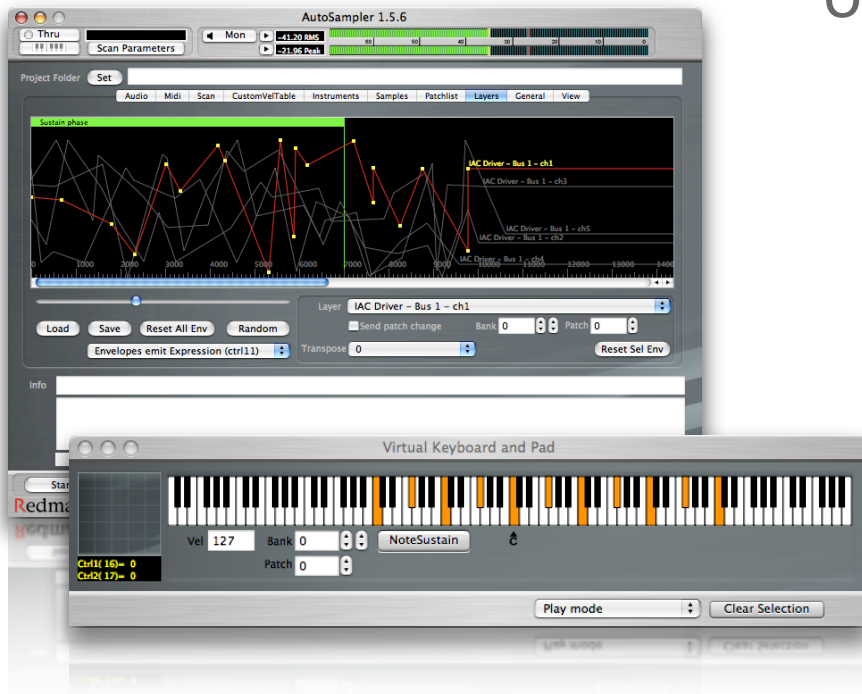


# AutoSampler

Advanced MIDI Resampler

## User's Guide





# AutoSampler

Advanced MIDI Resampler

User's Guide

# Redmatica

>innovative                      >audio                      >tools

© 2004-2007 Redmatica Srl. All rights reserved. Under copyright laws, this guide may not be copied, in whole or in part, without the written consent of Redmatica. Your rights to the software are governed by the accompanying software license agreement. The Redmatica logo is a trademark of Redmatica Srl, registered in Italy and other countries. Use of the Redmatica logo for commercial purposes without the prior written consent of Redmatica Srl may constitute trademark infringement and unfair competition in violation of these laws. Every effort has been made to ensure that the information in this guide is accurate. Redmatica is not responsible for printing or clerical errors.

Redmatica Srl  
Piazzale R.Finzi N.2  
42015 Correggio (RE)  
ITALY  
[www.redmatica.com](http://www.redmatica.com)

EXS24, EXS24mkII, EXSP24, Logic, Logic Express, GarageBand are registered trademarks of Apple. Other company and product names mentioned herein are trademarks of their respective companies. Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Redmatica assumes no responsibility with regard to the performance or use of these products. Sampling raw sounds of presets or waveforms directly out of a musical electronic synth is against copyright laws. Please respect and support the hard work of the hardware synth companies, and use this software in an appropriate and legitimate way.

Rev 1-AG 02/2007

# Table of contents

About AutoSampler 5

What's new in version 1.67

Quickstart 9

How it works 13

The main window 19

    Scan parameters 22

Options 27

    Options: Audio 27

    Options:MIDI 29

    Options: Scan 30

    Options:Custom Velocity Table 32

    Options: Instruments 34

    Options: Samples 37

    Options:Patchlist 39

    How to import patchnames from Sounddiver 41

    Options: Layers 42

    Options: General 44

    Options:View 45

Virtual keyboard and bidimensional pad 46

MIDI thru 47

Log panel 47

Copyrights and trademarks 48

Thanks to.... 48

# About AutoSampler

Designed to be a creative tool for bridging the gap between high quality hardware synths and the virtual studio world, AutoSampler is a standalone software dedicated to the automatic advanced sampling of midi instruments. Through the use of a suited host program as Logic, it's also possible to sample virtual instruments.

The more advanced features let you create EXS24 instruments from multiple synth sources, using graphic volume envelopes to create very dynamic sounds. At the end of this process, ready-to-play EXS24 instruments (and relative samples) are automatically created.

Main Features:

- Multisample multivelocitv sampling of midi synth patches in an automated unattended way from coreaudio audio devices. You can set the number of velocity levels to be sampled, the key range and the key step to use for sampling (every 1 semitone, every 2 semitones, etc....).
- MultiDimensional Sampling (MDS): while the normal sampling procedure creates single multisample multivelocitv maps, with MDS you also set up to 2 synth parameters you want to "capture" for later reproducing their effect on sound on playback. Just as a simplification, if you imagine these parameters to be "knobs", then MDS will take a full multisample/ multivelocitv keymap for each "tick" of these knobs (with some limitations). Once the MDS EXS24 instrument is created, you will be able to playback these "knob" variations using a pair of controllers on your master keyboard. To make a specific example, if you autosample an instrument by using MDS and specifying the filter and resonance knobs, then on playback you will be able to switch/fade in realtime between multiple keymaps sampled at the various filter/resonance knob positions.
- Generates ready-to-play EXS24 instruments without requiring specific user action/editing. Once the parameters are set as desired, you start the session, and at the end you get playable EXS24 instruments.
- Midi layer sampling mode for advanced sound design: you can multisample a composite sound generated by mixing multiple synths. Each sound source has an independent user definable midi volume/ expression graphic envelope and transpose parameter for compositing the desired sound.
- Automatic sampling with specific normalization modes, limiter, truncation, audio overload protection, release time detection, custom velocity maps.
- Can sample whole banks of synth patches with user defined patch names.

- Imports patch names from normal text files (which can easily be created by cut/paste from SoundDiver)
- Integrated virtual keyboard and bidimensional virtual controller pad.
- Comprehensive log file generation with embedded graphical snapshots of each sample.
- Standalone software for OSX 10.4.3 and later



# What's new in version 1.6

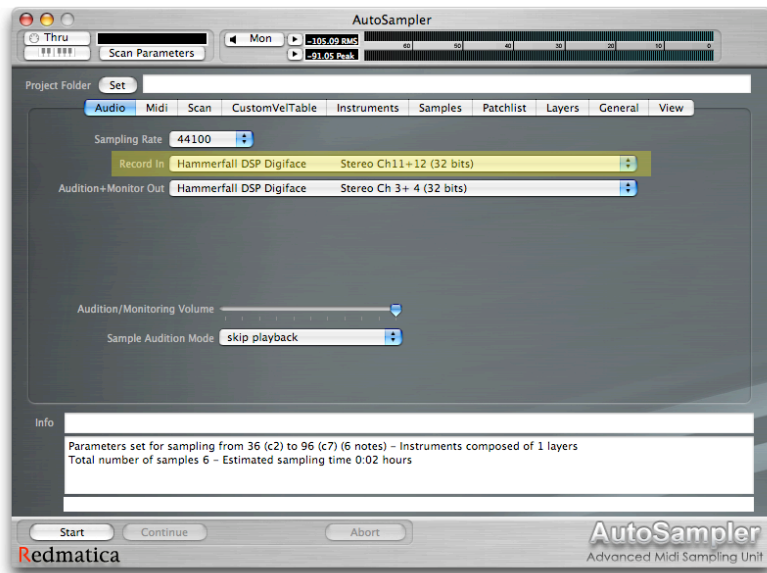
- AutoSampler is an universal binary fully compatible with Logic 6, 7 and 8 , OSX 10.4 and 10.5 on both Power PC and Intel platforms.
- French language localization
- New mode for sampling modified acoustic pianos through microphones. This mode uses additional noise rejection processing and has been tuned for best performance for this specific situation.
- New mode for sampling noisy sources (as vintage synths or sounds processed with guitar amps, etc)
- When sampling in acoustic mode, it's now possible to automatically sample the piano with and without sustain pedal. When sampling, sustain pedal is activated and then a small delay is introduced in order to start sampling without interference from pedal noise. The created instrument responds appropriately to the sustain pedal on playback. This feature is automatically enabled when sampling in acoustic mode, using MDS (1 or 2) and controller 64 (sustain pedal)
- It is now possible not truncate the sample tails at all



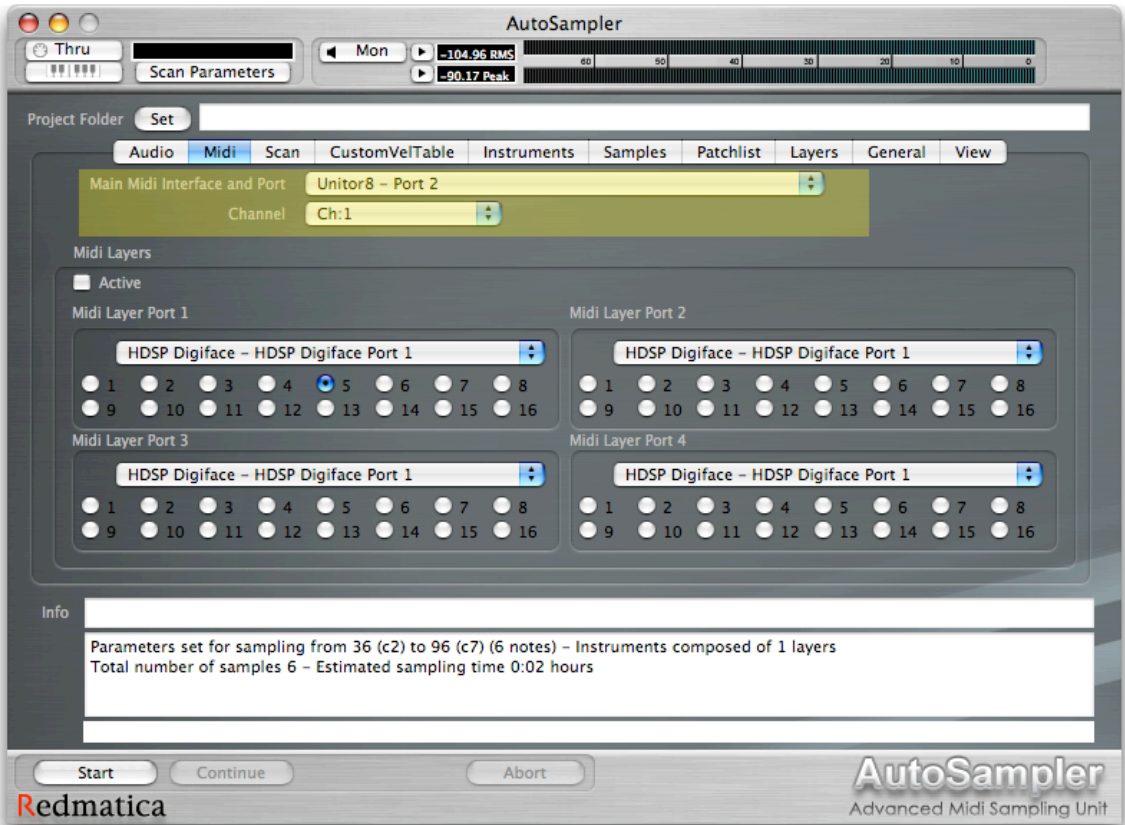
# Quickstart

Before going into the necessary explanations, we'll start by creating your first autosampled instrument.

