

SubBoomBass

Rob Papen



SubBoomBass-RE User Guide



Powered by RPCX

Welcome

Thank you for purchasing Rob Papen SubBoomBass-RE.

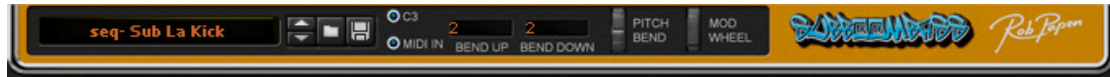
SubBoomBass-RE is filled with an excessive amount of low end ammunition to detonate your tracks! With patches designed by the legendary Rob Papen and other guest artists, this dedicated bass synth will supply you with huge cone-rattling sounds that will devastate any music track. This software instrument is great for Hip Hop and RnB but can also be used for Dubstep, video game music, film scores and more...

SubBoomBass-RE has been carefully crafted to provide you with the tools to create fresh new bass lines. It includes unique tuned drum percussion samples which are great for Hip Hop and RnB basses but can also be used to add rhythm flavour to your tracks. Also check out the innovative 'Wave-sequence' feature which will open up brand new sonic possibilities for your music.

Rob Papen and the RPCX team, December 2012

Patch and Modulation Section

At the top of the SubBoomBass-RE panel you find the patch control section and modulation controls.



Patch Controls

SubBoomBass-RE uses the standard Reason patch controls. Clicking on the patch menu brings up a list of all patches in the current folder and clicking on the up / down buttons next to the menu allows you to scroll through these patches one by one.

The Patch Browser button will bring up the patch browser, allowing you to load in patches from other folders.

The Save Patch button saves the current patch.

The C3 button previews the current patch.

The Midi-In indicator lights up when SubBoomBass-RE receives Midi-data, for example when you play notes on a connected midi controller.

Pitch Bend Controls

The pitch bend wheel applies pitch-bend to the currently played sound. The Bend Down and Up controls, determine the maximum pitch change when you move the pitch-bend wheel all the way down or up. It ranges from Off, to a maximum of 48 semitones (4 octaves) up or down.

Mod Wheel

This applies a mod wheel (MIDI Controller #1) control signal to the currently selected SubBoomBass-RE patch.

Play section

In the Play Mode section you control how SubBoomBass-RE responds to notes played, either polyphonic or monophonic or set them to be triggered by the internal sequencer.

The section also contains the portamento settings.



Play modes

<i>Mono</i>	Synthesizer is in monophonic mode and uses 1 voice. Only a single note can be played at a time, pressing another key releases the previous note.
<i>Mono2</i>	Synthesizer is in monophonic mode 2 and uses 1 voice only. If you have a key pressed down and then press another key the new note plays, and if you then release this note the original held note is retriggered.
<i>Legato</i>	Synthesizer is in monophonic mode and uses 1 voice. Similar to mono, but if you have a key pressed down and then press another key the note is not retriggered (i.e. envelopes don't restart), and if you release this second key the pitch returns to the original note
<i>Legato2</i>	Same as Legato mode but any new note's amp envelope level starts at the level of the last played note
<i>Seq</i>	This activates the sequencer. See the Sequencer section for the settings.
<i>Poly</i>	This puts SubBoomBass-RE in polyphonic mode and the synthesizer has 6 voices.

Unison

In Unison mode, for each note played, SubBoomBass-RE plays multiple voices simultaneously. The Unison detune control allows for detuning each of these voices to fatten up the sound. An additional feature is the ability to play unison voices one octave above the original note. Ultimately this gives you an extremely rich sounding stack of voices. The unison parameters are an excellent tool to create ultra-phat bass lines and lead sounds.

The table below lists the unison options:

<i>Off</i>	Unison is not activated. Each note played uses only a single voice.
<i>Oct</i>	This combines 1 voice on the note played and adds another unison voice at one octave above the note played. In total you get 2 voices for each note played.
<i>Unison 2</i>	This combines 2 voices on one note. If you use the unison detune these 2 voices are detuned resulting in a phat sound.
<i>Unison 2 + Oct</i>	This combines 2 voices on the note played and adds 2 unison voices at one octave above the note played. In total you get 4 voices for each note played. If you use the unison detune these voices are detuned resulting in a phat sound.
<i>Unison 4</i>	This combines 4 voices on one note. If you use the unison detune these 4 voices are detuned resulting in a phat sound.
<i>Unison 4 + Oct</i>	This combines 4 voices on the note played and adds 4 unison voices at one octave above the note played. In total you get 8 voices for each note played. If you use the unison detune these voices are detuned resulting in a phat sound.
<i>Unison 6</i>	This combines 6 voices on one note. If you use the unison detune these 6 voices are detuned resulting in a phat sound.
<i>Unison 6 + Oct</i>	This combines 6 voices on the note played and adds 6 unison voices at one octave above the note played. In total you get 12 voices for each note played. If you use the unison detune these voices are detuned resulting in a phat sound.

