complete instrument to be saved as a Sampler file (.xts) which can be loaded into a Sample component at any time.

The Save All option within the menu will also allow a complete instrument to be saved as a Sampler file (.ext) which can be loaded into a Sample component. However, the function will save the complete Sampler state including multiple instruments if created and various Multis - to be explained in a later chapter. The Save All option will be discussed further there.

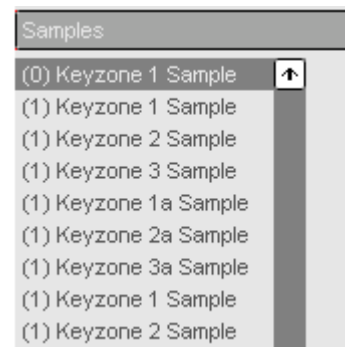


The only option in the "Sounds" menu not covered as yet is the Inputs and Outputs option. This option is used to configure the number of audio outputs which the Sampler component will use via a pop-up dialog box. This is useful for routing layers, samples and instruments into different audio outputs to be further treated within the EnergyXT host. More on this in later sections.

Somewhat below the "Sounds" section is the "Samples" section. This section can simply be described as the list of samples loaded into the Sampler component at any given time.

To the left of every sample is a number in brackets. This notes in how many instruments the given sample appears. If the value in the brackets is zero, this means that the current sample is not used in any instrument.

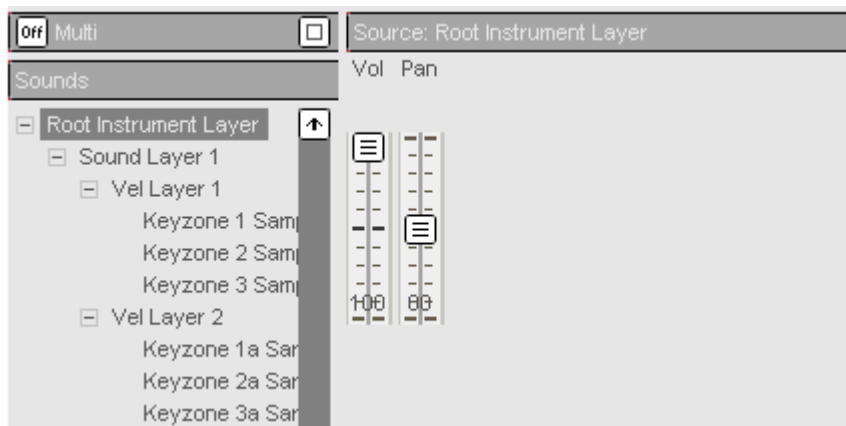
Right-clicking and selecting the Delete option will remove any selected sample in this section provided that it does not currently exist in an instrument.



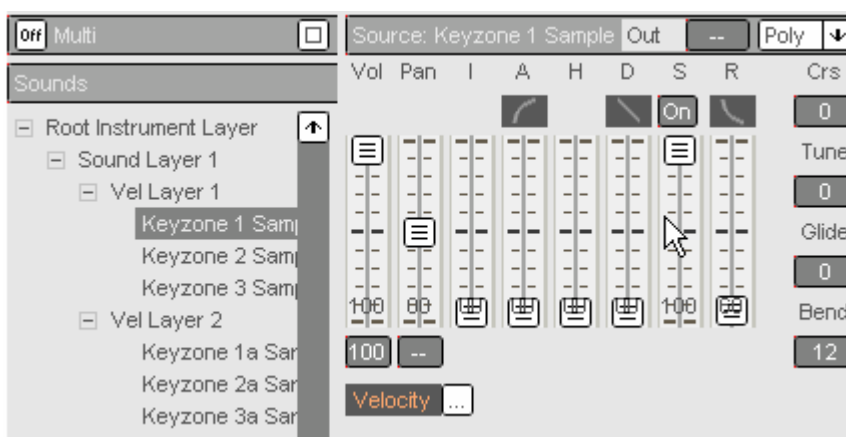
Source Controls, Unison and Audio Routing

The "Source" section within the Sampler contains many key parameters concerning the playback of samples within an instrument including amplitude, panning, pitch and performance parameters as well as controlling which audio output the sound should be routed to.

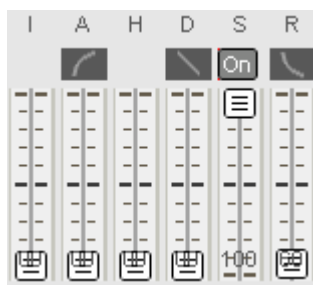
What "Source" controls are displayed depends on whether a layer/slice or sample is selected within the "Sounds" section.



For layers and slices both overall volume and panning is available which will affect all the layers, slices and samples within that layer/slice. This means that any adjustment of these parameters will relatively adjust the volume and panning settings created in all children layers, slices and samples.



For samples, the list of available parameters in the "Source" section is far more comprehensive.



Other than Volume and Pan settings already mentioned, the Sampler component contains a sophisticated amplitude envelope.

I (Initial) - this control sets the initial volume for sample playback when the amplitude envelope is initially triggered.

A (Attack) - this sets the time it takes for the sample to increase from the initial volume to the maximum set volume. Above the slider is a control to change the slope of the Attack. This is done via click-dragging.

H (Hold) - this control sets the time during which the volume should remain at maximum before decaying.

D (Decay) - this control sets the time it takes for the sample to decrease from the maximum set volume to a set sustain volume. Again a slope control is provided above.