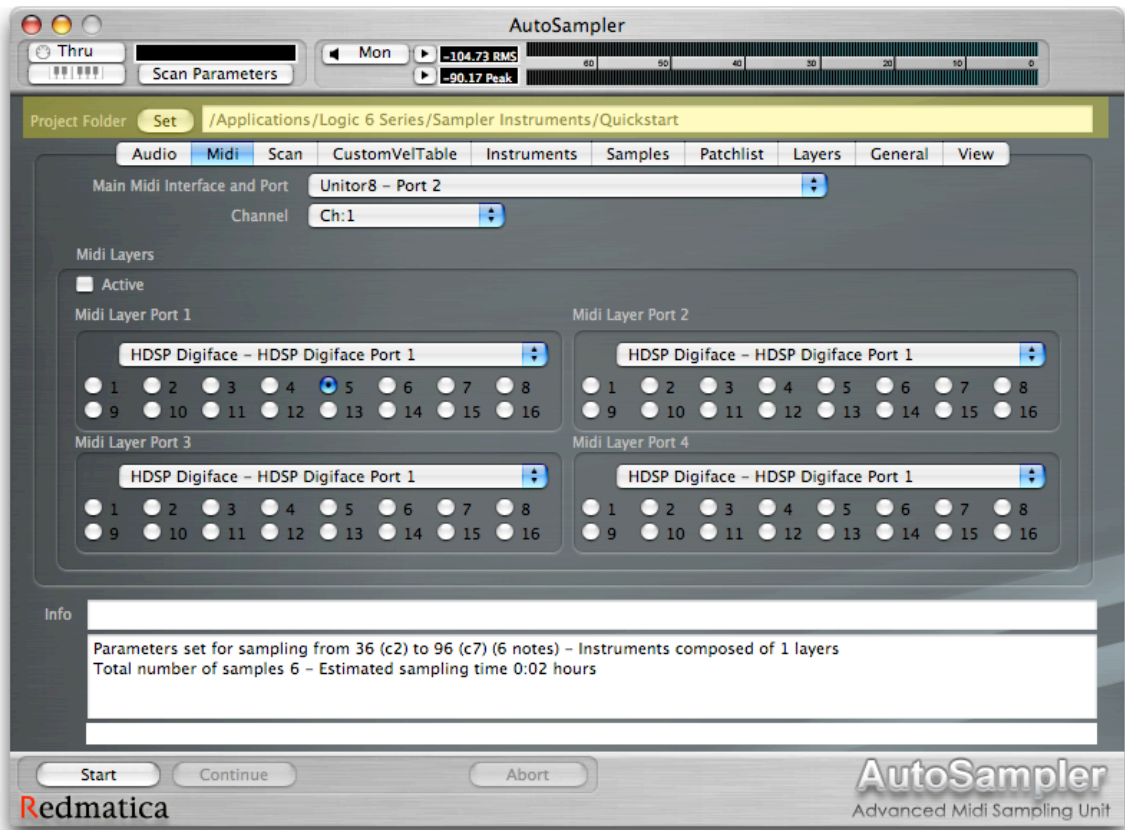
- 1) Connect your synth instrument audio out to your mixer/card audio inputs using an audio cable
- 2) Connect a midi out from your midi interface to the synth instrument midi in using a midi cable
- 3) Start AutoSampler, select the "Audio" tab and set the correct audio input port that you have just connected to your synth. If you set the correct port, you will be able to see the VUmeter moving when you play notes on the synth keyboard. Set the synth volume so that the VUmeter never becomes red even if you trigger single notes at full velocity.



4) Select the "Midi" tab and set the correct midi output port and channel to use (the one going to your synth).

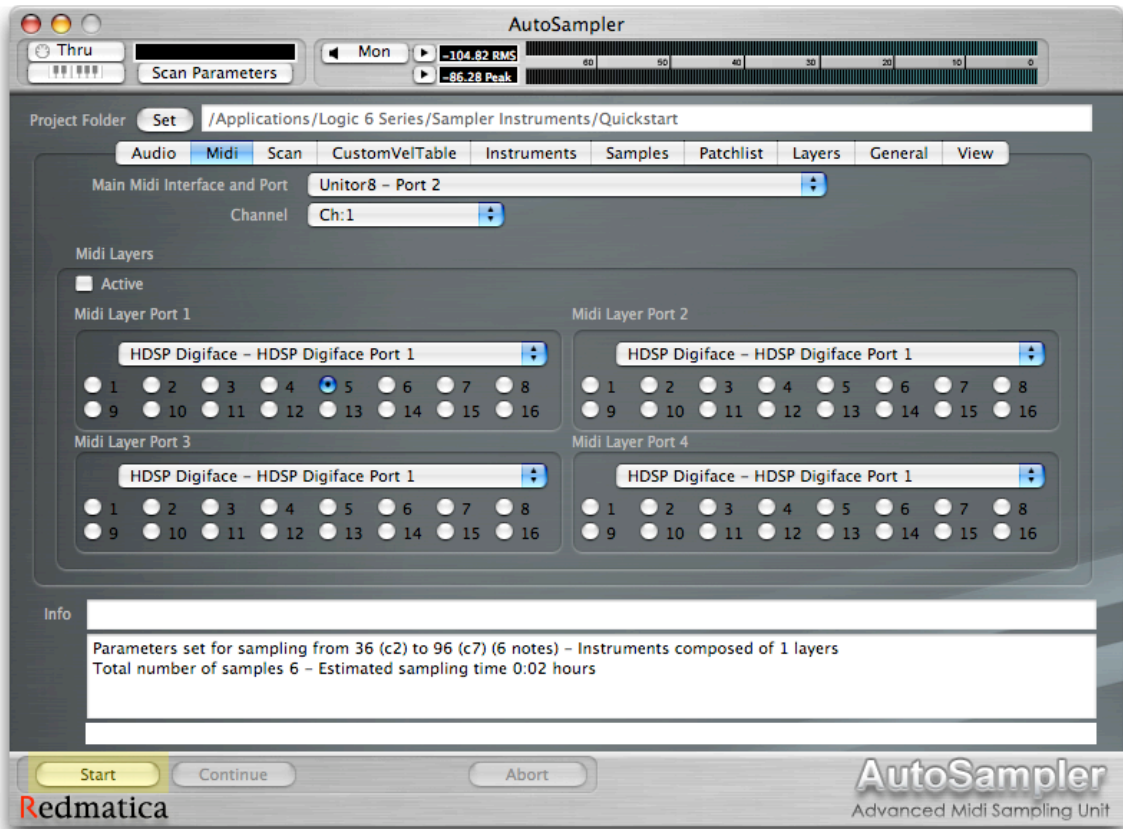


5) Click on the “Project Folder Set” button and set your destination folder for the instrument and the samples. In order for Logic and EXS24 to directly see the new instrument we are going to create, this time you will use a new folder inside the “Sampler Instrument” folder. Let’s name it “Quickstart”



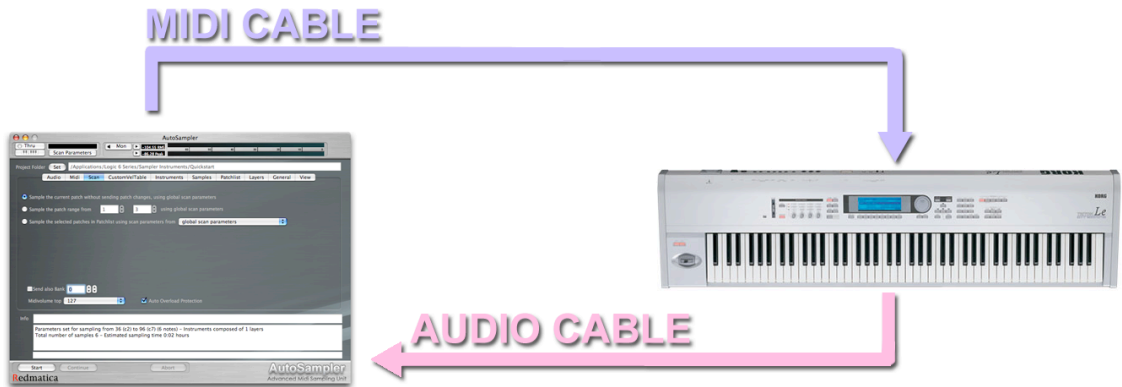
6) Go to your synth and select the patch you want to sample. For this quickstart session you might want to sample a simple sound, for example a pad

7) Click the “Start” button in AutoSampler. At this point you can take that long sought after coffee break. When AutoSampler completes the session you can start Logic and open EXS24. You will find the newly created “Quickstart” instrument ready to be played.

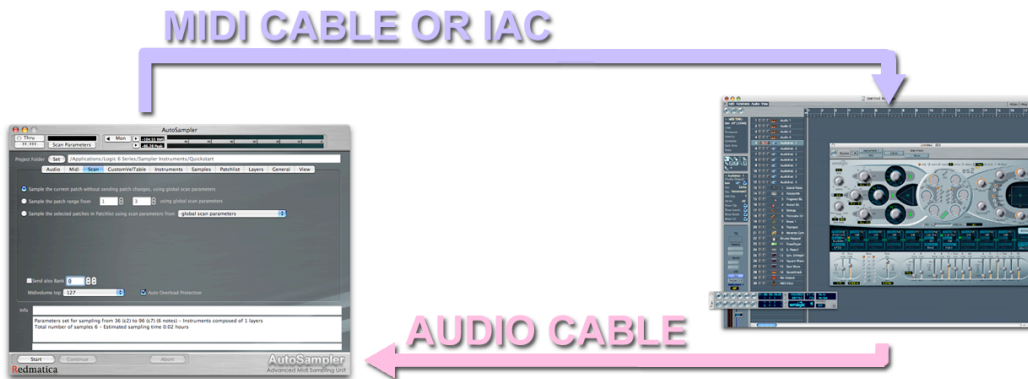


# How it works

AutoSampler has been designed to be as simple as possible to operate: as you have seen, the software samples a midi synth/sampler connected to your mac through midi and audio cables, in an automatic, unattended way. The midi synth is sent a sequence of notes at various pitches, velocities and each sample is recorded, trimmed, normalized, saved and automatically inserted at the appropriate place in newly created EXS24 instruments.



You can also sample a virtual instrument through a properly connected software host.



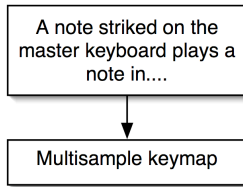
At the basic level, you decide which patches and notes you want to sample and the number of velocity levels that you want to capture. For each patch you decide to sample, a new EXS24 instrument/sample-set ready to load and play will be created.

Additionally, through use of the advanced features of EXS24 playback engine, it's also possible to create a MultiDimensionally Sampled (MDS) EXS24 instrument by sampling a complete keymap for each of the possible 14 How it works different value combinations of a set of 2 user specified midi synth controller (panel knobs, sliders or any synth parameter that accepts a midi controller input).