Uni detune

Unison detune controls the detuning between the stacked voice in Unison2/4/6 Play Modes. SubBoomBass-RE must be in Unison 2 / 4 / 6 mode for the detune function to have any effect.

Portamento

Portamento speed sets the time or rate of how note pitch changes from one note to the next one played.

Port modes

<i>Off</i>	No portamento , the note pitch changes instantly from note to note
<i>Constant Rate</i>	The pitch changes at a constant rate, greater keyboard note ranges take a longer time.
<i>Constant Time</i>	The pitch change between notes takes a predefined time, regardless of the position on the keyboard
<i>Held Rate</i>	Same as Constant Rate but the portamento effect only occurs if you play legato, i.e. you play a new note while still holding the previous note and create a slight overlap.
<i>Held Time</i>	Same as Constant Time but the portamento effect only occurs if you play legato, i.e. you play a new note while still holding the previous note and create a slight overlap.

Oscillator section

SubBoomBass-RE's sound creation starts with the oscillator section. SubBoomBass-RE uses 2 oscillators to generate its basic sound. You can use one or both oscillators, depending on the type of sound you want to produce.

We have added FM and Ring Modulation options to Oscillator 2, to allow you to enrich the sound beyond that of dual oscillators.

Oscillator on/off

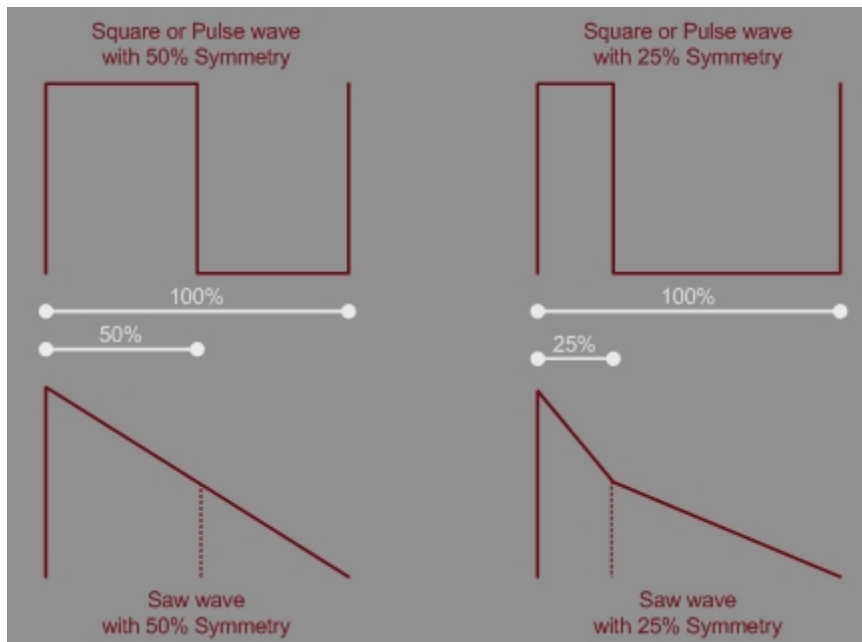


Next to the Oscillator label you find a button to switch the oscillator on or off.

Waveform

This control sets the basic shape or harmonic content of the oscillator. It is known as its waveform. SubBoomBass-RE has a total of 55 waveforms, ranging from classic analog style waveforms, including saw and square, to additive and spectral waveforms, to sampled bass and percussion waveforms.

Symmetry (Sym.)



This controls the symmetry of the selected waveform. The impact depends on the selected waveform, but basically it moves the midpoint of the waveform. It is most commonly used in combination with the Square waveform. Here the symmetry control alters the "pulse width" of the waveform, from very narrow pulse waveforms to normal square waves.

Free on/off

When this is turned off, it returns an oscillator to its initial waveform position (phase) every time you play a new note. When it's on, the oscillator phase continues in an uninterrupted cycle, regardless whether a key is played or not, it is "free-running". This can be useful in pad sounds because it spreads the initial 'attack' part of the sound to create a lush character.

Sync on/off (Osc 2)

Sync is only available for Oscillator 2. If you switch it on, the oscillator frequency synchronizes to Oscillator 1. This means that when oscillator 1 finishes the wave cycle, it resets the synced oscillator to the initial position. Oscillator 2 gets reset and its frequency is bound to Oscillator 1. You can hear this effect very well if you detune Oscillator 2 while Sync is on.

The detuning disappears, and it now has the same pitch as Oscillator 1. However, Oscillator 2 will sound differently because Oscillator 1 resets Oscillator 2 whenever it reaches the end of its wave cycle. Typically this will add to the harmonic content (additional overtones) to the basic waveform.