S (Sustain) - this control sets the volume level that a played sample should remain at while it loops (ie while the note is being played). This control has an on/off switch above. If set to off this will basically ignore the sustain and release controls and decrease from the maximum volume to zero according to the decay settings.

R (Release) - this control sets the time it takes for the sample to decrease from the sustain volume to zero volume once receiving a note-off message. Release also comes with a slope control.



To the right of the "Source" section is the pitch and performance controls.

The drop-down menu contains options for Mono or Poly playing with a Glide function controlling the timing of a portamento effect.

Crs - controls the tuning in semitones.

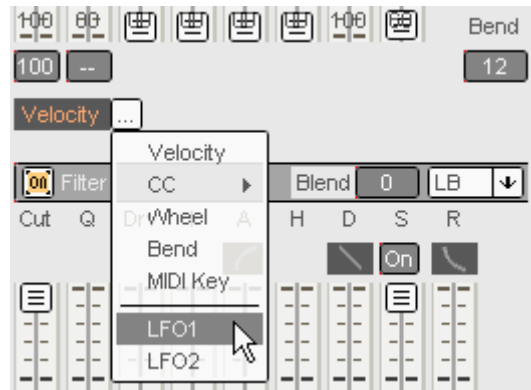
Tune - controls the tuning in cents.

Bend - controls how many semitones are controlled by pitch-bend messages. The Sampler can create bends between 0 and 48 semitones in pitch.

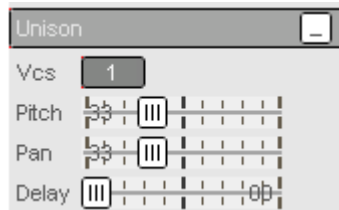
The Sampler component includes comprehensive control modulation options and routings which will be described in a later section. However, the "Source" section also contains a very quick and easy way to assign modulation options to the Volume and Pan controls for a given sample.

The method for applying the modulation options is simple. Click the drop-down menu button to the right of the text box and choose the source control. This menu has a divider under which any modulator created (see a later section) will also be presented.

Once the source is selected, it is simply a matter of adjusting the numeric display under the the Volume or Pan controls by click-dragging. The value of modulation can be between -100 and 100 which can be considered percentage measurements.



In the "Sounds" section, the option to add or remove audio outputs was covered. It is within the "Source" section that sounds are allocated to an audio output. A simple click-drag will cycle through all available outputs.



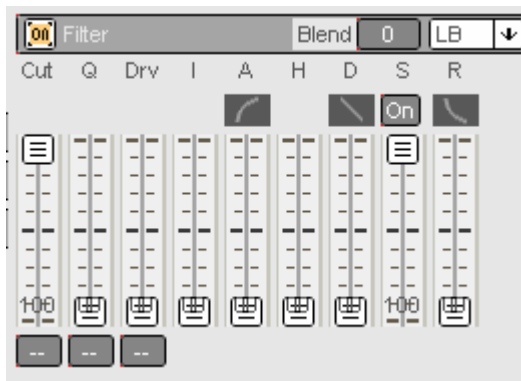
The Sampler component also comes complete with a "Unison" option for samples. The idea of the "Unison" section is to multiply the number of voices and separate them by pitch, panning and timing to 'thicken' the sound. Controls are available to select the number of voices (Vcs), the difference in pitch around the selected sample (Pitch), the panning position (Pan) and the timing difference in triggering the voice (Delay).

Each component in the "Source" and "Unison" section applies only to the sample selected at any given time. If the controls need to be set for a whole layer of samples a simple double-click on a given sample will select all samples in that layer. Then any given change will apply to all selected samples.

Filter Controls

The "Filter" section within the sampler sits under the "Source" section on the interface. Unsurprisingly, this section controls the filter within the EnergyXT Sampler.

The filter within the Sampler is quite versatile. It has a blend function which blends between two separate filter types and comes complete with a sophisticated envelope identical to that of the amplitude envelope in the "Source" section.



The first control to note is the on/off switch at the top left of the "Filter" section. This controls whether the filter is active (on) or bypassed (off).



On the top right of the section are the blend and filter type controls. The filter type drop-down list provides 3 alternative dual filter combinations to use:

- LB - Lo Pass/Band Pass
- LH - Lo Pass/Hi Pass
- BH - Band Pass/Hi Pass

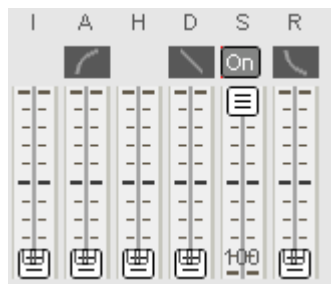
The Blend function works on a percentage blend between the two types of filter selected.

To give an example, if the LB filter type was selected and the Blend value was 0, a Lo Pass filter will be used. However, if the Blend value was 50 the filter would be half Lo Pass, half Band Pass. The same cutoff, Q and Drive values set would be used for both filter types in the blend.



The purpose of the three sliders to the left of the "Filter" section are fairly evident for those familiar with filters. Cut determines the cutoff for the filter, Q is used for enhancing the frequencies around the cutoff point and Drv is used to determine the amount of drive used in the filter.

Just like in the "Source" section there are some quick-set modulation options for these controls. Set the modulator option using the control from the "Source" section and then click-drag the value for the chosen filter control.



Just like the Amplitude envelope in the "Source" section, an identical envelope appears in the "Filter" section. However, this envelope is 'hard-wired' to the filter cutoff value.