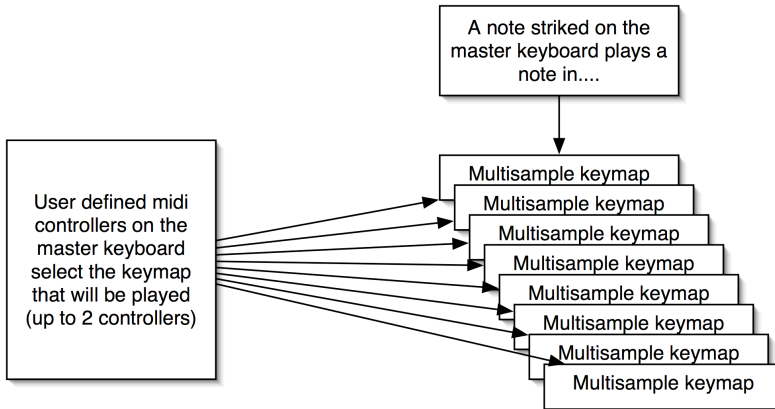
Once created, this complex EXS24 instrument will playback a different sample keymap depending on how you set the designated controllers on you master keyboard. A possible application of this feature is for sampling a physical modeling midi synth, where the chosen controllers map to some complex parameters (string stiffness, inharmonicity, etc.). The result is that the generated EXS24 instrument better retains the subtleties and dynamic characteristics of the original synth patch.

The following diagram shows the difference between the traditional and the MultiDimensional Sampling instruments. AutoSampler can create instruments in both ways.

### Traditional Sampling Playback



### MultiDimensional Sampling Playback

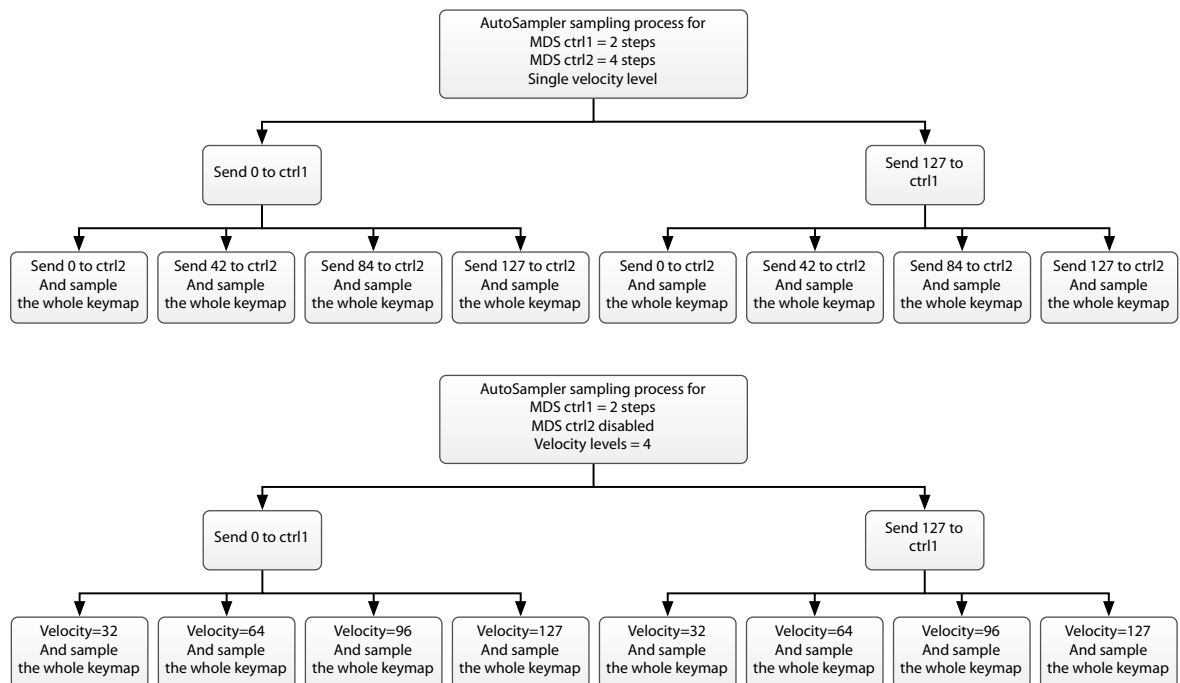




The two controllers available for multidimensional sampling are handled in a different way for playback: MDS Controller 1 value is latched by each note-on event. In other words, the value of the controller is checked only in the moment you press the note. Changing the controller after playback for that specific note has started won't change the sound. MDS Controller 2 value is instead continuously checked, and associated maps are crossfaded, so on playback, you can change the controller value and the sound will change accordingly, by fading through the corresponding sample keymaps.

When sampling with MDS enabled, AutoSampler samples all specified Patch/Note/Velocity/Controller1/ Controller2 combinations until the process is done. The set of parameters that specifies these values is named Scan Parameter set.

AutoSampler has 1 global scan parameters set and 128 individual-patch parameters sets. When sampling you can choose to use the single global set for all patches, or the individual ones. Here shown are two diagrams of the sampling process for MDS. Note that the use of MDS Controller 2 and multivelocity is currently mutually exclusive.

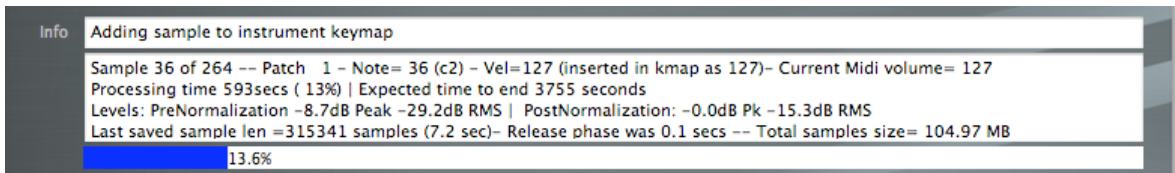


**WARNING:** Be careful with the settings, as it's quite easy to generate very large number of samples. The maximum possible is (128 patches)\*(127 notes)\*(16vel levels)\*(16 param values) = 4161536 sample files (!)

Once you are satisfied with the parameters to use for the sampling session, you click the Start button and from that point on AutoSampler will work unattended.

For each patch we're going to sample, the quiescent audio noise level is automatically detected and then the actual note sampling process starts. Each note is held sustained for a user settable amount of time while being recorded. Sampling of each note continues until the sound releases completely to the previously detected noise footprint. In this was slow releasing sounds are never cut in first instance.

Once the sampling session starts AutoSampler will display and update all the relevant info about the latest sample recorded and the overall sampling session.



Additional processing (trimming, cutting release, normalizing, etc..) is done automatically after each note sampling, so the user can hear the final result when auditioning samples. All audio processing inside AutoSampler is performed in floating point format. If the user chooses to create 16 bits files, the sampling and processing will still be performed at the highest possible resolution, and conversion to 16 bits will be done only as a last step, when saving the files to disk. Dithering is automatically applied when and where appropriate in order to obtain good quality samples.

In order to completely avoid any possible clipping while sampling, you can also set an [auto overload protection] option. When this option is enabled, any sampled audio that clips because of too high audio level is detected and marked. Clipped samples are then discarded and sampled again at a lower volume using appropriate midi volume messages. This process is repeated until the audio doesn't clip anymore. Midi volume is lowered of 20 units for each detected overload. For successive samples, the midi volume will be slowly raised again (by 5 units each sample, until it reaches the top value again) to automatically improve the signal to noise ratio as much as possible.

When the [auto overload protection] option is enabled, we strongly suggest that you also enable normalization (in the Samples page) so that the final sample level will be always the same for all the sampled notes regardless of the intervention of the the auto clip protection. Depending on various options, the release parameter of the amplitude envelope in the created EXS24 instrument can be automatically set to the proper (average) value. It's also possible to create instruments where the samples are set to "oneshot", so that on playback the whole sample is played back from start to end regardless of note off messages. This is generally useful for drum samples.

*IMPORTANT: Sampling raw sounds of presets or waveforms directly out of a musical electronic synth is against copyright laws. Please respect and support the hard work of the hardware synth companies, and use this software in an appropriate and legitimate way.*

One very powerful feature of AutoSampler is the sampling of dynamically layered sound sources. In addition to the main synth source, you can select up to 64 additional sound sources from up to 4 additional midi ports. For each of these sound sources (also the main), you can specify a multipoint volume envelope and a transposition value.

At sampling time AutoSampler sends note on messages to the sound sources, starts playback of the individual volume envelopes and samples the resulting mix. Each envelope is fully independent and is preserved while editing when you enable/disable sources. Through a random function it's also possible to randomize the envelopes to get new complex new original material very easily. You can preview at any time the resulting composite sound by using the external midi keyboard or the internal virtual one.

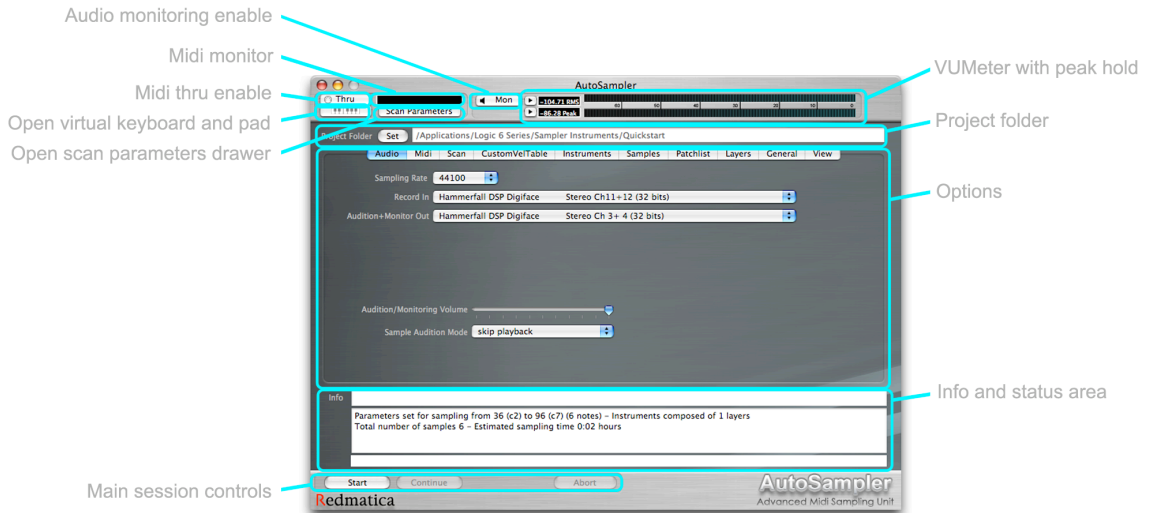
Needless to say that with this technique you can create new composite sounds with extremely dynamic evolution. For those with practice of vector synthesis, think of this as a meta-wavestation where instead of oscillator parts we have whole synths. Just as an example, with this method you can create a new sound that starts with a bell sound, fades in a pad and then finally you have a 5th choir sound slowly raising in the mix...

The creative possibilities are truly endless.

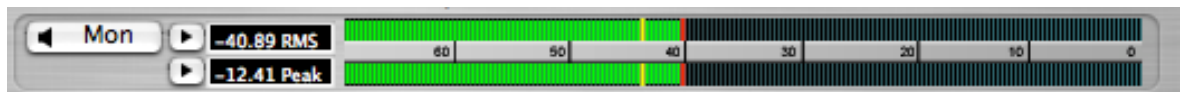


# The main window

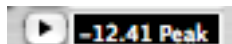
Let's now examine the main AutoSampler window in detail.



The top right section of the main AutoSampler window contains a stereo VUMeter, which displays the current audio levels from the specified audio input, and is always active.