Semi

This controls the root pitch setting of the oscillator, with semitones you can alter the tuning from -48 semitones down (-4 octaves) to 48 semitones up (+4 octaves) from the base note.

Fine

Located next to the semi knob, fine sets the fine-tuning of the oscillator with a range of -100 cent up to + 100 cent.

Track

The track button is located directly above the semi knob. With track set to on, the oscillator follows the keyboard in pitch. When it is off the pitch of the oscillator stays the same independent of what key is played. It can be useful when using a percussive attack sample as part of the sound you are creating. In the case of FM or Ring Modulation it's useful too to be able to fix the pitch of the oscillator.

Sub

This knob controls the volume of the oscillator's sub-oscillator. The sub-oscillator is a square wave, which is one octave lower than the normal oscillator pitch. The sub-oscillator pitch is always connected to the oscillator pitch, so if you detune the oscillator, the sub-oscillator detunes along with it.

The sub-oscillator knob allows you to use two different types of waveforms. If you turn it to the left, it produces a sinus waveform. If you turn it to the right, it produces a square waveform. The centre position turns the sub-oscillator off.

PWM

PWM stands for Pulse Width Modulation. This controls the maximum PWM modulation amount of the LFO (see speed parameter). PWM alters the symmetry setting (the middle point) of the oscillator over time. You can use PWM on any waveform, but it is most commonly used with the square wave where it alters the pulse width of the waveform.

Please note that the PWM settings affect the sub-oscillator too, if you are using a square waveform for the sub-oscillator.

Speed

The amount of PWM (Pulse Width Modulation) is altered over time by a sine-wave LFO. With speed you control the speed of this LFO. Of course you need to open the PWM amount to hear the result of any speed changes.

Volume

With volume you control the volume of the oscillator before it goes into the 'Filter section'.

Filter (OSC1)

This controls whether oscillator 1 is output to the 'filter section'. With FM and Ring modulation in use, you may not want the modulating oscillator output to be fed into the filter.

So with Oscillator 1 you have the option to shut off the output to the filter, when you are using it as a modulation oscillator.

Ring / FM Mode (OSC2)

This controls the cross modulation options for Oscillator 2. When you use the oscillator in FM or ring modulation, you'll need to keep the modulation oscillator active but not audible, so you can turn off the output of the oscillator to the filter using the output button.

With FM modulation the oscillator modulates the pitch of the target oscillator, so you add overtones to the original sound. With Ring modulation, both oscillators are multiplied together and you get sound that uses a combination of both sources.

FM Amount (OSC 2)

This control determines the strength of the frequency modulation.

Filter section

The sound generated by the oscillators is fed into the filter. The filter alters the harmonic content of the sound coming from the oscillators depending on the selected filter type and filter parameter settings. SubBoomBass-RE also has an additional secondary filter, labelled F2, for those situations where you need to combine different filter types.



Main Filter

Cutoff

This sets the filter's frequency where the filter starts altering the sound. For instance, if you set the Cutoff to 2000Hz and use a 12dB Lowpass filter it reduces any frequencies above 2000Hz, so the volume of the frequencies at 4000Hz will be reduced by 12dB. The Cutoff frequency can be static at one frequency, but you can also modulate the Cutoff frequency with the Filter Envelope, Keyboard tracking, Modulation Wheel and LFO.

The modulation doesn't move the Cutoff control knob from its initial position, but if you add any kind of modulation (change the silver colour control knobs) the Cutoff frequency is internally modulated.

Resonance (Q)

The resonance controls how much the sound at the Cutoff frequency is increased, the resonance "emphasises" this frequency. As you increase resonance it gets more and more pronounced till the filter "self-oscillates". So basically the resonance is feedback onto the Cutoff frequency.

Note: the 6dB filter types are unable to self-oscillate, and in Comb filter the resonance controls the comb filters feedback.

To hear what resonance does, the best thing to do is to try changing it while you play a note. If you open the LFO modulation you will hear that the Cutoff frequency starts to move. Opening the Resonance emphasises this movement.

Filter Mode

<i>Bypass</i>	The filter is bypassed and the sound passes through unaffected
<i>6dB LowPass</i>	Low frequencies pass through this filter; frequencies above the Cutoff frequency are reduced by 6dB per octave. For example: a frequency 2000Hz is 6dB softer in volume if the Cutoff frequency is set to 1000Hz.
<i>6dB HighPass</i>	High frequencies pass through this filter, those below the Cutoff frequency are reduced by 6dB per octave. The filter is open if the Cutoff frequency knob is fully turned left.
<i>12dB LowPass</i>	Low frequencies pass through this filter; those above the Cutoff frequency are reduced by 12dB per octave.
<i>12dB HighPass</i>	High frequencies pass through this filter; those below the Cutoff frequency are reduced by 12dB per octave. The filter is fully open if the Cutoff frequency control knob is fully turned left.
<i>18dB LowPass</i>	Low frequencies pass through this filter; those above the Cutoff frequency are reduced by 18dB per octave.
<i>18dB HighPass</i>	High frequencies pass through this filter; those below the Cutoff frequency are reduced by 18dB per octave. The filter is fully open if the Cutoff frequency knob is fully turned left.
<i>24dB LowPass</i>	Low frequencies pass through this filter; those above the Cutoff frequency are reduced by 24dB per octave.
<i>24dB HighPass</i>	High frequencies pass through this filter; those below the Cutoff frequency are reduced by 24dB per octave. The filter is fully open if the Cutoff frequency knob is fully turned left.

