

SilverBox



User's Manual

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1 Installation

Thanks for registering **SilverBox**!

To install,

1. Run the installer that you downloaded from the website.
2. Read the license agreement thoroughly. Then click on **I Agree**.
3. On the next page, select to install the main program and/or the user's manual.
4. Select the destination folder for the installation. The installer tries to find your VST folder based on your registry settings. If this is not appropriate, please select another location.
5. Click on **Install**.

After installation, you may need to rescan your VST folder in your sequencer or restart your sequencer for the plug-in to appear. If you have trouble doing that, please refer to the documentation of your host program, or simply restart it.

Spectralhead Audio wishes you happy tweaking!

2 Overview

SilverBox is a monophonic bass line synthesizer, painstakingly modeled after one of the world's most famous and most often copied analog instruments. Its sophisticated filter and envelope sections will let you recreate all types of typical acid sounds. For convenience, it features a high quality overdrive module with four types of wave shaping.

To make pattern editing easier, its internal sequencer features a built-in piano roll and a dedicated sequencer matrix for gate, accent, slide, octave up and octave down options. This gives you an instant overview of what's going on in the pattern. The main goal was to make editing as easy as possible, without any hidden features that are not visible on the user interface. The randomize, shift, transpose and reset functions at the lower-right corner help you in editing the pattern in a quick and convenient way.

SilverBox has two working modes: **internal** and **external sequencer** mode. In **external sequencer** mode, you can play it like any other synth – you create a pattern in your external host program. In **internal sequencer** mode, the synth is driven by the in-built sequencer, which is triggered by MIDI notes. You can transpose a pattern by pressing different keys on your MIDI keyboard, which transposes the notes in the internal sequencer. You can adjust pattern properties like tempo and length at the LCD right to the piano roll. Once the sequence is playing, you can tweak and shape the sound with the knobs at the top of the user interface.

To add some crunch to your sound, set **DRIVE TYPE** to your favorite distortion type, and adjust the **DRIVE** knob. The options in the LCD near the **VOLUME** knob determine the character of the distortion, like quality and bass cut.

3 Working Modes

3.1 Internal Sequencer Mode

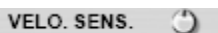
The built-in sequencer lets you create bass line patterns quickly and easily. The sequencer is running as long as a MIDI note is played. The notes in the internal piano roll are relative to the MIDI note that triggers the sequencer, which means that you can transpose the pattern by playing different notes. This allows more flexibility and gives some improvisation possibilities. When you release a note and press another note, the sequencer restarts.

When the synth is played in legato (meaning that two notes overlap, without a note off between them), the behavior is determined by the **RETRIGGER** button. If it is disabled, then the pattern is transposed during playing, without restarting. If it is enabled, then the pattern will restart from the beginning.

3.2 External Sequencer Mode

The other way to play SilverBox is the external sequencer mode. To allow this, enable the **EXT. SEQ. MODE** button found in the sequencer options section. In this mode, the internal sequencer is switched off, and SilverBox can be played just like any other synth.

In this mode, accents can be triggered by high velocity values. If the velocity of a note is higher than a threshold, it will be accented. The threshold is adjustable by using the **VELO. SENS.** knob, next to the **VOLUME** knob:



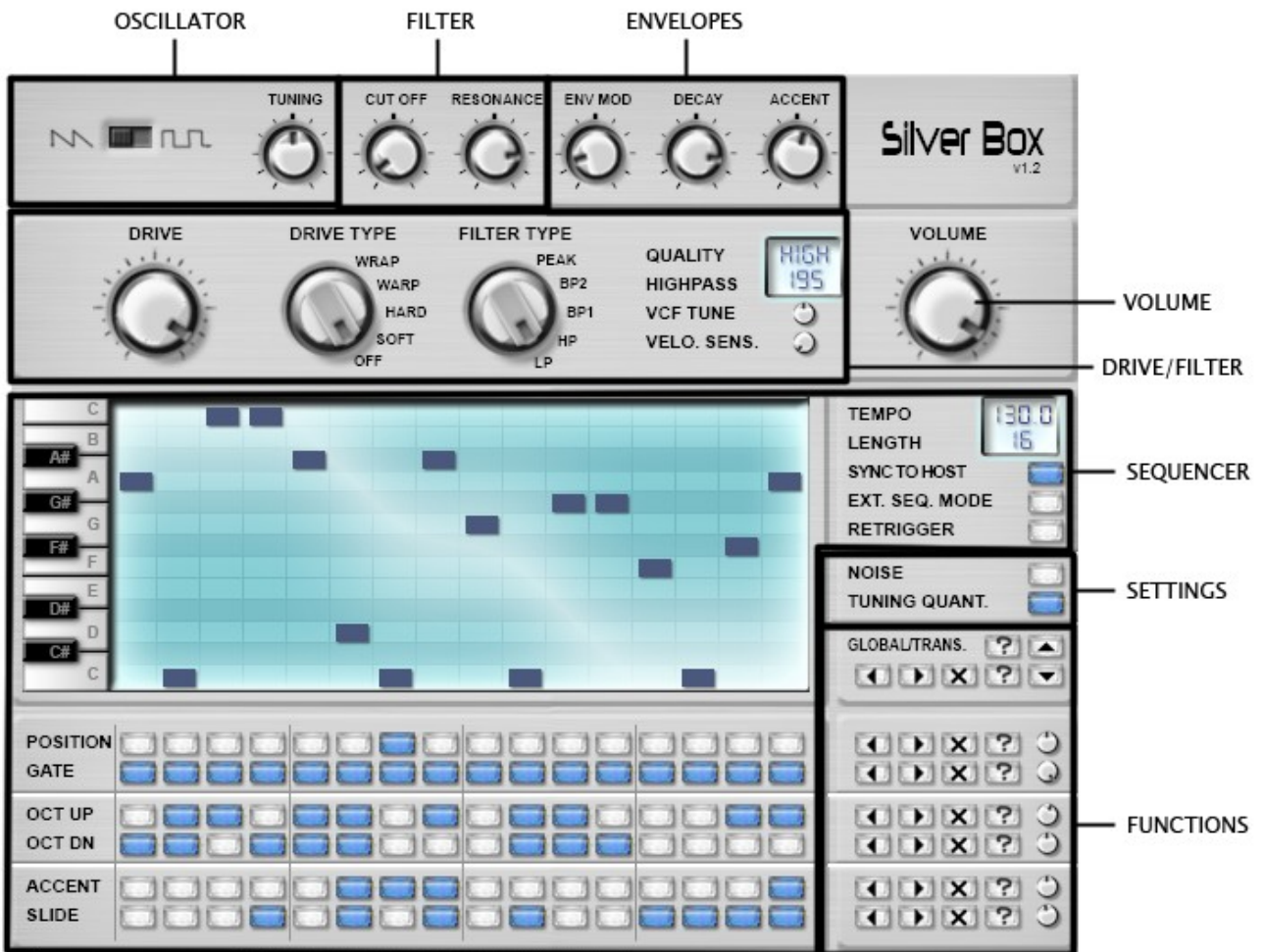
In the leftmost position, accents are switched off completely. In the rightmost position, every velocity means accent note, so all notes will be accented. The optimum is somewhere between the middle, so that you can use low velocity in your sequencer for normal notes, and high velocity for accented notes.

Tip: if you use various different velocity levels and adjust the **VELO. SENS.** knob during playing, you can change the number of accented steps without actually changing your pattern.

To slide between notes, you need to disable the **RETRIGGER** option. If it is set to off, and you play SilverBox in legato (meaning that two notes overlap, without a note off between them), the pitch will be slided to the second note without retriggering the envelopes. This way you can create 303-like patterns using your external sequencer.