You can see the peak and RMS values (peak value is represented by the red line, while RMS is represented by the yellow line). These last two values are also displayed in numeric form. Of particular interest is the numeric peak level



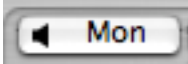
, as it memorizes the highest detected peak and gives a good idea of the headroom left in the audio path. Ideally sounds should be sampled at the highest possible level, without clipping. The small triangle arrow buttons



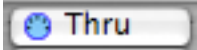
let you to reset memorized levels for peak and RMS level.

If the incoming audio clips, the VUMeter will momentarily change color to full red for a few seconds.

Audio monitoring can be enabled/disabled at any time using the Mon button .



AutoSampler allows use of an external midi master keyboard to control various aspects of its workings (example: midi learn functions, layer preview, etc). The Midi thru button



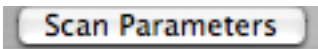
enables or disables this capability. When enabled, AutoSampler will listen to all midi inputs on your system and reroutes incoming events to the midi interfaces and channels you have selected to use in the midi option panel of the software. When enabled, you will also be able to see incoming midi events in the Midi monitor box. Only the midi events of relevance to AutoSampler, notes and controllers, will be displayed. Note that all of the Midi learn functions will work also if midi thru is disabled. Actually when learning from midi, midi thru is temporarily enabled so that you can hear what you are playing/selecting on the keyboard.

AutoSampler also provides an integrated virtual keyboard and pad that you can open by clicking on the Virtual keyboard button.



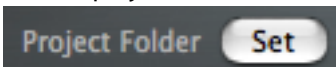
More details on how the virtual keyboard works, in a later section.

The scan parameters drawer contains the most important parameters of AutoSampler, and is always accessible by clicking on the Scan parameters button.



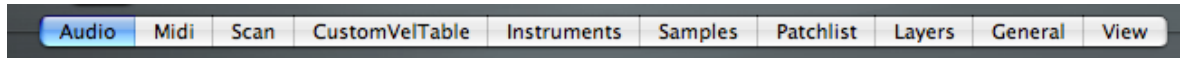
Note that AutoSampler uses a drawer for these parameters so that you can always view and edit them while you are switching between the various option panes. More on the scan parameters and the drawer in a later section.

The Set project folder button



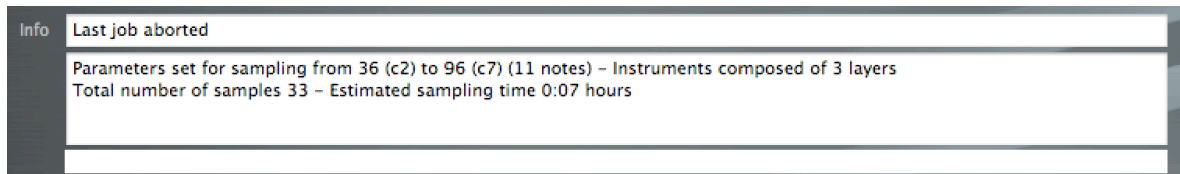
opens a panel that let you choose the destination folder for instruments and samples for the current sampling session. Depending on some options, the destination folder name can also be used as name for the instruments and samples to be created.

The Options tabview is in the middle of the window, readily accessible for setting all the desired options, operating modes and parameters.

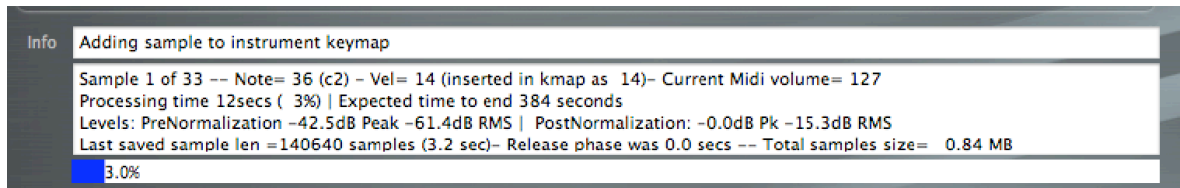


AutoSampler saves all settings on program exit, so that on next launch you will be back where you left last time.

The info and status area is where AutoSampler provides feedback and status information to the user.



While sampling, the user is kept informed of the current processing status displaying the total amount of sample data created, the percent of total scan done, time from start of sampling session, and expected time to end of the session.



The main session controls let you start and stop (abort, exactly) the sampling session. A Continue button is provided for skipping audition phase (when this function is enabled).



In detail:

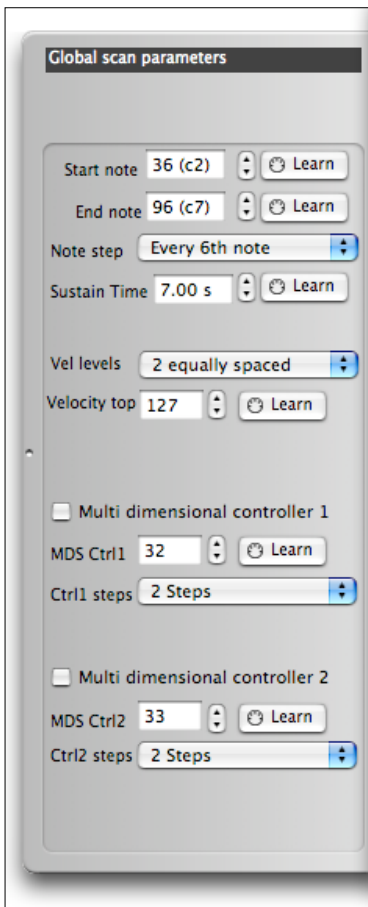
**[START]:** This button starts the sampling session. AutoSampler will start recording samples and creating instruments unattended.

[CONTINUE]: This button skips the playback of the latest sampled sound when the user sets an audition mode (check “Options/Audio”), and lets AutoSampler continue in the sampling session. Note that if the user sets audition mode to “infinite looping”, user intervention is needed to continue the sampling process after each sampled note.

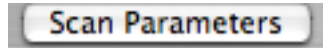
[ABORT]: This button aborts the sampling process. The samples already saved to disk won’t be erased, but the current Exs instrument will not be written.

## Scan parameters

The “scan parameters set” is the set of parameters that define how the instrument will be sampled.



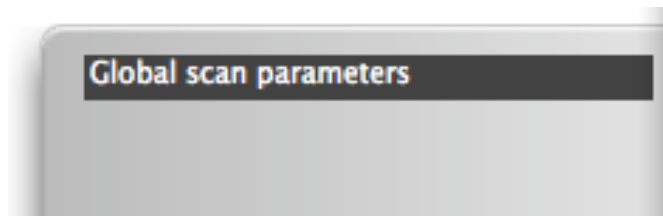
You can decide which notes to sample, the number of velocity levels, etc. You can view and edit the actual scan parameters by opening the scan parameters drawer clicking on the specific button



found on top/left of the main AS screen.

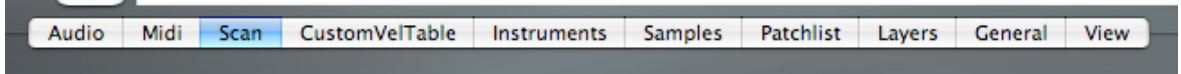
Depending on where you currently are in the main AutoSampler option tabs, you will either see the global set, or the individual set of the currently selected patch in the patchlist.

You can always see what set you are viewing/editing by looking at the black strip on top of the drawer.

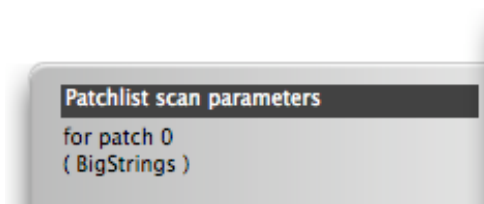
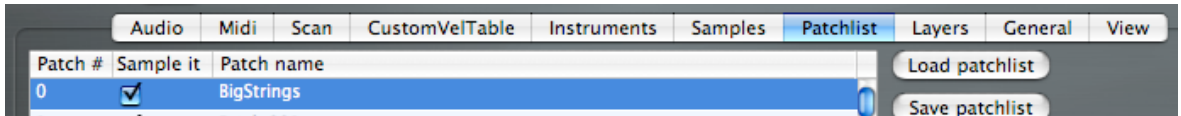




More in detail, you access the global set when you select the “scan” tab of the main AS screen.



The individual sets are instead accessed when you select the “patchlist” tab and then select a patch from the list.



You can copy/paste between the various sets by using the contextual menu found in the patchlist tab. Where it makes sense, midi learn functions are available for entering values directly from an external master keyboard.

From top to bottom you see:

**[Start Note] [End note]:** These two values are used to set the start and end position of the notes to be sampled on the midi instrument in Midi Scan mode. You can enter note values either as midi number (example: 60), or as note name (example: C4). Unfortunately there’s not a single midi standard for octave assignment (C4 can be midi note 48, 60 or 72 depending on the school of thought), so you will first have to set the mapping you want to follow in the “general” options tab.

*Note: you can also select individually the exact notes to sample by using the built in virtual keyboard (more about this in the virtual keyboard section)*

*Note: you can use a midi learn function for entering these values. You click on the [Learn] button and play the note from your master keyboard. You can play as many different notes as you want. Once you find the satisfactory one, play that note again (a sort of double click): the midi learn panel will automatically close and the selected note will appear in the corresponding parameter box.*

**[Note step]:** This menu let you select the note “step” to use for sampling the keyboard range specified by [Start note] and [End note]. Possible values are 1 to 12 semitones (1 octave). A value of “1” means that all notes will be sampled.

*Note: you can also select individually the exact notes to sample by using the built in virtual keyboard (more about this in the virtual keyboard section). As soon as you select individual notes, the [note step] menu will turn to “custom map”.*

*Note: the end note will always be sampled even if it doesn’t match the note step: i.e. if you select C4 as start note and D4 as end note, and a note step of 1 octave, the D4 note will be sampled anyway even if the “next” note after C4 would be C5 (which in turn is not sampled as it’s beyond D4)*

**[Sustain time]:** This value determines how long the sampled note is kept in sustain mode (key note pressed) while sampling. Values of 7 or 8 seconds are usually sufficient for most sounds. You can also think of this setting as “maximum amount of sustain time” you will get when playing the instrument in Exs24.

*Note: you can use a midi learn function for entering this value. You have to click on the [Learn] button and play a note from your midi master keyboard for the desired amount of time. When you release the note key, the midi learn panel will automatically close and the played time, as automatically detected by AS, will appear in the parameter box, rounded to the upper 0.5 seconds.*

**[Velocity levels]:**This menu determines how many velocity levels are going to be sampled for each note. Possible values are from 1 (a single velocity level) up to 16 evenly spaced levels. You can also use a custom velocity table by selecting the <Custom Table> value (full explanation about the custom velocity table is in the specific chapter). The will be processed and inserted in the keymap so that they are phase coherent. AutoSampler creates crossfading instruments so that on playback the sound smoothly changes from a velocity point to another.

*Note: multiple velocity levels are mutually exclusive with multidimensional sampling for controller2. When you enable multidimensional sampling for controller2, AS will automatically revert to a single velocity level mode.*

**[Velocity top]:** This menu sets the maximum velocity value sent to the sampled synth. This value scales the velocity levels as specified in the previously explained menu. As an example, if velocity top is set to 90, and you select 10 velocity levels, then the velocity levels will be spaced of 9 units.