I (Initial) - this control sets the initial cutoff level when the envelope is initially triggered

A (Attack) - this control sets the time it takes for the sample to shift the cutoff in frequency from the initial value to the maximum set value (or

Hold). Above the Attack slider is a control to change the slope of the Attack. This is done via click-dragging.

H (Hold) - this control sets the time during which the filter should remain at the maximum set cutoff frequency before decaying.

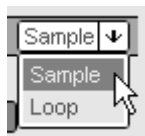
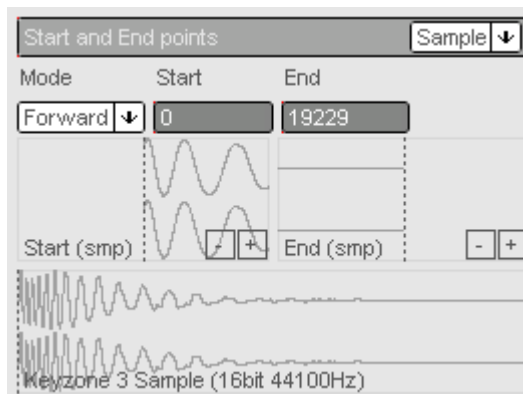
D (Decay) - this control sets the time it takes for the cutoff value to decrease from the maximum set frequency to a set sustain frequency. Again a slope control is provided above.

S (Sustain) - this control sets the frequency level that the cutoff will remain at after decay until such time as the note is released. This control has an on/off which above. If set to off this will basically ignore the sustain and release controls and decrease from the maximum cutoff frequency to zero according to the decay settings.

R (Release) - this control sets the time it takes for the cutoff frequency to decrease from the sustain frequency to zero once receiving a note off message. Release also comes with a slope control.

Sample and Loop Editing

To edit sample and loop start and end points, there is a section appropriately named "Start and End points" beneath the "Filter" section.



Firstly, on the top right of this section is a drop-down box that allows a choice between Sample start and end point editing and loop start and end point editing.

The Mode drop-down means two different things depending on whether the editing is for sample or loop.



The first image shows the Mode options for sample which indicate how the sample will be played back overall. Logically enough, forward means that the sample will play forward from the start position onward and reverse means that the sample will play from the end of the sample backwards.



The second image shows the Mode options for loop which indicate how the sustain loop will be played back. Off indicates that the loop markers will be ignored and the sample will play without any looping. Forward indicates that while the note is sustained the playback will jump from the loop end marker back to the loop start marker in continuous playback until the note is released. Backward indicates that the sustain looping will play from the end loop marker to the start loop marker. Alternate indicates that the looping will play back alternating between forward and backward looping between the loop markers in a "bouncing" fashion.

Start and End indicate the precise position in which the markers are placed. When editing the sample, this indicates the playback start position and end position. When editing loop markers this indicates the start and end of the playback loop. The measurement is in samples.

The two display windows show a close-up of the start and end points currently being edited. The actual markers are represented by the dotted line and the start and end markers currently being edited are shown in brackets. The plus and minus box refer to zoom levels - the plus increases the zoom and the minus decreases the zoom.



A right-click in either of these windows will move the marker to the pointer position.

The bottom display window shows a representation of the complete waveform. Both sets of markers are displayed in this window with a colour variation determining which markers are currently selected for editing. The relevant

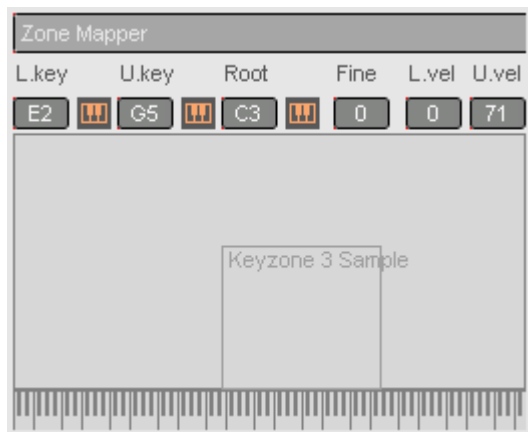


markers will move on this display to mirror the changes made to the relevant start and end markers.

The name of the wave file being edited appears along with the associated bit depth and sample rate of the wave file.

Zone Mapping for Layers

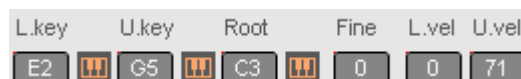
The "Zone Mapper" works slightly differently depending on whether your layer is a regular instrument layer or a "slice" layer. Firstly, the "Zone Mapper" for regular instrument layers will be described.



In the diagram is shown a layer with one of the "zones" selected. A zone is a way of mapping a particular sample to a range of keys on the keyboard. In the sampler you can map across different key ranges - key zones, and also across different velocity ranges - velocity zones.

For example, if a particular sample is wanted to be triggered between C1 and C2 on a keyboard but only when velocity values between 100 and 127 are received, then this is entirely possible in the Sampler. In this way you can build up a layer of a multitude of samples across different key ranges and velocity ranges to create a more realistic facsimile of an acoustic instrument.

The top section of "Zone Mapper" shows the controls for manipulating the various ranges of a given sample.



L.key is the value for the lower extreme of the key range.

U.key is alternatively the value for the upper extreme of the key range.

Root determines at what root note the sample should be set. This is an important value as all adjustments in pitch of the sample will be done using this as a base reference. For example if C#3 is wanted when the root value is C3, then the base sample will be pitch-shifted in the sampler by the equivalent of one semitone.