If you enable **RETRIGGER**, then every new note will trigger the envelopes. However, if you hold a note and press a new note, then release the new note (still holding the first note), then the pitch will be slided back to the first note without retriggering the envelopes. This way you still have some flexibility for sliding notes when retrigger is enabled.

4 Sections



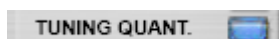
4.1 Oscillator



The oscillator is a basic waveform generator with two waveforms: sawtooth and square. The square oscillator generates an analog modeled waveform with a distinct, unique character. The waveform switch is located at the upper left corner of the user interface. In the left position, the waveform is sawtooth. In the right position, the waveform is square.

The **TUNING** knob determines the base frequency of the oscillator. In SilverBox, the frequency of the oscillator is relative to the MIDI note received from the external host (coming from the external sequencer or a MIDI keyboard, for example). You can use the **TUNING** knob to detune the frequency of the oscillator, ranging from -12 to +12 semitones.

Note that the tuning knob is quantized to half-note steps if the **TUNING QUANTIZE** option is enabled in the settings section:



If this option is disabled, then you can use the **TUNING** knob for fine tuning of the frequency. For this, hold the control key on your keyboard while dragging the **TUNING** knob. Note that you can use the control key to fine-tune any of the knobs on the user interface.

4.2 Filter



The **CUT OFF** knob determines the cutoff frequency of the filter. Depending on the filter type, frequencies above or below this will be attenuated.

The **RESONANCE** knob determines the emphasis at the cutoff frequency. Around this, frequencies will be emphasized, resulting in the typical screaming 303 sound when set to maximum.



The **FILTER TYPE** switch is below the **RESONANCE** knob. SilverBox features five types of filters, the low pass filter modeled after the original. The high pass, band pass and peak modes try to retain the typical sound character, but allowing wider sound possibilities. The filter types are summarized in the following table.

Type	Description
LP	3 pole 18 dB/octave low pass filter
HP	3 pole 18 dB/octave high pass filter
BP1	3 pole band pass filter with 6 dB/octave high pass slope and 12 dB/octave low pass slope
BP2	3 pole band pass filter with 12 dB/octave high pass slope and 6 dB/octave low pass slope
PEAK	Peaking EQ filter, emphasizes frequencies around cutoff

VCF TUNE

The **VCF TUNE** knob (left to the volume knob) modifies the center frequency of the **CUTOFF** knob. By adjusting it, you can set the cutoff range lower or higher. This way you can somewhat determine the character of your sound, allowing hollow barking or high screaming sounds.