**[Multidimensional ctrl1]:** This option enables a further sampling dimension (apart note and velocity). A complete synth keymap is sampled for each of several different values of this user specified midi synth parameter (knob/slider or any synth parameter that accepts a midi controller input). Once created, this complex Exs instrument will playback a different sample set depending on how the user sets the controller on his keyboard. The selected keymap for MDSCtrl1 is "latched" at note on. I.e. you can't dynamically change the keymap set for a note with Exs24 once you start playing that note.

**[MDS Ctrl1]:** This is the value of the controller to be used for multidimensional sampling. In order to create useful samples, the synth must react to this controller.

**[Ctrl steps1]:** This menu let the user select the number of equally spaced intervals at which the MDSCtrl1 will be sampled. For each subdivision, a whole complete keymap (note and velocities) is sampled. Possible values range from 2 up to 16

**[Multidimensional ctrl2]:** This option enables a further sampling dimension (apart note and MDSCtrl1). A complete synth keymap is sampled for each of several different values of a user specified midi synth parameter (knob/slider or any synth parameter that accepts a midi controller input). Once created, this complex Exs instrument will playback a different keymap set depending on how the user sets the controller on his keyboard. These keymaps are continuously crossfaded. I.e. you can dynamically change the keymap set for a note with Exs24, even after you start playing that note.

*Note: the use of Multidimensional ctrl2 and multivelocity is mutually exclusive. In other words, you can't sample multivelocity and multidimensional ctrl2 for an instrument. You can still use multivelocity and multidimensional ctrl1.*

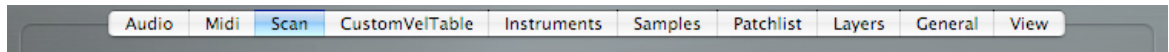
**[MDS Ctrl2]:** This is the value of the controller to be used for multidimensional sampling for ctrl2. In order to create useful samples, the synth must react to this controller

**[Ctrl steps2]:** This menu let the user select the number of equally spaced intervals at which the MDSCtrl2 will be sampled. For each subdivision, a whole complete keymap (note and MDSCtrl1) is sampled. Possible values range from 2 up to 16



# Options

The options tabview let you select the operating modes of AutoSampler, which devices to use, and all the other settings.



Let's examine the various option panes in a detailed way

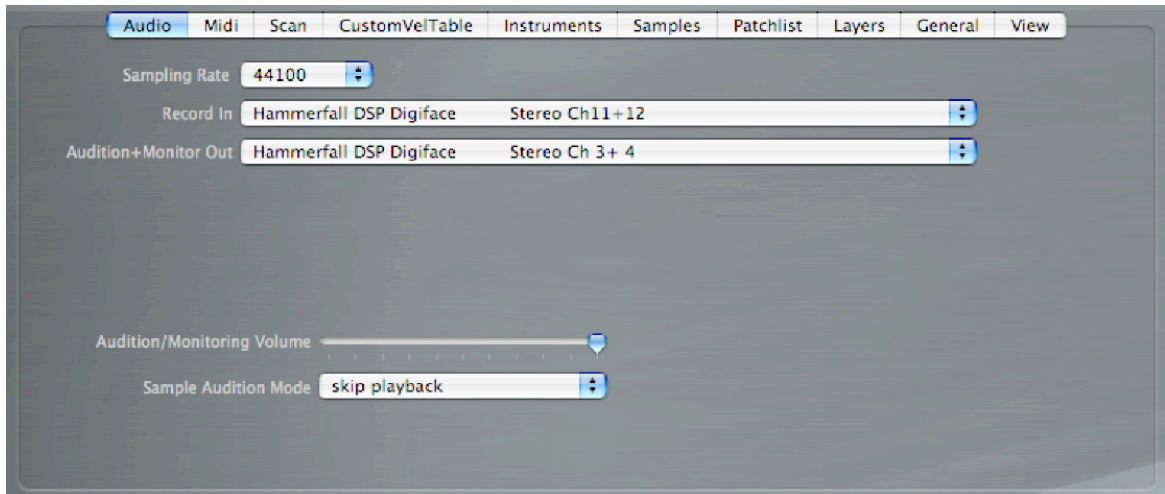
## Options: Audio

Here is where you can set the audio interfaces to be used and other related settings. The AutoSampler internal audio engine has been designed to be capable of using different audio hardware devices for recording and audition/monitoring playback. It's not required for the audio devices to be synchronized by use of a wordclock. However, if the real sample rates of the devices are too different and no sync is provided between the audio devices, the monitoring section will periodically stop to resync with the incoming audio. The sampled audio is not affected by these resync operations. You can sample at various sample rates, depending on your audio hardware capabilities. Note that in general, sampling at high rates will result in bigger sample files, bigger RAM usage and higher CPU loads in Exs24. For most tasks, 44100hz will probably be sufficient. It's suggested that you sample at the rate that you will use in most of your songs, as this will minimize the CPU load of Exs24 at playback time. The supported sample rates are: 32Khz, 44.1Khz, 48 Khz, 64Khz, 88.2Khz and 96Khz,

AutoSampler audio engine also decouples the number of channels of the hardware from the number of channels of the created samples, by providing independent settings for both. This might be a little confusing at start, but lends to more flexibility in instrument/sample creation. As an example, if you enable creation of stereo samples (by setting the appropriate option in Option:Samples), the generated sample file will always be stereo. If the sampling hardware is mono, the same audio signal will go to both channels (Left and Right) of the sample file. If you instead decide to create mono samples, and you sample from a stereo source, the left and right signals will be mixed down to mono before insertion in the (mono) sample buffer. It's up to the user to use the most appropriate audio configuration in order to avoid phase cancellations in the mono downmix.

The sampling always happens at the highest bit resolution supported by the audio input device. Processing is performed in the floating-point domain and conversion to 24/16 bits integer format is done only as last step, by automatically adding dither when appropriate in order to create good quality

samples. In audio devices, for example some USB devices, where it's not possible to record and playback in 24 bit format at the same time, the monitoring section is automatically set at 16 bits, in order to still allow sampling at 24 bits.



**[SamplingRate]:** With this menu you set the sample rate to be used for the sampling session. Note that in general, sampling at high rates will result in bigger sample files, larger RAM usage and higher cpu loads in Exs24. For most tasks, 44.1Khz will probably be the best solution.

**[Record Input]:** With this menu you select the audio hardware and the channels (mono or stereo) to use for recording the samples.

**[Audition+Monitor Out]:** With this menu you select the audio hardware and the channels to use for audio output, more precisely for auditioning recorded samples and monitoring incoming audio signal.

**[Audition volume]:** This is a simple volume fader, editable at any time, where you can set the output volume of the audition / monitoring audio signal. Note that this is a simple volume out control, and as such does not alter in any way the volume of recorded samples.

**[Sample audition mode]:** This option enables the audition of each recorded and processed sample before going on with the next one. Depending on the setting, the sample will be played back for a certain number of times (1, 3, 10) and then the sampling session will continue automatically. When set to "skip

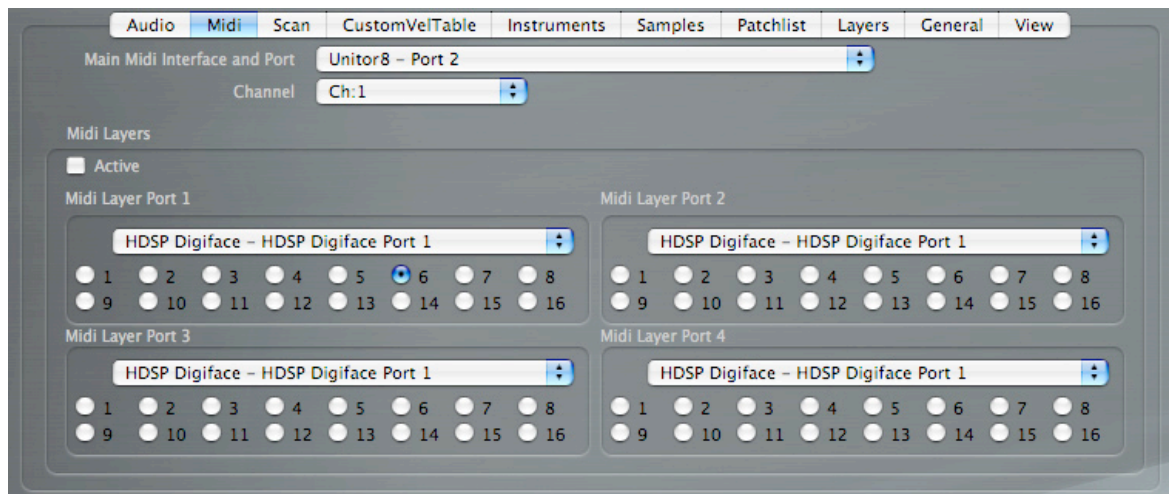
auditioning”, no audition playback will occur. When the menu is instead set to “infinite”, AutoSampler will keep playing back each sample indefinitely until the user clicks on the “Continue” button, so this last setting is not good for unattended operations.

## Options:MIDI

AutoSampler uses a midi connection to send notes and controller messages to the synth(s) to be sampled. In the Options:MIDI page you can set the main midi port and channel to be used for communication to the synth.

The main midi port and channels are used for sampling a single synth source at time. For sampling layered synth sources you can use up to 64 additional layers, on up to 4 additional midi ports. For each midi port you can individually enable/disable the midi channels to be used. As explained in a previous chapter, each midi channel can be sent an individual custom midi expression envelope at sampling time, so that you can create very complex evolving samples out of many different sound sources.

*Note: when sampling layered sources, the sampling still happens through a mono/stereo audio port, so the sound sources must be mixed before entering the audio inputs of the selected audio interface.*



**[Main MIDI Interface Port]:** This is where you set the interface and port to use for the main synth to be sampled.

**[Chan]:** With this setting you select the (single) midi channel to use on the main synth.

**[Midi Layers/Active]:** With this setting you enable or disable all the additional midi layers at once.

**[Midi Layer 1][Midi Layer 2][Midi Layer 3][Midi Layer 4]:**With these settings you can set the ports to use for the additional layered sound sources. Under the popup menu, you can enable and disable individually the midi channels of each port by CMD-clicking on the channels buttons

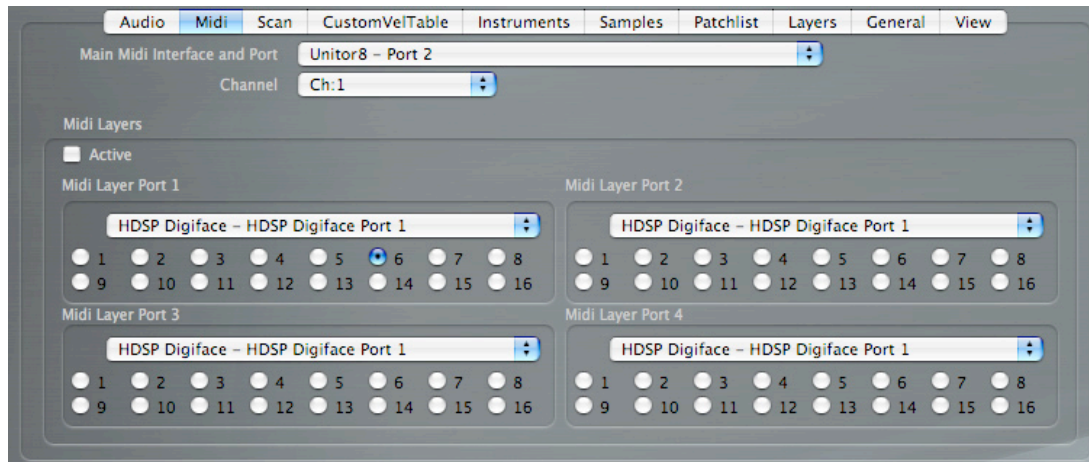
## Options: Scan

In this view you set the basic operating mode for your sampling session. You can either decide to sample a single patch (the currently selected patch on the external synth), decide to sample a contiguous set of patches or decide to sample a set of patches selected in a patchlist (more on this later). You also set whether to send bank messages together with patch changes, and at what maximum midi volume the synth should be sampled. A midi volume of 127 is ideal for sampling hardware synth patches and maximize the signal/noise ratio, while a midi volume of 90 is ideal for sampling virtual synth hosted by Logic, where volume 90 equals 0dB.