Fine is a positive or negative value determining an amount in cents that the base sample should be detuned prior to any transposition.

L.vel is the value for the lower extreme of the velocity range.

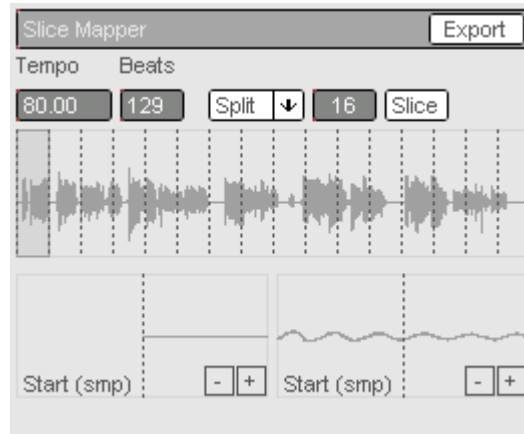
U.vel is alternatively the value for the upper extreme of the velocity range.

All values can be adjusted by click-dragging with the mouse. Additionally, the values of the L.key, U.key and Root can be adjusted automatically upon receiving midi note messages. To do so, click the small icon on the right of these fields and then play the desired midi note. The value in the field will be updated accordingly.

The remainder of the window shows a graphical representation of all the zones in a given layer, and a representation of the complete midi note range (128 notes). When selecting a sample in a layer, the respective zone is highlighted in this area along with the name of the sample assigned to that zone.

Direct manipulation of the zone/range values is not possible in this area. However, the display will automatically update as the values in the fields above are adjusted giving instant graphical feedback of changes made. The keyboard representation also has no functional use as such but remains a visible guide only in setting up various key zones.

Slice Mapping for Slices



The purpose of the "Slice Mapper" is to take an imported wave file in a slice layer in the sampler and cut it into smaller pieces - 'slices' - with each slice triggered by a different midi note. The layout itself is quite logical.



Underneath the title bar, "Tempo" and "Beats" refers to the tempo of the slice sample and the number of beats the sample contains.

The Sampler actually calculates these values automatically when a sample is selected. However, it is possible to change one of these values arbitrarily via click and type and the other value will alter itself accordingly.

The drop box selection to the right of the "Tempo" and "Beats" fields determines what slicing method to use when slicing the sample.

- "Auto" - This method is the most sophisticated and determines natural slice points based on an internal algorithm. The aim is to find the start/end points of each sound within the sample (eg. hits within a drum loop)
- "Beat" - Utilises the "Beats" value to its left to determine x number of even slices within the sample
- "Split" - Utilises the field value to its right that is altered via a vertical click-drag to determine an arbitrary number of even slices within the sample

The "Slice" button performs the slicing of the sample. This process does not actually slice the audio into smaller files. It simply sets up non-destructive markers for the sample in order to create smaller virtual samples that trigger at each beginning marker and end at the following marker.

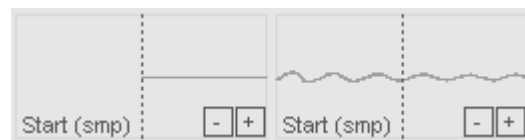
The operation is not limited to one attempt only. It is possible to change the slicing method or other parameters and select "Slice" again to perform the operation as if for the first time.

Once the "Slice" function is performed, the created markers are displayed on the sample and a group of individual slices ordered by the midi trigger key (displayed in brackets) appears under the slice layer in the Sounds section of the Sampler.



Underneath the slicing tools is the sample display itself which is displayed as a number of segments (slices) after the "Slice" button is selected. Any individual slice is selected via a mouse click.

The next display shows the start and end marker for the selected slice. It is possible here to alter the slice points manually by a mouse click either to the left or to the right of the marker guide. To assist, small '+' and '-' buttons zoom in and out of the slice segments at the slice marker. This helps for very fine changes to the existing marker.