<i>12dB BandPass</i>	This filter mode is a combination of 12dB LowPass and 12dB HighPass filters. Only those frequencies near to the filter Cutoff frequency pass through (a band of frequencies), the resonance (Q), controls the width of this band so that low & high frequencies are removed.
<i>24dB BandPass</i>	This filter mode is a combination of a 24dB LowPass and 24dB HighPass filter. Only those frequencies near the filter Cutoff frequency pass through (a band of frequencies), the resonance (Q) controls the width of this band, so low & high frequencies are removed.
<i>12dB Notch</i>	Those frequencies near to the filter Cutoff frequency are reduced in volume (12dB), the resonance controls the width of this removal region.
<i>24db Notch</i>	Those frequencies near to the filter Cutoff frequency are reduced in volume (24dB) , the resonance controls the width of this removal region.

<i>Comb</i>	This is a very short delay, which emphasises the comb filter frequency. The Cutoff frequency controls the length of this delay and resonance (Q) the feedback of the filter.
<i>Vox filter</i>	Vocal Filter, which adds a voice-like filtering to the sound. In Vox filter mode, the distortion knob controls the vowel of the filter.

Vowel

Sets the vowel (a,e,i,o and u) used by the vox filter

Pre-Filter Distortion

It is possible to overdrive the oscillator sound ahead of going into the Filter. This can be done in a smooth way or in an edgy way. For the edgy setting, the following applies:

- Overdrive of the filter starts at about -3dB with a sinus waveform using only 1 oscillator
- Overdrive of the filter starts at -9dB with a sinus waveform using 2 oscillators
- Overdrive of the filter starts at -12dB with a sinus waveform using 3 oscillators

So be careful with the volume of the oscillators if you are in edgy filter overdrive mode. The smooth overdrive is more "subtle" and less aggressive than the edgy setting. Also distortion in smooth setting starts only if you open up the drive amount. Try it out yourself and open the resonance (Q) to hear the difference in sound with both distortion modes.

Cutoff Frequency Modulation

Envelope

Adds a positive or negative Cutoff frequency Envelope amount. The 'Envelope' is part of the Filter section itself. Keep in mind that if you use negative modulation, the effect of the envelope is reversed.

Velocity

Adds a positive or negative Cutoff frequency modulation by the amount of velocity used. If SubBoomBass-RE is in arpeggiator mode (Play mode) the arpeggiator velocity settings are active.

Keytrack

Adds a positive or negative Cutoff frequency modulation by the keyboard note position. With positive amount, the Cutoff frequency is increased the higher you play the keyboard. With negative amounts, the Cutoff frequency is reduced the higher you play the keyboard.

LFO

Adds negative or positive Cutoff frequency modulation by the 'Filter LFO'.

Mod.Wheel

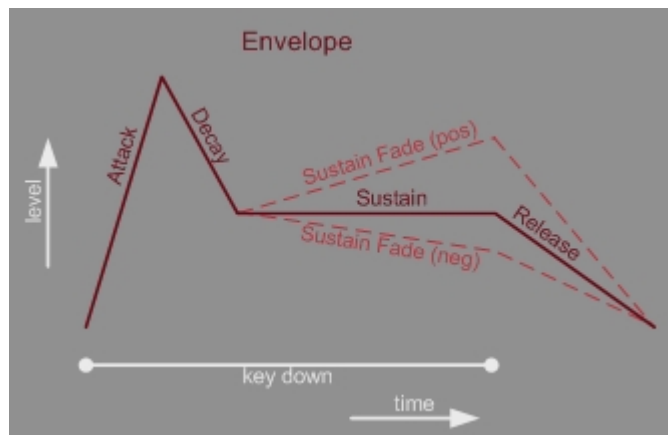
Adds negative or positive Cutoff frequency modulation by the 'Modulation Wheel'.

Filter Envelope

The Filter Envelope is assigned to the main filter Cutoff Frequency of SubBoomBass-RE and the amount is controlled by the Env amount in the Filter section. An envelope is a time-based modulation section in a synthesizer. If you press a key it moves from 0% up to 100% and back to 0% when you release the key.