If the sampled synth responds to midi volume messages, it's also possible to enable an "auto overload protection". This function detects when the audio signal distorts because of too high volume level, and sends midi volume messages (of increasingly lower values) to the synth in order to automatically compensate the problem until the sample can be recorded correctly.

The details about which notes to sample, at which velocity, etc.. are viewable/editable by opening the scan parameters drawer with the "Scan Parameters" button found at top of the window. You can either decide to autosample patches using a single Global set of scan parameters, or you can assign an individual set of scan parameters to each patch in the patchlist (more on this later).





**[Sample the current patch..]:** This selection switches AutoSampler in single patch sampling mode. When the sampling session is started using the start button, no midi program changes will be sent and the currently selected patch will be sampled as it is. The global set of scan parameters will be used to determine which notes will be sampled and how.

**[Sample the patch range from..to..]:** This selection switches operating mode to patch range sampling mode. AutoSampler will send out program change messages, sample the corresponding patches, then go over with the next one until the whole range has been sampled. For example, if the “from” value is 10 and “to” is 13, then patches 10, 11, 12 and 13 will be sampled. The global set of scan parameters will be used to determine which notes will be sampled and how. This means that all programs will be sampled in the same way (same notes, same velocities, etc).

**[Sample the selected patches...]:** This selection switches operating mode to patch selection sampling mode. AutoSampler will send out program change messages, sampling the patches selected in the patchlist until all the selected patches have been sampled. You can select to use the global set of scan parameters for all programs, or use individual scan parameters (set from the patchlist view) for each program.

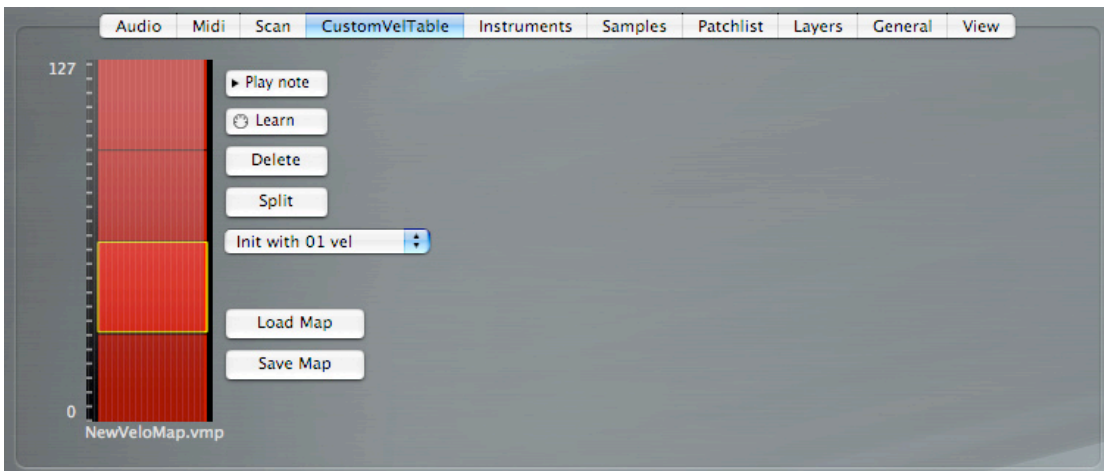
**[Send bank]:** With this setting you choose to enable/disable sending midi bank switch messages with every program change sent. This is useful if your synth has more than a single bank.

**[Midivolume top]:** With this menu you select the maximum midi volume to use for sampling sounds. Using a lower volume than 127 is useful if you are sampling from an host (as Logic), where midivolume 90 equals 0dB. Note that your host/synth needs to support midi volume changes in order for this setting to be effective.

**[Auto overload protection]:** When enabled, this option ensures that no sample is recorded distorted because of too high volume level. During a sampling session, when the incoming audio clips and the option is enabled, the current sample is discarded, then the midi instrument volume is lowered through use of midi volume messages, and the process repeated until the audio doesn't clip anymore. Midi volume is lowered of 20 units for each tentative. For each subsequent sampling that doesn't clip, the midi volume will be slowly raised of 5 units at time, until it reaches the maximum level allowed (midivolume top). When you use this option, it's highly recommended that you also enable automatic RMS normalization of the samples by using the option found in the options:samples view, so that the final sample level will be always the same for all the samples regardless of the intervention of the the auto clip protection.

## Options:Custom Velocity Table

It might happen that the equally spaced velocity levels provided by the standard scan parameters might not be appropriate for what you are going to sample. AutoSampler let you define a custom velocity table to be used for sampling. You can edit, load and save velocity maps so you can build your own library for these special cases.



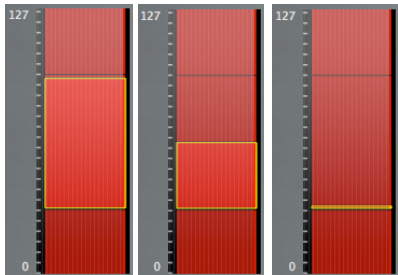
*Note: currently there can be only a single custom velocity map loaded at a single time in AS, so if you need to sample several instruments requiring different custom maps you will have to do it in multiple sampling sessions.*

The velocity table always extends from 0 to 127, so if you have a single zone in the table (the default), you can't directly edit it. The currently edited element is displayed in bright red, and the corresponding velocity zone is surrounded by a small yellow ring.

**[Play note]:** This button plays a note (note 60) at the currently selected velocity for 2 second so that you can hear the corresponding sound on the synth at that specific velocity.

**[Learn]:** This midi learn facility let you enter velocity values from an external midi master keyboard by directly detecting the key velocity.

*Important: keep in mind that a zone can't be set higher than the top level of the zone immediately above it, or lower than the top level of the zone immediately below it. In the example shown here below (in the center), we have one zone set at 127, one zone set at 95, one (selected) zone set at 63, and the last one on the bottom set at 31. If we try to use the midi learn, or to manually edit the currently selected zone (going from 32 to 63), we will only be able to set it at values between 32 (one more than 31), and 94 (one less than 95). Other values will be rejected.*



**[Delete]:** This button deletes the currently selected zone. Note that the table always contains at least one zone.

**[Split]:** This button splits the currently selected zone in two.

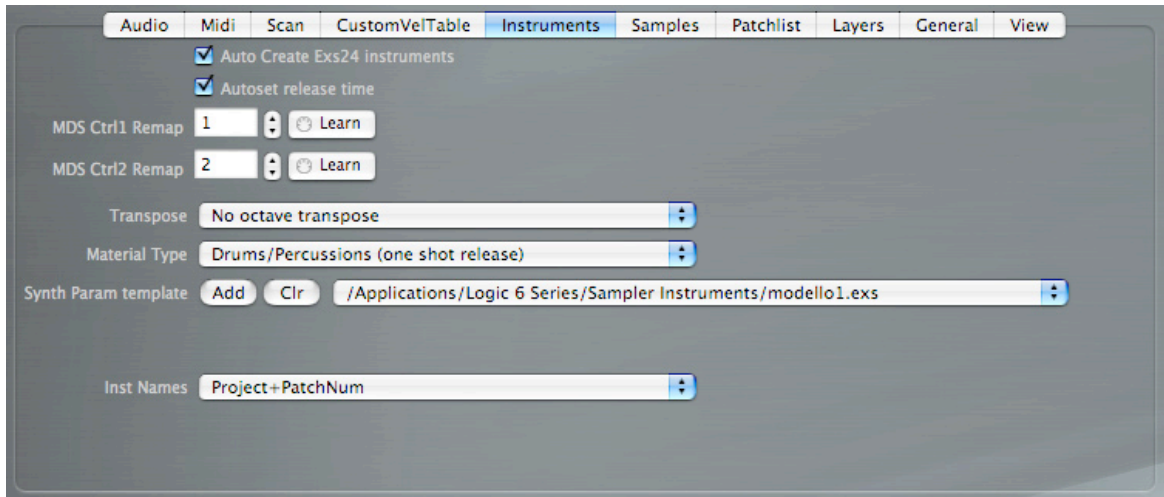
[**Init with..**]: This menu initializes the table with a number of equally spaced zones. This is often useful as a starting base.

[**Load map**]: This button let you load a velocity table from your hard disk.

[**Save map**]: This button let you save the current velocity table to your hard disk.

## Options: Instruments

In this view you find options related to the Exs24 instruments that AS will create in the sampling session. It's possible to autodetect and autoset the appropriate release time for the sounds, to select the controllers that will be used for playback from the master keyboard for navigating the multidimensional sample sets. It's also possible to choose a template instrument from where to copy the synthesis parameters for the generated Exs24 instruments.



[**Create Exs24 instrument**]: This enables/disables automatic Exs24 instrument creation. Most of the time you will keep it enabled. If disabled, AS will create only the sample files.

**[Autoset release time]:** When this setting is enabled, AS will automatically detect the average release time for the sampled sound and set the ENV2 (amplitude) release parameter in the Exs24 to the proper value.

**[MDS Ctrl1 remap]:** This is the controller that Exs24 instruments will respond to, for crossfading between multidimensional MDSCtrl1 maps. As example, you can sample an instrument using MDSCtrl1 (we're talking of the scan parameter, not the remap value!) set to a filter knob, let's say controller 80. If you set MDSCtrl1Remap to 1 (modwheel), then the generated instrument will use the modwheel to fade between the various filtered sampled keymaps.

*Note: if your synth knobs/sliders emit midi controller messages, you can use a midi learn function for entering this controller value. You have to click on the [Learn] button and move the controller knob on your synth. When you are happy with the choice, you can press any note key to close the learn panel.*

**[MDS Ctrl2 remap]:** This is the controller that Exs24 instruments will respond to, for switching between multidimensional MDSCtrl2 maps. As example, you can sample an instrument using MDSCtrl2 (we're talking of the scan parameter, not the remap value!) set to a resonance knob, let's say controller 81. If you set MDSCtrl2Remap to 1 (modwheel), then the generated instrument will use the modwheel to switch between the various resonance sample keymaps.

*Note: if your synth knobs/sliders emit midi controller messages, you can use a midi learn function for entering this controller value. You have to click on the [Learn] button and move the controller knob on your synth. When you are happy with the choice, you can press any note key to close the learn panel.*

**[Transpose]:** This is a simple octave transposition, useful for when the user wants to create transposed instruments. The sampled notes will remain as specified, but the created instrument will have samples inserted at the transposed note location.

**[MaterialType]:** With this option you can decide if the zones inside the created Exs24 instrument will have the "one shot" flag enabled or not. This is usually needed/useful for drum sounds.