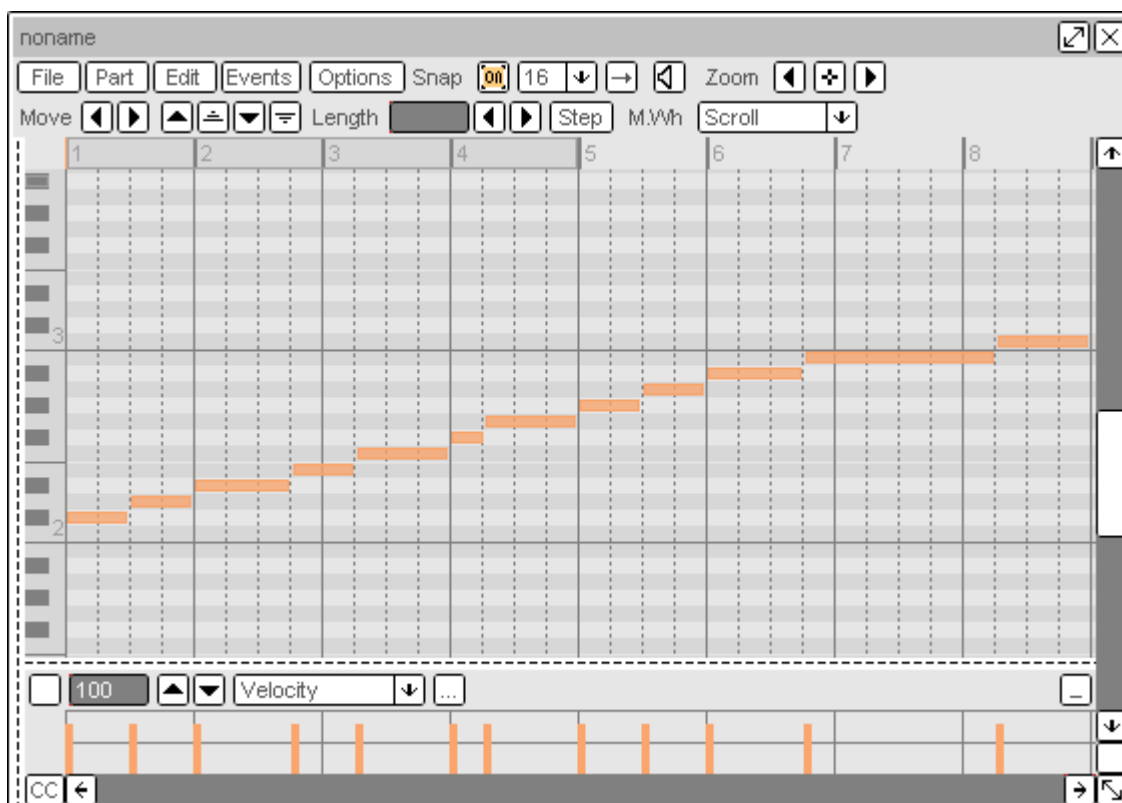
An additional tool is the "Export" function found in the Slice Mapper title area. The purpose of this is to save the sliced sample as a midi file, where each midi note represents each trigger for the slices.

This sounds tricky but isn't really. When a sample is sliced, it creates under a slice layer the triggers for all the slices that make up the sample. These slices are triggered by ascending midi notes. During the export a facsimile of the sliced sample is created with midi notes so that when the midi file is played back through the sampler, the original sample is played from start to end.

The "Beats" value selected determines the duration of the midi clip, and the duration of the midi notes are directly proportional to the slices in the sample.

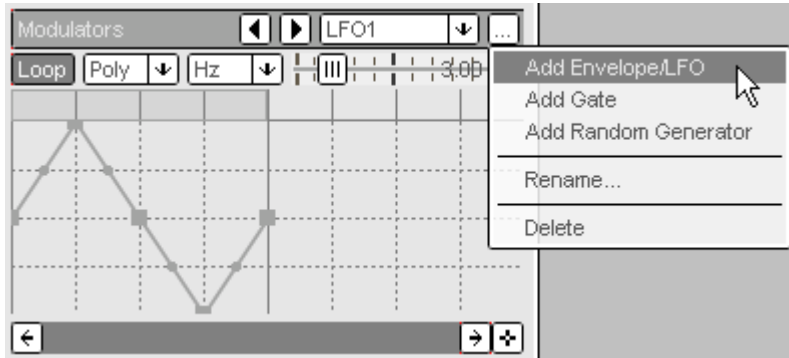
Two options exist for the "Export" function. One is a simple click and select the path and file name to save the slices as an external midi file. The other is to drag-n-drop from the "Export" button into the sequencer or open midi part.

If dragged to the sequencer, a new midi track will be created with the midi part already added. If dragged to an open midi part, the midi notes will be pasted into the piano roll. Below is an example of what a sliced sample might look like in a midi part.



Modulators

In the Sampler component, many modulation sources are possible for varying sound shaping elements over time. There are already two envelopes hard-wired to Amplitude and Filter cutoff. Then there are pre-existing modulation sources such as MIDI CC. However, the Sampler component also allows creation of an unlimited number of further modulation sources. These are created in the "Modulators" section of the Sampler.



There are three types of modulators that can be added into the sampler for later assignment to various parameters: Envelope/LFO, Gate, and Random Generator.

The Modulator section comprises of a title bar which has two buttons that cycle through all the modulators that have been created within that Sampler session and accompanying drop-down box for modulator selection.

Additionally, there is a button to activate the Modulator menu where different modulator types can be added and the selected modulator can be renamed and deleted.

Beneath the title bar is the data section of the selected modulator. The information appearing here will vary depending on which of the three types the current modulator belongs to.

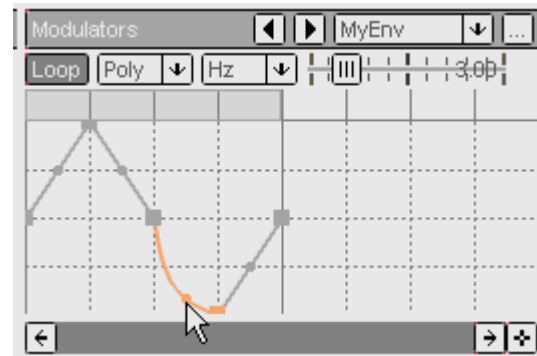
Envelope/LFO:

The Envelope/LFO modulator is actually a multi-break point envelope which can span over up to 1000 measures. An unlimited amount of break points can be added with the additional ability of being able to modify the shape of the curve between any two break points.

The envelope can be set to "1 shot" or "Loop". A looping envelope basically creates the effect of a potentially very complex LFO.

Both Poly, Mono and Run modes are available via a drop down selector:

- Poly - Envelope modulator is triggered with each note.
- Mono - Envelope is only triggered with the first note played meaning that all notes will be affected by the same level of modulation from the envelope at any given time.
- Run - This is a free running mode only really useful for looped envelopes (LFO). The envelope constantly cycles and is not affected by midi note triggers.