Between this you can adjust the time how it does do this. The first part is known as the attack, this is the time it takes to reach 100% The second part is known as the decay, this is the time it takes to reach the sustain (the final) level. If this level of sustain is for instance 50, the decay goes down to 50% and stays there. Finally when you release the key, the envelope goes to 0%, during the period that you just set.

An extra feature of the SubBoomBass-RE envelopes is Fade. Fade adds a second part to the sustain level, when it is positive, the sustain level goes up to 100% over a set period, if it is negative then the sustain level goes down to 0% over a set period. This is a handy feature if you want the Cutoff frequency of the filter to rise whilst holding the keys.



To hear the full effect of the Filter Envelope you have to open the Env amount, which you can find in the filter section next to the Cutoff Frequency. The amount can be positive or negative.

Attack

An envelope always rises from 0 to 100% and back to 0% when the key is released. Attack controls how fast it rises to 100%. So if you open the Attack control knob, it takes longer to go from 0 to 100%. With Attack closed, the envelope starts at 100%.

Decay

After the attack stage, with the envelope at 100%, the decay stage is reached. Decay reduces the envelope level to the sustain level over a set time. So if you use a long decay, it takes longer to reach the sustain level. If the sustain level is 100% the Decay has nothing to fall to and so the sustain stage is reached immediately after the attack.

Sustain

This is level of the sustain stage. After the attack & decay stage, the envelope goes into the sustain stage and remains here for as long as you have a key pressed down. The sustain level is the level of this sustain stage. Sustain level in the Filter envelope means the level of where the Cutoff frequency parameter stays as long as you hold the key(s).

Sustain fade

If the fade is set to off, the sustain remains at the sustain level i.e. it is a classic sustain. If you open the fade amount in a positive direction the sustain changes into a second attack. So after the Decay reaches the Sustain level it starts rising to 100% again and the time it takes to reach 100% is set by the Fade time. If you open the fade amount in a negative direction the sustain changes into a second decay. So after the Decay reaches the Sustain level it starts falling to 0% again and the time it takes to reach 0% is set by the Fade time.

Release

After you have released a key (note), the release stage starts. The envelope then decays from the sustain level to 0%, the time it takes is set with the release knob.

Filter LFO

An LFO (Low Frequency Oscillator) is an oscillator at a very low pitch/frequency. In SubBoomBass-RE the LFO can have a frequency between 0.03Hz and 27.50Hz. The SubBoomBass-RE Filter LFO produces changes to the Filter Cutoff frequency. You need to open the LFO amount in the 'Filter section' to hear the results. The sine waveform is most often used for this purpose. It makes the Filter Cutoff frequency rises up and down repeatedly and in a gradual fashion. Other waveforms with the LFO can be used to produce interesting results.. SubBoomBass-RE has the option to "tempo base" the LFO, which makes it a great feature for changing sounds in a musical tempo based way.

Waveform

Sine, Triangle, Saw Up, Saw Down, Square and S&H Here you can set the type of wave, this modulates the Filter Cutoff Frequency. Sinus and Triangle are often used because they produce a smooth modulation signal. The other waveforms are more suitable for FX or special sounds.



Speed

This controls how fast or slow the LFO is running. If the control Sync is set on then the speed is tempo based.

Sync

If you turn Sync on, the Speed of the LFO will be tempo based. So it will synchronise with the song tempo. To find the right setting you need to adjust the Speed parameter.

Mode

Poly, Free and Mono - This controls how the LFO responds when you hit one or more keys.

<i>Poly mode</i>	Each note you play has its own Filter LFO and each LFO starts from the zero position. Poly mode is useful for complex sounding Filter LFO modulation.
<i>Free mode</i>	The LFO is free running and all the notes share the same LFO. The LFO is always running and does not reset when you press a key.
<i>Mono mode</i>	Similar to free mode. All the filter LFOs have the same value, however when you press a key in Mono mode, all LFOs are reset to their initial start position

Amount control

Here you can select the controller to adjust the LFO modulation within the 'Filter section'. This can be a positive or a negative amount. So you can increase the modulation or decrease the impact of the modulation.

Select Patch "Bass Move 1" for example. You can see that in this patch the Mod Wheel is assigned with +21% amount. So if you open the Mod Wheel the LFO modulation in the 'Filter section' will be increased. In fact with a fully open Mod Wheel the LFO modulates the filter with a total of +68%. This is because the fixed LFO amount in the filter is 47% and the modulation control is set to +21%.

Filter 2 section

Filter 2(F2) is an additional filter after the main filter that you can run in series, in parallel or separately. It can be a great help if you want to filter out bass from a sequence sound or as extra filter to further shape the sound. In the 'Free modulation section' you can select the Filter2 Cutoff frequency as a destination. While Filter2 has only a single Cutoff Frequency control, you can still use a 'Free Envelope', 'Free LFO' or any other midi controller to dynamically control filter 2's Cutoff frequency.