**[Inst names] :**With this option you set the scheme to be used for naming the instruments. Possible choices are:

**Project+PatchNum** With this setting, AS will name created instruments using the project name and the number of the patch being sampled (example: projectname001.exs). If you are sampling a single patch, then the project name alone will be used (projectname.exs).

**PatchName** With this setting, AS will name created instruments using the individual patchname got from the patchlist. If you are sampling a single patch, then the project name alone will be used instead.

**PatchNum+PatchName** With this setting, AS will name created instruments using the patch number and the individual patchname got from the patchlist (example: 001BigStrings.exs). If you are sampling a single patch, then the project name alone will be used instead.

[Synth param template] This option let you select an existing instrument from where to copy the synthesis parameters for the Exs24 instruments that AS will create. Keep in mind that some parameters are reserved for AS use, and won't be copied. The picture below highlights in red the reserved ones:



By default, AS will create instruments with the modwheel controlling the amount of pitch modulation by LFO1.

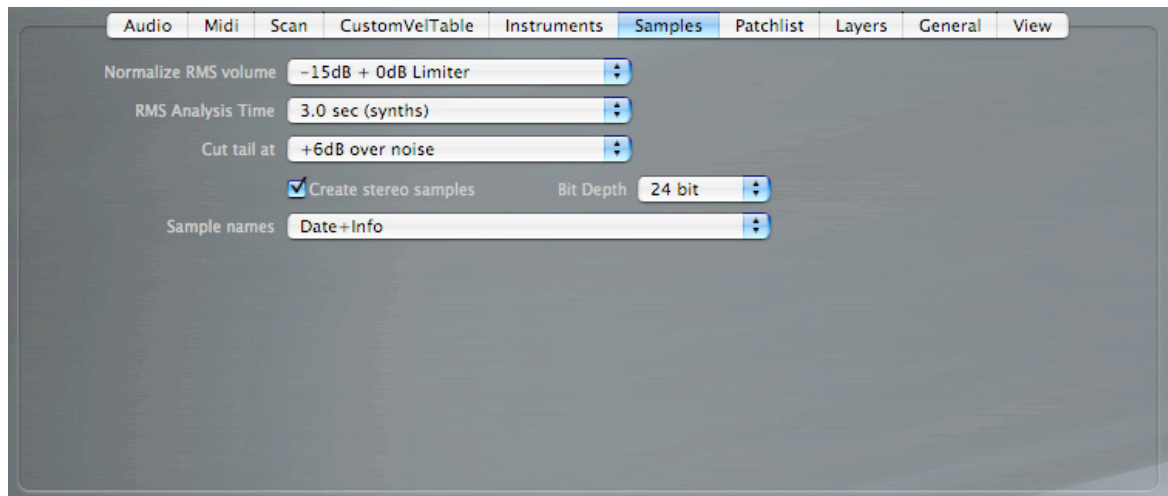
## Options: Samples

In this view you can set various options related to the samples that AS will create. You can normalize the RMS level of the samples so that each sample is saved to disk with the same perceptual volume level. Note that this is very different than normalizing peak level. This approach allows you to redefine the dynamic response of the sound with the various dynamics controls in Exs24, in essence factoring out the original dynamics.

You can also choose to not normalize. In this case the samples will already incorporate the dynamic response of the sampled instrument and so you will have to lower the dynamic range in Exs24 parameters. The crossfading between the various samples (enabled by default in the created instruments) will do the rest to reconstruct the original dynamics.

Another option let you cut the tail of the sample to an higher volume level than usual (+6db over noisefloor). You can also decide to create stereo o mono samples (independently from the mono or stereo audio source), the bitdepth of the samples and the names to be used for sample files.

Note that internally all processing is done in floating point format to maintain the maximum sound quality. The conversion from floating point to 24 or 16 bit is done just as last stage. In the case of conversion to 16 bit, dithering is automatically applied to improve the final sound quality.



**[Normalize RMS volume]:** This option adds an RMS normalizer and a 0dB limiter in the sample processing path. When these modules are active, all samples will be processed to have the same RMS volume, chosen among the presented choices (-10dB, -11dB, -12dB, -13dB, -14dB, -15dB, -20dB, -25dB, -30dB). The limiter

catches any possible overshooting of the sound. Note however that normalizing to high values (-10dB as example) will often result in overcompressed/distorted sound.

**[RMS analysis time]:** The RMS normalizer gets an average volume level on the initial section of the sample. If the sample has a very short attack this might fool the algorithm and result in over normalization/overcompression of the sample. This parameter allows you to set the length of the section of sample to analyze. 1 second is usually good for drums as we are emphasizing attack volume. 3 seconds are instead usually good for sustained sounds.

**[Cut tail at]:** Once the sample has been recorded, it's possible to shorten the release tail by cutting the sample when the tail volume gets lower than the value specified by this option. Useful for shortening very long release tails.

**[Create StereoSamples]:** Here you select the creation of stereo or mono samples. This setting is independent from the (mono or stereo) source of the sound. Mono files from mono sources and stereo files from stereo sources are straightforward. Stereo files from mono sources will have the same signal on both channels. Mono files from stereo sources will have Left and Right channels downmixed to the mono file. Note that in this specific stereo->mono case you have to be careful about phase cancellation issues.

**[BitDepth]:** With this checkbox you select the bitdepth of the created sample files. 16 bit sample files will be created using dithering for improved conversion quality.

**[Sample names]:** With this option you set the scheme to be used for naming samples. Possible choices are:

**Date+Info** With this setting, AS will create samples whose name is composed of date and sample info. Example: 200401021234\_f47f7f7f.wav

**PatchName+Info** With this setting, AS will create samples named after the individual patchname and the sample info. Example BigStrings\_f47f7f7f.wav. If you are sampling a single patch, then the project name will be used instead of the patchname.



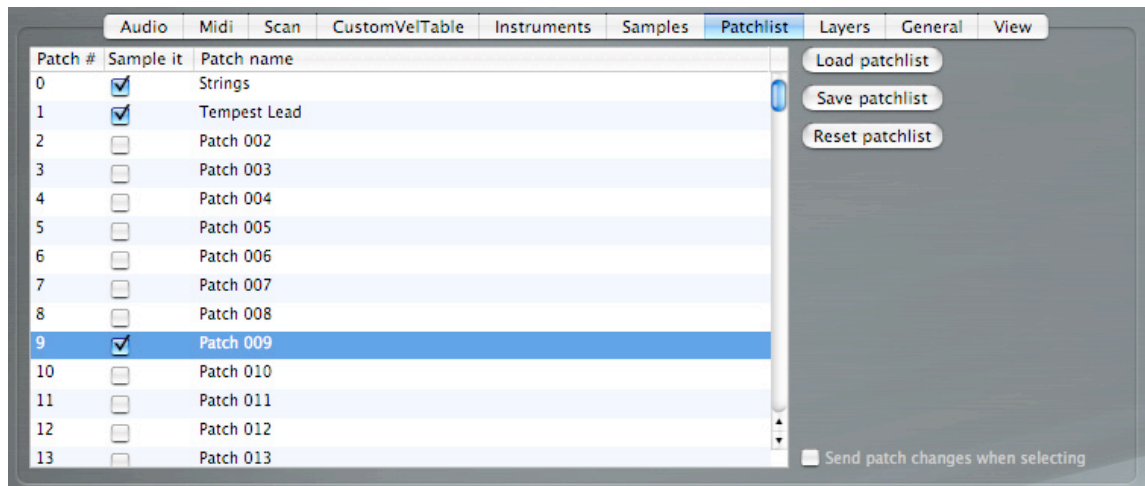
**PatchName+Counter** With this setting, AS will create samples named after the individual patchname and a sequential number. Example BigStrings\_0001.wav. If you are sampling a single patch, then the project name will be used instead of the patchname.

**Project+Counter** With this setting, AS will create samples named after the project name patchname and a sequential (project-wide) number. Example SamplingSession\_0001.wav

## Options:Patchlist

In this view you can see a bank of 128 programs corresponding to a synth bank. Here you can import/export/assign names to patches, you can select which patches you want to sample and view/edit settings for the individual scan parameters. Note that AutoSampler is not reading the patch names from your synth memory. You have to enter them manually, by double clicking the name in the table. You can also import them as simple text files (not rtf files!), from some midi librarian with this capability. The patchlist files are simple text files with one text entry for each line.

If you select a patch in the patchlist, the scan parameter drawer will display the settings for that specific patch.



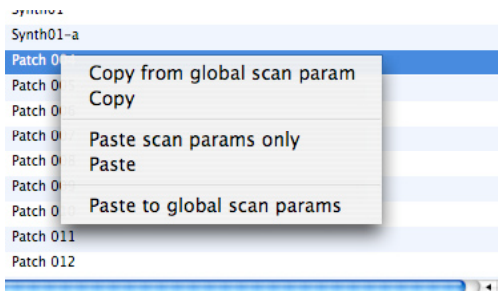
**[Load patchlist]** Loads a patchlist from disk.

**[Save patchlist]** Saves the patchlist from disk.

**[Reset patchlist]** Resets the current patchlist (and associate scan parameters) to default values

**[Send patch changes..]** When this setting is enabled and you select a patch in the list, a program change midi message is sent to the synth so that it switches to the selected patch.

You can also use a contextual menu for copy/paste between the various patches by using ctrl+mouse button, or right mouse button in a double button mouse.



**[Copy from global scan params]:** Copies the scan parameters from the global set

**[Copy]:** Copies the scan parameters and patchname from the currently selected entry

**[Paste scan params only]:** Pastes the scan parameters only in the currently selected entry(entries). The patch name is not pasted.

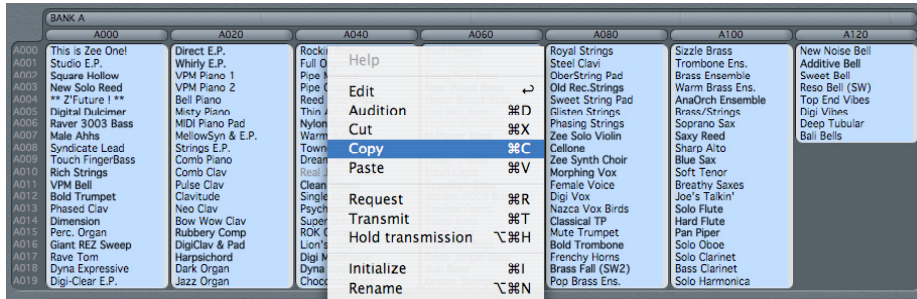
**[Paste]:** Pastes the scan parameters and the patchname in the currently selected entry(entries).

**[Paste to global]:** Pastes the scan parameters to the global set.

# How to import patchnames from Sounddiver

If you want to import patchnames from Emagic's Sounddiver librarian/editor, you can follow this simple procedure:

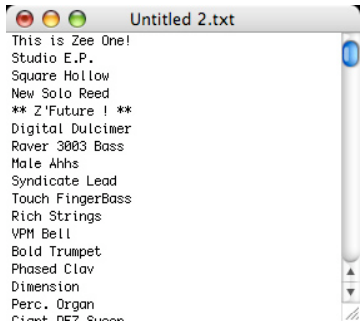
As first thing, select the patchnames in Sounddiver and copy them.