The Unit drop-down selector follows, which determines what time measurement is used to calculate the duration of a given envelope. The options are Herz (Hz) a real-time measurement, or Beat which is synchronised with the host's established BPM value.

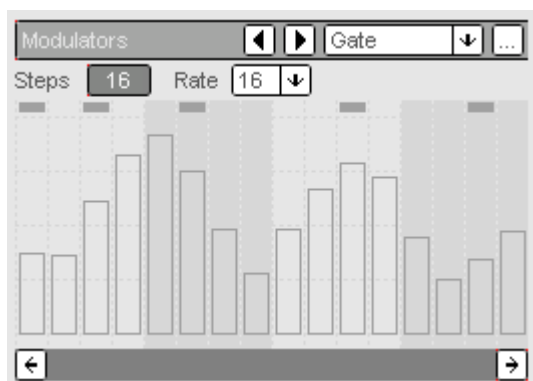
If the unit of measurement is Hz, a slider will be present to control the duration. If the unit of measurement is Beats, two value fields - measures and beats will be available to control the duration. At the bottom of the Envelope modulator is a scroll bar and a zoom control which is adjustable via a click-drag on the control button.

The grid section allows the shaping of the envelope modulator and the definition of start and end points (right-clicking will alter the end-point of the envelope).

The grid itself is used as a guide only - each column can be thought of as an equal unit of time. The reason for this is that the length of the envelope is actually determined in Hz or Measures/Beats via the above controls.

The curves within the envelope can be altered by click-dragging on the control point between the two break points.

Gate:



The Gate modulator is a set of bars with values between 0 and 127 over a number of 'steps'. Gates are always internally set to loop.

The number of steps can be set in the so-labeled text box using a click-drag. 32 is the maximum number of steps that can be set.

The Rate drop-down selection sets the value of each step. For example, setting the rate to 16 means that each step is a 16th of one measure (or semi-quaver).

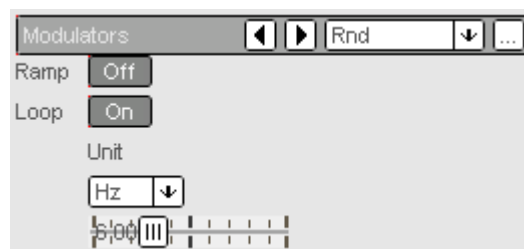
Should more steps be selected than can fit on the display, the horizontal scroll bar at the bottom will be activated and scrolling will allow the complete gated sequence to be seen.

The gate "columns" are set by a simple click-drag with the ability to select "ties" above each column. The ties will enable a slur between two columns.

Random Generator:

The Random Generator does what its name implies. It introduces a random element which can then be used as a modulation source.

Within this modulator, there are options to have looped or unlooped modulation depending on the value of the Loop field.



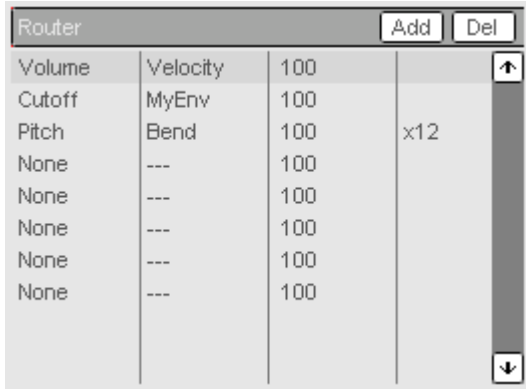
Unit is a drop-down selector where the unit of measurement for the timing of a modulation "cycle" or loop is determined. The options are Herz and Beat. Beat is a beat/measure value synchronized with the host BPM value.

Ramp when set to "On" applies a slope or smoothing to each randomised level. This has a slurring effect much like the "tie" settings in the Gate modulator.

Router (Modulation Matrix)

The Router section in the EnergyXT Sampler is where modulators are assigned to destination parameters. This is where sound design finesse is actualized.

The Router (or Modulation Matrix) contains virtually unlimited entries and acts upon the selected sample. Currently routing can only occur on an individual sampler in a patch which can make applying modulation to patches with a large amount of samples time consuming. However, it also means that modulation can be applied with precision to individual components of a given instrument patch.



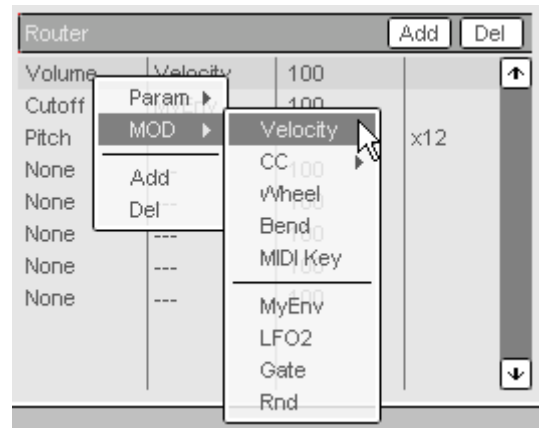
The Router consists of 4 data columns to handle modulation control:

- Destination (Param) - used to identify which parameter for the sample is going to be modulated
- Source (MOD) - used to identify which modulation source will be used to affect the destination
- Value 1 - used to identify what percentage effect will be used within the modulation. This can be between -100 and +100.
- Value 2 - an option data column which is only necessary for certain destination parameters.