Cutoff

This sets the filter's frequency where the filter starts altering the sound. For instance, if you set the Cutoff to 2000Hz and use a 12dB Lowpass filter it reduces any frequencies above 2000Hz, so for instance a sound at 4000Hz will be reduced by 12dB. The Cutoff frequency can be static at one frequency, but you can also modulate the Cutoff frequency with the Filter Envelope, Keyboard tracking, Modulation Wheel and LFO. Therefore there is a line on SubBoomBass-RE front-end which shows that these controls alter the Cutoff frequency.

The modulation doesn't move the Cutoff control knob from its initial position, but if you add any kind of modulation (change the silver colour control knobs) the Cutoff frequency is internally modulated.

Resonance (Q)

Resonance / Q of Filter 2. For an explanation of filter resonance, please see the Resonance explanation in the main Filter section

Signal Path Routing

The filter path switch sets the routing of the oscillator signals through the two filter sections (Main and F2). It allows you to set the two filter sections in series, in parallel or split configurations.

In the Series setting, both oscillator signals go to the main filter. The output of the main filter is subsequently fed to Filter 2. Filter 2 feeds into the amplifier section.

The Parallel configuration feeds both oscillators to both filters simultaneously. The output signals of both filters are then mixed again and passed on to the amplifier.

The Split configuration routes Oscillator 1 through the Main Filter and Oscillator 2 through Filter 2. In Split mode there is an additional facility to assign each oscillator / filter combination to its own effect. This is achieved by activating the Split button available on the back panel.

Filter mode

The secondary filter modes (Filter 2) are a subset of the filter modes that are available for the main filter section. Please see the previous section for a listing and description of the filter modes. The available Filter 2 modes are:

- Bypass
- 6dB LowPass
- 6dB HighPass
- 12dB LowPass
- 12dB HighPass
- 24dB LowPass
- 24dB HighPass

Amplifier section

The audio that comes from the 'Filter section' continues through the 'Amp section'. This section amplifies the signal and controls the volume and panning. An important controller of the Volume is the Volume Envelope. This controls the volume level of the sound over time (contour). The Amp section also contains the velocity control. This sets the response of SubBoomBass-RE to the velocity of the keyboard or sequencer.



Volume

This sets the overall volume of the patch.

Pan

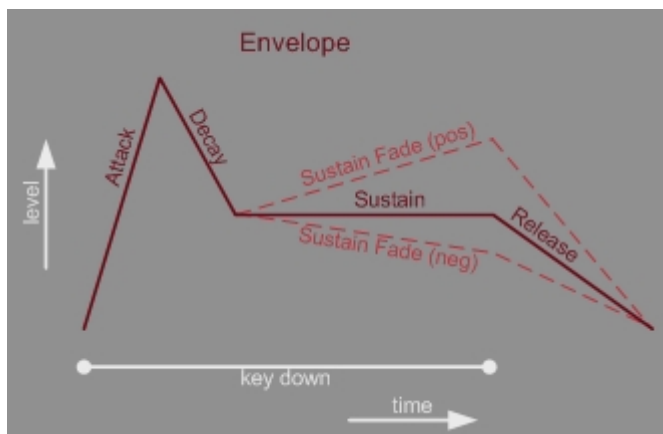
This sets the overall panning of the patches, from all the way to the left, to centred, to completely to the right.

Velocity

This sets the level at which note velocity controls the patch volume. It applies to notes played on a keyboard and those triggered by the sequencer if selected.

Volume Envelope

This envelope controls the volume contour over time.



An envelope is a time based modulation inside a synthesizer. If you press a key it moves from 0% up to 100% and back to 0% when you release the key. By using the Volume Envelope you can adjust the amount of time it takes to do this.

The first part is known as the attack stage, this is the time it takes to reach 100% The second part is known as the decay, this is the time it takes to reach the sustain (the final stage) level. If this level of sustain is for instance 50, the decay goes down to 50% and stays there. Finally when you release the key, the envelope goes to 0% , during the period that you have set. An extra feature of SubBoomBass-RE's envelopes is Fade. Fade adds a second part to the sustain, when it is positive the sustain level goes up to 100% over a set period, if it is negative the sustain level falls to 0% over a set period. The amp envelope controls how the main volume of each note sounds.

Attack

An envelope always rises from 0 to 100% and back down to 0% when the key is released. Attack controls how fast it rises to 100%. So if you open the Attack knob, it takes longer to go from 0 to 100%. With Attack closed, the envelope starts at 100%.

Decay

After the attack stage, with the envelope at 100%, the decay stage is reached. Decay reduces the envelope level to the sustain level over a set time. So if you use a long decay, it takes longer to reach the sustain level. If the sustain level is 100% the Decay has nothing to fall to and so the sustain stage is reached immediately after the attack.