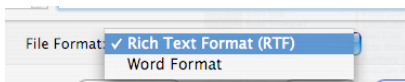
Then launch the "Textedit" editor found in the OSX Applications folder



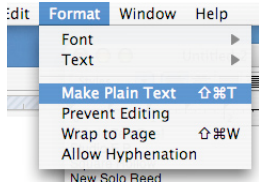
Create a new empty file and paste the patchnames on the very first line.



Now you can save the patchlist as plain text, ready for use in Autosampler. If Textedit prompts you for saving as "rich text format" or "Word format" as shown here,



you will have to first use the “Make Plain Text” function found in the Format menu of Textedit.



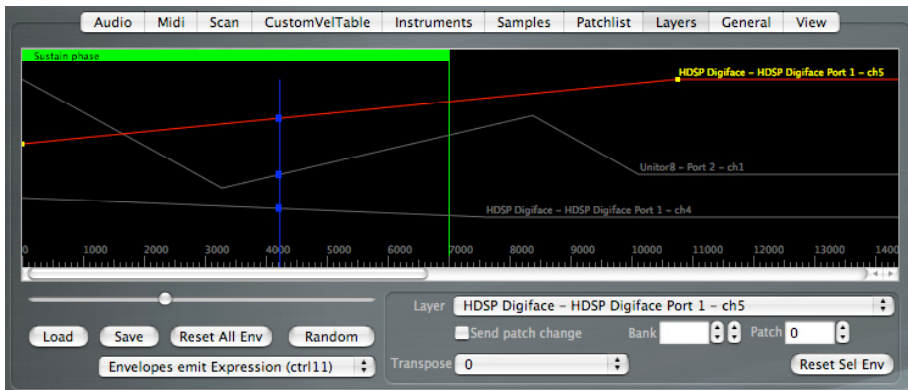
At this point you will be able to save as plain text format, readable by AutoSampler.

## Options: Layers

The layers view is the key to one of the most powerful features of AutoSampler: sampling of layered sounds. For each midi interface/channel you enable in the Midi page, you can here specify a multipoint volume envelope and a transposition value. At sampling time (or every time a note is triggered from the virtual or master midi keyboard), AutoSampler starts playback of the envelopes and midi volume control changes are sent to the synth sources: this let you create new composited sounds with extremely dynamic evolution.

Each envelope is fully independent and is preserved while editing for each channel/port even if you switch between ports or enable/disable them. It's possible to randomize the envelopes by using a Random panel, to easily get new original material. The layer mode makes more sense when creating a single instrument at time, as there can be only one set of envelopes and layer parameters loaded at once in AutoSampler.

Mouse operations for creating/deleting envelopes are straightforward. A green band on top shows the length of the sustain phase for the currently selected scan parameter set.



Alt+mouse drag scales the currently selected (red) envelope, while Alt+CMD+mouse drag scales all the active envelopes at the same time. Note that by its own nature the envelope playback system is monophonic: i.e. each time you press a note, the envelopes start back from beginning. When playback starts, you can see the current play position as a vertical blue line, with small blue dots showing the current envelope levels being sent to the sound sources.

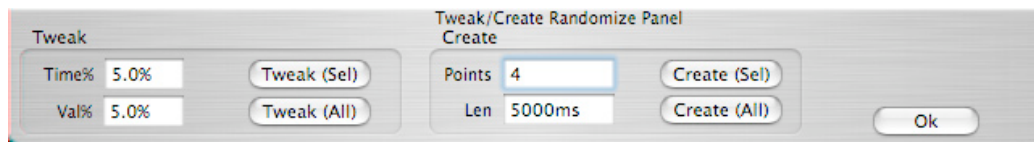
Layers are identified by the name of the midi port and midi channel used for sending out envelopes. You can also set a program+bank change and a transposition for each voice (+-24 semitones). Note that the program and bank settings for the main midi port and channel are independent from the one shown in virtual keyboard. Also, envelopes are always enabled: if you do not want an evolving envelope, simply reset the specific envelope curve (or "reset all" envelopes)

**[Load]:** Loads from disk the envelopes set.

**[Save]:** Saves to disk the envelopes set.

**[Reset all envelopes]:** Resets all envelopes to default (straight full volume envelope, no transposition, no program changes).

**[Random]:** This button opens the tweak/create randomize panel.



From there you can tweak timing and/or values of the selected envelope, or of all envelopes at a single time. You can also create new envelopes, for the selected one or for all envelopes at once, by specifying the number of desired points and the length of the envelope length. Once you are satisfied with the results, you can close the panel by clicking on **[Ok]**.

**[Layer]:** You can select individual layers (and corresponding envelopes) by using this menu. At any time you will be able to view, select and edit only the midi interfaces and channels enabled in the Midi page of AutoSampler.

**[Send patch change]:** With this option you can make AS send out program changes for each layer. This is useful if you want to set patches from AS screen, and not directly from the synth panels.

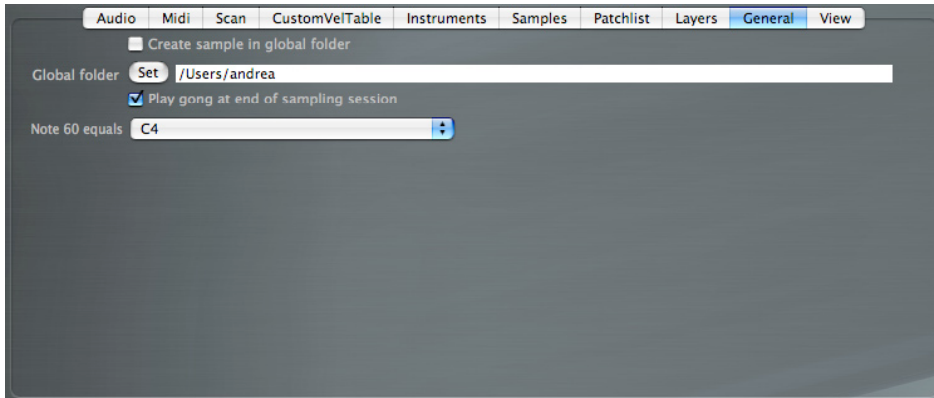
**[Bank]:** This is the bank number to use for the currently selected layer

**[Patch]:** This is the patch number to use for for the currently selected layer.

**[Transpose]:** This is the note transposition to use for the currently selected layer. Note transposition allows for more complex compositing of sounds. As an example, you could make a 7th swell into the sustain phase.

## Options: General

This view is for settings related to general AutoSampler operations.



**[Create samples in global folder]:** This option let you create all samples in a “global folder” rather than in each session project folder

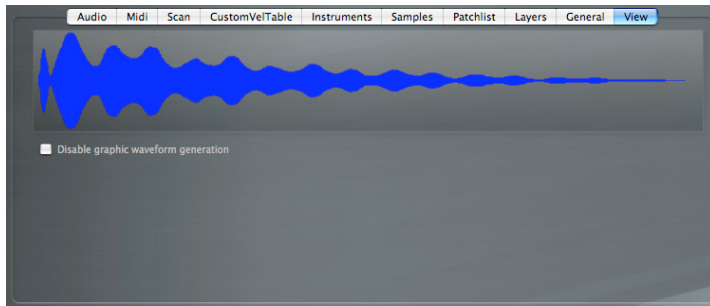
**[Set global project dir]:** Clicking on this button, you set the global directory to be used for samples

**[Audio alert on job end]:** This will make AS play a gentle “gong” sound at sampling session end.

**[Note 60 equals]:** With this menu you can set the conventional octave to use for middle C (midi note 60). Possible values are C3, C4 and C5. This settings affects only the displaying of note names and is not connected in anyway to transposition.

## Options:View

In this view you can see a small informative waveform graphics display for each sampled sound. This is intended just to show the overall shape.



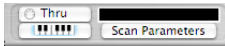
**[Disable graphic view]:** With this setting you can disable the generation of a graphic waveform view after each sample. For long sampling sessions and slow computers this can save a sensible amount of time

## Virtual keyboard and bidimensional pad

Autosampler has a builtin virtual keyboard that can be used with the mouse to play sounds and to select notes to be sampled.



The keyboard is displayed/hidden using the keyboard icon found at top left of the main AS window.



The keyboard has two possible operating modes: play mode and selection mode. The operating mode is selectable through a menu on the bottom of the keyboard. Regardless of the current mode, selected notes for sampling are displayed in orange and are updated in realtime while editing the scan parameters. A small "C" icon points to the middle C note (midi note 60).

In play mode you can play notes on the keyboard using the mouse. The currently playing note is displayed in red. The space bar acts as a sustain pedal so that you can play a note with the mouse, hit the space bar and go play with the controller pad on the left. The velocity of the played note can be quickly selected by using the "0" to "9" keys, or more finely by using the "+" and "-" keys. Independent, dedicated program and bank changes can be sent from the virtual keyboard in order to quickly explore sounds without having to switch back and forth from the synth or the main program window.

*Note: by its own nature, the keyboard is monophonic as AutoSampler will always sample one note at once.*

In selection mode, the mouse is used to select/deselect notes to be sampled for the currently selected scan parameters. You can select and drag selection to speed up selection operations. A [Clear selection] button deselects all notes.

*Tip: if you are sampling a split sound at, let's say C4, you will have to select both C4 and B3 as notes to be sampled. In this way the split position will be faithfully reproduced.*

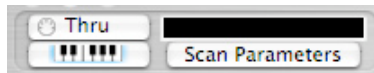


The virtual pad on the left is used to send controller data to the synth using the mouse. The controllers sent depend on the current MDSCtrl1 and MDSCtrl2 values as set in the “Scan parameters” drawer of AS. This is useful to preview the effects of these controllers on the sound (for example: filter cutoff, resonance level,...)

*Note: in any operating mode, playing a note on the virtual keyboard will trigger the whole layer/envelope mechanism using the current settings. Envelopes will be sent to sound sources and the sound you will hear will be a true preview of what is going to be sampled.*

## MIDI thru

AutoSampler also provides a midi thru feature for using an external master keyboard. To enable/disable this feature you must click on the “Thru” icon on the top of the main AutoSampler window. The external midi keyboard can’t be currently used for selecting notes to be sampled.



## Log panel

Depending on settings, sampling sessions can be very long. For this reason, AutoSampler provides a log panel where all the relevant information about sessions can be later found and eventually saved to disk as an rich text format file, viewable by any OSX text editor. The log panel is accessed by the View menu.



If the graphics view generation is enabled, the log will also contain a graphics representation of the samples. The log is automatically cleared at start of each sampling session.



## Copyrights and trademarks

Exs24, Exs24mkii, ExsP24, Project Manager, Logic are registered trademarks of Apple . This program is not a creation of Apple.

## Thanks to....

We would like to thank our beta testing team for the great feedback and for the patience in testing the software: Raymund Beyer, Panos Kolias, Sascha Kujawa, Jochen Schmidt-Hambrock, Ronald Anthony, Matteo Orlandi, Roberto Lanzo, Tony David Cray, Richard at Tweakheadz.com, Thomas Bleicher, Jeff Bohnhoff, Stefano Bartoloni, Hanno di Rosa, Wolfgang Rueter, Manfred Lange, Nick Batzdorf, Stephane Deschamps. Special thanks go to Antongiulio Frulio for his dedication and to Musicarte in Roma for letting us test AutoSampler on a wide range of audio and midi hardware. Thanks to smoothjazz.com internet radio for the great music, and to Paul Linford for helping in proofreading the document.

A big thank you to Apple/Emagic and to Clemens for developing Exs24.