Adding a new entry within the matrix is simply a matter of clicking on the "Add" button or right-clicking and selecting the "Add" option from the context sensitive menu. Deleting the selected modulation entry is similarly executed.

To select which modulator to assign, navigate via the "MOD" option on the right-click context sensitive menu.

The possible options are midi note velocity, midi controllers, modulation wheel, pitch bend messages, midi note pitch and any modulation sources created within the Modulator section of the sampler.



Assigning the intensity of the effect is simply a matter of vertical click-dragging in the Value 1 column of the matrix.

The right-click context sensitive menu is also used to select which destination parameter of the selected sample needs to be modulated. Navigate to the list via the "Param" option.

The majority of these parameters are self-explanatory. However, some parameters are worthy of individual attention

U.Pitch and U.Pan refer to the Pitch and Pan settings within the Unison control. This enables modulation of the unison effect.

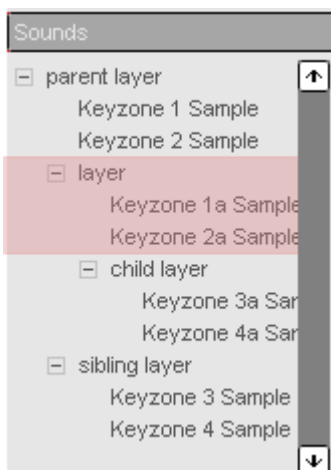
The bottom-most section is reserved for the parameters within modulators that are created within the Modulation section of the sampler. This allows a source modulator to have some parameters as a modulation destination and can lend itself to some sophisticated modulation techniques such as using the level of one envelope (LFO) to affect the rate of another envelope (LFO).

When the Destination is set to Pitch there is an additional value which can be adjusted in the Value 2 column of the matrix. This is a multiplier for the pitch modulation.

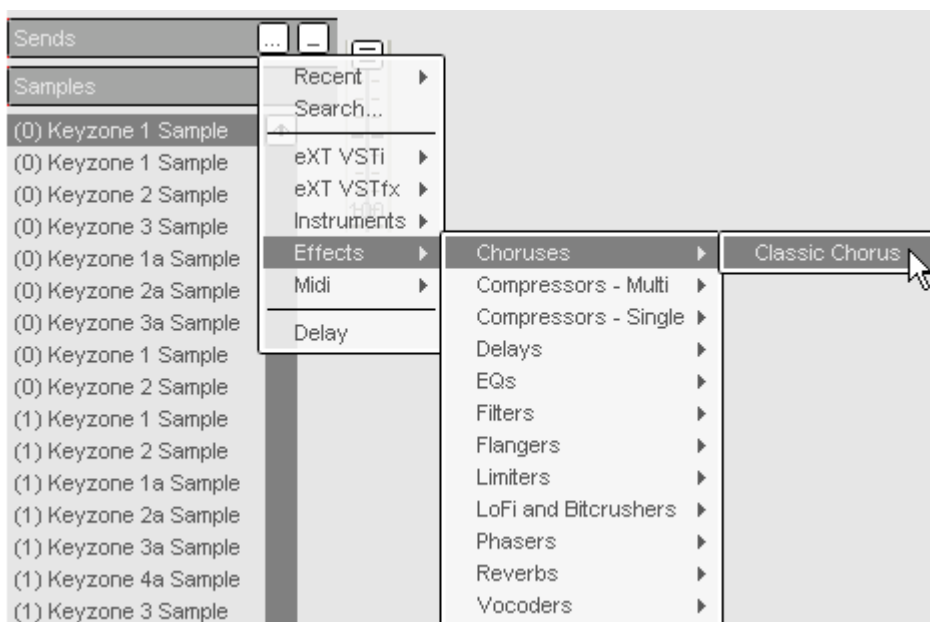
Send Effects

The Sampler component allows VST and native effects to be used as a send within the sound structure itself. This can be saved not only within an individual EnergyXT project file, but also within a Sampler program (xts) file. This means that care must be taken when distributing xts files with others that both parties have any effects that have been used within the patch file.

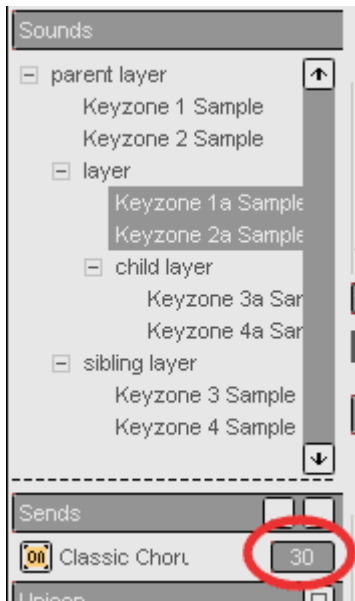
The scope of a send effect is limited to the given layer in which it has been added. Therefore parent, children and sibling layers will not be able to use the same instance of any effect added to a given layer.



The shading indicates the scope of any send effect added to the layer marked "layer" in the diagram above. Should the same effect be required on one of the other sound structure layers, a new instance will need to be loaded in for each individual layer.