Sustain

This is the level of the sustain stage. After the attack and decay stage, the envelope reaches the sustain stage and remains here for as long as you have a key pressed down. The sustain level is the level of this sustain stage. Sustain level in the volume envelope means that the level of the volume parameter will stay as long as you hold the key(s).

Sustain fade

If the fade is set to off, the sustain remains at the sustain level i.e. it is a classic sustain. If you open the fade amount in a positive direction the sustain changes into a second attack. So after the Decay reaches the Sustain level it starts rising to 100% again and the time it takes to reach 100% is set by the Fade time. If you open the fade amount in a negative direction the sustain changes into a second decay. So after the Decay reaches the Sustain level it starts falling to 0% again and the time it takes to reach 0% is set by the Fade time.

Release

After you have released a key (note) the release stage starts. The envelope then decays from the sustain level to 0% the time it takes is set the release knob.

Decay / Release shape

The way the envelopes transition between levels is not limited to straight linear paths. The shape parameter allows you to dial-in a continuously variable setting from convex through linear to concave. Depending on the sound selected, experimenting with this parameter can help you making sound snappier or giving it a more natural evolving volume.

Pitch LFO



The Pitch LFO is a dedicated modulator for vibrato-effects. Its workings are similar to the other LFOs in SubBoomBass-RE

Waveform

Sine, Triangle, Saw Up, Saw Down, Square and S&H Sinus and Triangle are most often used for pitch because they produce a smooth modulation signal. The other waveforms are more suitable for FX sounds or special sounds.

Sync

If you turn Sync on, the Speed of the LFO will be based on the tempo of the host. This enables it to synchronise with the song tempo. To find the right setting you need to adjust the Speed parameter.

Speed

This control determines how fast or slow the LFO is running.

Amount

The Amount parameter controls the depth (strength) of the vibrato effect. At the maximum setting, the pitch goes up / down by one semitone (sine, triangle and S&H waves) and up only by one semitone for the square and saw waves.

Amount control

This is where you can adjust how much the LFO's Amount value is changed by the modulation source and also which modulation source is used. It can be a positive or a negative amount and thus lets you increase the modulation or decrease the modulation.

Look at patch "bass: Class 20" as an example. In this patch the Mod Wheel is assigned with +32% amount. So if you open the Mod Wheel the LFO modulation of the pitch will increase. You hear this as an increasingly stronger vibrato effect.

Free modulation section

This section consists of an Envelope, an LFO and a Modulation matrix with 4 slots. The free modulation section gives you additional soundshaping options. For instance, if you wish to make an FM synthesis sound you can assign the Envelope to the FM amount for oscillator 2. Or maybe you would like to create a stereo panning effect by an LFO.



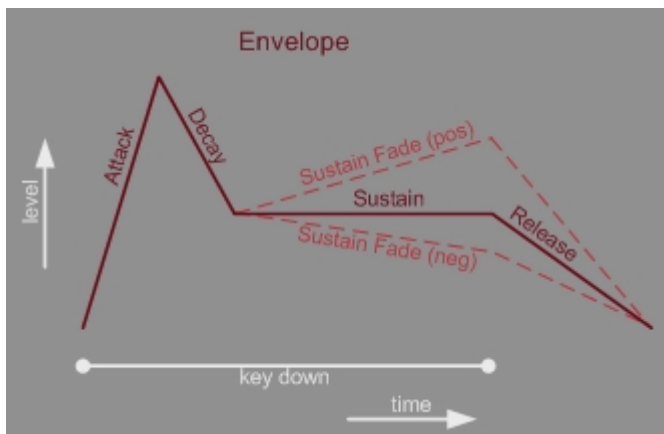
Envelope

The envelope has its own modulation destination, independent of the LFO and Mod Matrix slots. The modulation amount (depth) is fixed or can be controlled by midi-controllers or SubBoomBass-RE internal components. The Envelope will change the value of the destination parameter over time - for example the oscillator pitch. Listen to patch "Pred Brass".

An envelope is a time-based modulation section in a synthesizer. If you press a key, it rises from 0% up to 100% and back down to 0% when you release the key. Between this you can adjust the time how it does do this.

The first part is known as the attack, this is amount of time it takes to reach 100% The second part is known as the decay, this is the time it takes to reach the sustain (the final) level. If the level of sustain is for instance 50, then the decay falls to 50% and stays there. Finally when you release the key, the envelope lowers to 0%, during the period that you have set.

An extra feature inside SubBoomBass-RE is Fade. Fade adds a second part to the sustain, when it is positive the sustain level rises to 100% over a set period, if it is negative then the sustain level falls to 0% over a set period.



Attack

An envelope always rises from 0 to 100% and back to 0% when the key is released. Attack controls how fast it rises to 100%. So if you open the Attack control knob, it takes longer to go from 0 to 100%. With Attack closed, the envelope starts at 100%.