4.3 Envelopes

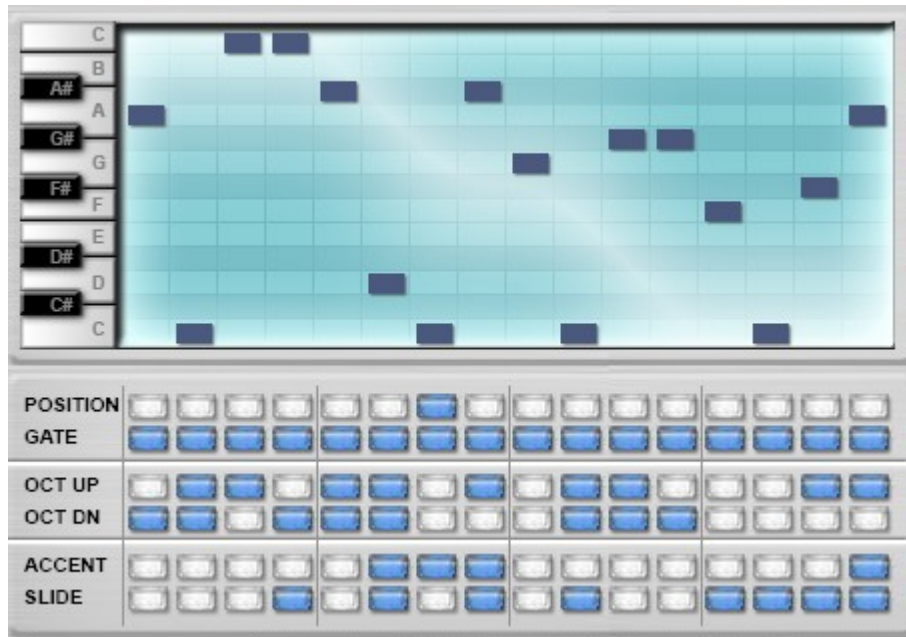


SilverBox features unique envelopes, just like the original bass line synth it is modeled after. The **ENV MOD** knob determines how much the envelope generator modulates the cutoff frequency. Note that if you increase the envelope modulation amount, the base cut off frequency of the filter will be lowered.

The **DECAY** knob sets the decay time of the envelope generator. The minimum decay time is around 200 ms, the maximum decay time is around 1.5 second. When accent is enabled for a step in the sequencer, the decay amount will be minimal for that step, no matter what level is set. This is the normal behavior of the original bass line synthesizer.


The **ACCENT** knob does multiple things at the same time. Its main purpose is to determine the accent amount for the steps which are marked with accent in the pattern sequencer. The more the accent level is, the more the accent envelope modulates the cutoff frequency of the filter and the amplitude of the amplifier.

4.4 Sequencer



The sequencer features a piano roll and six rows. In the piano roll, you can enter the note sequence by clicking at the LCD display. You can either click at a row to move a note, or drag and drop the note to the desired position. SilverBox will play the note sequence relative to the actual MIDI note that is received from the external host / MIDI keyboard. This allows transposing the pattern during playing a pattern, or even when playing live. For this, you need to play notes in legato mode in your external host.

POSITION The first row below the piano roll is a position display, which shows the actual position in the sequencer. This is just for display purposes.

GATE This row determines if a note is played or skipped (muted). Basically, you might want to set the gate buttons for all notes. You may do that easily by setting the probability knob on the right side of the user interface to maximum position, and pressing the random button (). You will find more information about this in the Functions section.

OCT UP / OCT DN The octave up and octave down rows transpose the note an octave up or down. If both are set, then the note is not transposed.

ACCENT The accent row enables accent for the selected steps. The **ACCENT** knob determines the amount of accent applied to the step. The accent modulates the cutoff frequency in a very typical way, and gives an amplitude boost to the step.

SLIDE If slide is enabled for a step, it will be played in legato mode with the next step. This means, that the frequency will smoothly glide to the next step's frequency. Note that if the next step is muted, then the slide button does not have any effect.

Sequencer options



TEMPO / SYNC TO HOST

The sequencer can be synchronized to the host's tempo, or by driven by its internal BPM clock. If the **SYNC TO HOST** option is enabled, the host's tempo setting overrides the internal tempo setting of SilverBox. Otherwise, the tempo given on the user interface will be set in the internal sequencer. You can set the tempo by individually dragging the numbers on the LCD display near the **TEMPO** label. There's no limit on the tempo, anything goes from 000.1 to 999.9 BPM.

For a different time signature, for example 3/4 (triplets), you can play with the tempo setting. Let's suppose your external host runs at 140 BPM. Now if you set BPM to $140 \times 3/4 = 105$ BPM, then the time signature will be 3/4. You may also want to set the pattern length to $16 \times 3/4 = 12$.

LENGTH

In SilverBox, the length of a sequencer pattern may be 1 to 16 steps. Then **LENGTH** parameter sets the length of the sequence, after which it restarts from the first position. You can set the length by clicking and dragging the numerical display near the **LENGTH** label.

EXT. SEQ. MODE

SilverBox has two working modes: **internal sequencer** mode and **external sequencer** mode. When **EXT. SEQ. MODE** is disabled, it means that the built-in sequencer is running. To switch off the internal sequencer and play SilverBox just like any other synth, enable **EXT. SEQ. MODE**.