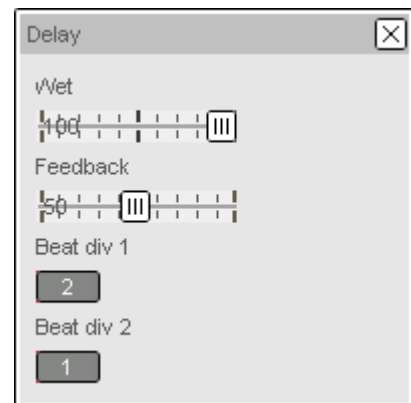
To add a send effect to a particular layer, select it within the "Sounds" section of the sampler and then click the button on the "Sends" title bar underneath. In fact, it is possible to add a send effect to a layer by selecting an individual sample within that layer also. The result is the same.



Once you've added an effect, the send level (or wet level) of the signal is very configurable within the applicable layer. The wet level cannot be applied at the layer level. To access this control a sample or samples need to be selected as in the diagram.

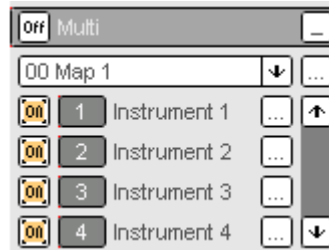
It is possible to apply the wet level to all the samples in that layer or indeed different wet levels per sample opening up an enormous range of additional sound-design options.

Along with the ability to add VST effects into the sound structure, the Sampler component also has a self-contained native Delay effect. This is fairly simple in nature giving wet and feedback settings as well as two tap delay settings measured in beats and synchronised to the host tempo. The advantage of using this delay rather than an VST plug-in is that it is completely portable with your xts program.



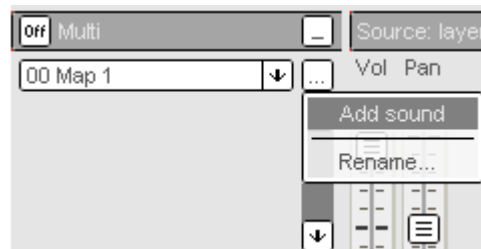
Multi-Timbrality

The EnergyXT Sampler component is multi-timbral. This means that it is possible to play different instruments on different midi channels simultaneously. This trick is achieved by using the "Multi" section of the sampler.



Multi-timbrality is activated via the on/off switch in the "Multi" title bar. The Sampler component can create not only 1 map of instruments for multi-timbral playback, but several "Multis".

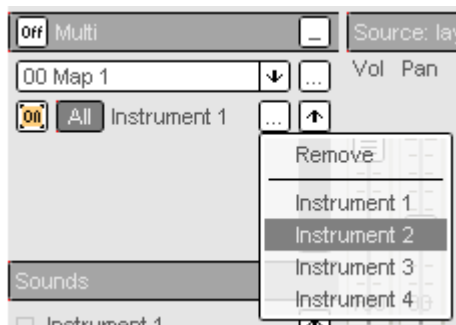
128 different Multis are possible



Clicking the button via the "Multi" section's drop-down selector will bring up Multi menu.

"Rename" allows the naming of the selected Multi.

"Add sound" allows the adding of an instrument to the selected Multi.



The instrument has a switch to activate and deactivate that instrument within the Multi. Additionally there is a midi channel field allowing a click-drag to select which midi channel will trigger the selected instrument.

An instrument menu is available that allows the removing of the selected instrument from the Multi and the switching of the instrument for another within the sampler.

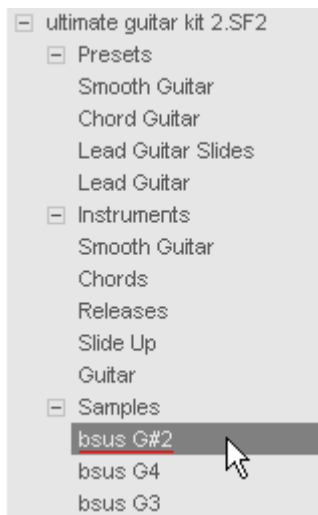
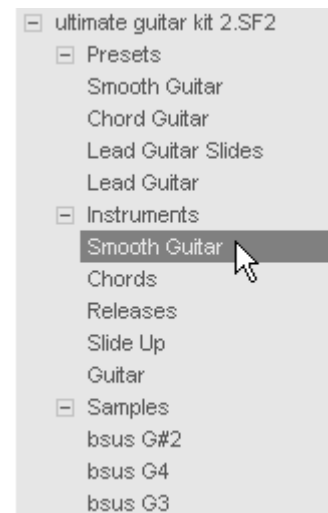
SoundFont Import

The Sampler component allows the import of SoundFont sample mappings. SoundFonts are an open standard sample format that were made hugely popular by its integration into consumer soundcards, instantly turning any computer into a sophisticated hardware sampler. The format has thrived with many software SoundFont players and both free and commercial sample sets are scattered all over the internet. Because of this, compatibility with this format in a software sampler immediately opens up the instrument to a wealth of existing material that would not be available if the device was only compatible with its own proprietary format.

As the purpose of EnergyXT's Sampler component is more for audio manipulation than simple sample playback, the SoundFont compatibility has been limited to reading the sample mappings only. This means that additional envelope, filter and effect settings are not imported into the Sampler.

SoundFonts are imported via drag-n-drop from the EnergyXT Browser. The Browser exposes the elements of a given SoundFont so that either samples or whole instruments can be imported directly into the Sampler.

In the example, dragging and dropping the Smooth Guitar instrument into the Sounds section of the Sampler will automatically create a new layer with all the relevant samples in the structure key and velocity mapped and ready to add any sound design subtleties required.



Similarly an individual sample from the SoundFont can be imported into an existing layer within the Sampler component. If no layer is currently selected in the Sampler a new layer will be created for the sample.