RETRIGGER

The **RETRIGGER** option determines how the sequencer works when a new note is received before the previous note ends (legato mode). When the **internal sequencer** is running and a new note comes, the pattern will be transposed but it won't be restarted if **RETRIGGER** is set to off. If it is enabled, then the pattern will be restarted from the beginning.

In **external sequencer** mode, the behavior of **RETRIGGER** is different. When it is set to off, then overlapping notes (legato) will be bent, similar to the slide in the internal sequencer, without the envelopes being retriggered. This way you can create 303-like patterns using your external host.

If **RETRIGGER** is enabled, every note will trigger the envelopes. However, in this mode, if you hold a note, press a new note (envelopes are triggered now), then release the second note (still holding the first one) , then the pitch slides back to the first note without the envelopes being triggered.

4.5 Functions



Right to the sequencer matrix, there is a group of buttons which are dedicated to editing and modifying the pattern. The uppermost row is a global row affecting all the pattern, whereas the six lower columns affect only one row of the sequencer matrix, or the notes. The row near the position row changes the notes in the piano roll. The rest are connected to the rows near them.

Shift left

This button shifts all steps towards left by one step. The steps that exit at the left will be wrapped around and enter at the right.


Shift right

This button shifts all steps towards right by one step. The steps that exit at the right will be wrapped around and enter at the left.

Reset

This button clears accent/slide/octave up/octave down buttons, and resets notes to the base C position for the notes.

Randomize

This button has multiple functions, it may be used to randomize a pattern, alter a note sequence or reset or set all buttons in a row. For each randomize button (except the global ones), there is a knob for adjusting the probability (). At the leftmost position, the probability is 0%, which means all steps will be reset. At the rightmost position, the probability is 100%, which means all steps will be set. This may be used to clear or set all steps in a row.

The two global randomize buttons work differently. The upper button randomizes the sound by setting the oscillator, envelope, filter, overdrive and highpass parameters randomly. This way you can get new sounds quickly with a mouse click.

The lower global random function randomizes the notes. Instead of changing all notes, the probability function determines the chance of a step being changed. Thus, if you set probability to minimum, no notes will be changed. If you set it to maximum, all notes will be changed in the sequencer. If you set it to a low amount, then only a few notes will change, which is useful for altering a pattern only a little bit in a random way.

There's no separate probability knob for the global randomize function. Instead, if you use the global randomize function, the probability settings of the individual rows will apply.

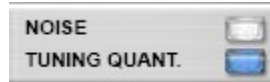
Transpose up

This button transposes all notes in the sequencer up one half-note. Notes that are too high for the piano roll will be wrapped around, and they will appear at the bottom.

Transpose down

This button transposes all notes in the sequencer down one half-note. Notes that are too low for the piano roll will be wrapped around, and they will appear at the top.

4.6 Settings



The settings panel features two options. If **NOISE** is enabled, background noise will be added to the sound of SilverBox, to make it less sterile. This may make it sound a bit more authentic, but it may sound bad in combination with overdrive.

We discussed the **TUNING QUANTIZE** option in the oscillator section. If enabled, it quantizes the **TUNING** knob to half-note steps.

4.7 Overdrive



SilverBox features a high quality built-in overdrive module, with four types of wave shaping.

DRIVE

Sets the amount of overdrive. Rightmost position is +80 dB overdrive. More overdrive attenuates the sound, so that the output level stays more or less constant.

DRIVE TYPE

Sets the type of the overdrive.

- OFF** - No overdrive
- SOFT** - Soft clipping, more analog sound
- HARD** - Hard clipping, harsher sound
- WARP** - Soft fold back distortion
- WRAP** - Hard fold back distortion

QUALITY

Sets the oversampling amount of the distortion. **NORMAL** means 4x, **MEDIUM** means 8x and **HIGH** means 16x oversampling. If you're working at a 44.1 kHz sampling rate, this means the internal sampling rate is 705.6 kHz in **HIGH** quality mode. For most sounds, the **NORMAL** quality setting should be enough. For some sounds with bandpass or highpass filter modes, you may want to set the quality to **MEDIUM** or **HIGH** to minimize the distortion artifacts for very high overdrive settings. Better quality settings consume a little more processing power, so use **NORMAL** if you want to spare on CPU resources. Note that due to extreme optimization, even **HIGH** quality mode uses fairly little CPU power, less than most of the average virtual instruments!

HIGHPASS

The overdrive module includes a high pass filter for removing the low frequencies before the overdrive. This may make the sound clearer and sharper. The options are: **OFF**, **110**, **195**, **350** and **630** Hz. You can adjust the high pass filter by dragging the readout on the LCD display. The high pass filter is only active when **DRIVE TYPE** is not set to **OFF**.

5 Automation

5.1 Parameter automation

You can automate almost all SilverBox parameters through your host sequencer program, including the individual steps in the pattern. Most host programs can show you a list of available automation parameters. As this is different to do in every host, please refer to the documentation of your host program.

SilverBox has the following automation parameters to adjust:

Accent, Cutoff, Decay, Dist Type, Drive, Env Mod, Filter Type, Highpass, Length, Noise, Quality, Resonance, Retrigger, SyncToHost, Tempo, Tuning, Tuning Quantize, VCF Tune, VeloSens, Volume, Waveform

Also, there is an automation parameter for every single step in the sequencer, including every row. This means, there are additional 96 parameters, giving you total access to the pattern. These are named **Note1–16, Gate1–16, OctUp1–16, OctDn1–16, Accent1–16, and Slide1–16**. With these, you can modify the pattern on-the-fly from your host program.

5.2 MIDI automation

In many hosts, you can route MIDI input to automation parameters. However, SilverBox also responds to MIDI continuous controller (CC) data directly. Upon installation, a subfolder named **SilverBox122** is created in the installation directory. The folder name is the same as the name of the DLL, so if you renamed the DLL, then the folder name will change accordingly.

In this SilverBox folder, a **MIDIConfig.ini** file is created with the default MIDI CC settings. This is a standard INI file, which you can edit by using any text editor, for example Notepad. If you open the SilverBox folder and double-click **MIDIConfig.ini** in Explorer, Notepad will open by default, allowing you to edit this file. The adjustable parameters are: Cutoff, Resonance, EnvMod, Decay, Accent, Waveform, Tuning, Volume, Drive, DistType, FilterType, VCFTune and VeloSens. You may specify a CC number (example: Cutoff=74), or turn off automation for a control by writing "None" as the CC number (example: EnvMod=None).

Note: after changing **MIDIConfig.ini**, you need to reload SilverBox in order for the changes to take effect!

The default MIDI CC assignment is shown in the following table.

Cutoff	74
Resonance	76
EnvMod	77
Decay	78
Accent	79
Waveform	70
Tuning	71
Volume	7
Drive	92
DistType	80
FilterType	81
VCFTune	82
VeloSens	83

6 MIDI output

SilverBox sends the sequencer data as MIDI output when the internal sequencer is running. In certain host programs, you can record this MIDI output or route it to another software or hardware synthesizer. Some host that can do this include Reaper, Live, Energy XT2, Buzz, SynthEdit and Tracktion.

Accented notes have a velocity of 127, and non-accented notes' velocity is set by the **VELO. SENS.** knob. So for example, if you set that knob to about halfway, then non-accented notes' velocity will be around 63.

Slided notes are played as legato, meaning that the new note starts before the previous note ends. If you route the MIDI output to another monophonic synth, you can use this to create slided notes if the synth has a portamento setting.

If you record the MIDI output, you can use that MIDI sequence to drive SilverBox from your host program in external sequencer mode. For that, make sure the **RETRIGGER** option is disabled, so slides are played properly. If you do that, you can extend or modify that pattern in your host, being able to create loops longer than 16 steps.

7 Contact

If you have further questions, suggestions, bug reports, feel free to contact us.

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