Decay

After the attack stage, with the envelope at 100%, the decay stage is reached. Decay reduces the envelope level to the sustain level over a set time. So if you use a long decay, it takes longer to reach the sustain level. If the sustain level is 100% the Decay has nothing to fall to and so the sustain stage is reached immediately after the attack.

Sustain

Next we have the sustain stage. After the attack & decay stage, the envelope reaches the sustain stage and remains here for as long as you have a key pressed down. The sustain level is the level of this sustain stage. Sustain level in the Free Envelope means that the "level"(amount) selected in the destination parameter stays for as long as you hold down the key(s).

Sustain fade

If the fade is set to off, the sustain remains at the sustain level i.e. it is a classic sustain. If you open the fade amount in a positive direction the sustain changes into a second attack. So after the Decay reaches the Sustain level it starts rising to 100% again and the time it takes to reach 100% is set by the Fade time. If you open the fade amount in a negative direction the sustain changes into a second decay. So after the Decay reaches the Sustain level it starts falling to 0% again and the time it takes to reach 0% is set by the Fade time.

Release

After you have released a key (note) the release stage starts. The envelope then decays from the sustain level to 0%, the amount of time this takes is set by the release knob.

VEL > TIME

This controls how the envelope responds to the velocity of notes pressed. If you use a positive amount, the envelope times get shorter for higher velocities. If you use a negative amount, the envelope times get longer for higher velocities.

KT > TIME

This controls how the envelope responds to the notes pressed. If you use a positive amount, the envelope times get shorter for higher notes. If you use a negative amount, the envelope times get longer for higher notes.

Destination

This is where you can select the target of the Envelope modulation. Listen to patch "Wide Notch". In this patch the modulation Envelope controls the cutoff frequency of Filter 2.

Amount

This is where you can select the amount of the Envelope modulation. This can be positive or negative modulation depending on the selected parameter. Listen to patch "bass: catch ladder" in the first folder. Again, in this patch the fine pitch of Oscillator1 is modulated. Increase or decrease the amount to hear how this changes the sound.

Amount control Envelope

This is where you select the controller for controlling the amount Envelope parameter. With amount you can set the how deep it controls the amount Envelope1 parameter. This can be a positive or negative amount. So that you can either increase the modulation or decrease the modulation.

Listen to the patch "bass: woody". In this patch the Velocity controls the amount of Envelope modulation. When you strike keys harder, the volume of Oscillator 1 will increase.

LFO

The LFO has its own modulation destination, independent from the Envelope and Mod Matrix slots. The modulation amount (depth) is either fixed or controlled by midi-controllers or SubBoomBass-RE internal components. An LFO (Low Frequency Oscillator), is an oscillator at a very low pitch/frequency. The frequency range of SubBoomBass-RE LFO is from 0.03Hz to 27.50Hz. Used often is the sine waveform. But the other waveforms of the LFO can also be used and produce interesting results. SubBoomBass-RE has the option to "tempo base" the LFO, which makes it a great feature for changing sounds in a musical tempo based way.

Waveform

Sine, Triangle, Saw Up, Saw Down, Square and S&H. This is where you can set the type of wave that modulates the LFO destination. Sinus and Triangle are often used because they produce a modulation that goes up and down smoothly. The other waveforms are more suitable for FX sounds or special sounds.



Speed

This controls how fast or slow the LFO is running. If the control Sync is set on then the speed is tempo based.

Sync

If you turn Sync on, the Speed of the LFO will be tempo based. So it will synchronise with the song tempo. To find the right setting you need to adjust the Speed parameter.

Mode

Poly, Free and Mono. This controls how the LFO responds when you hit one or more keys.

<i>Poly mode</i>	each note you play has its own Filter LFO and each LFO starts from the zero position. Poly mode is useful for complex sounding Filter LFO modulation.
<i>Free mode</i>	the LFO is free running and all the notes share the same LFO. The LFO is always running and does not reset when you press a key.
<i>Mono mode</i>	similar to free mode All the filter LFO's have the same value, however when you press a key in Mono mode, all LFO's are reset to their initial start position.

Destination LFO

This sets the destination of the LFO modulation. Listen to patch "bass: moving it hp". In this patch the Filter2 Cutoff frequency is modulated by the LFO.

Destination amount LFO

This is where you select the amount of LFO changes the LFO destination control. This can be a positive or negative modulation depending on the selected parameter. Listen to patch "bass: moving it hp". In this patch the Filter2 Cutoff frequency is modulated. Increase or decrease the amount to listen to what it does.

Amount control LFO destination

This is where you can adjust how much the LFO 's amount is changed by the modulation source and also which modulation source is used. This can be a positive or a negative amount. So you can increase the modulation or decrease the modulation.

Look at patch "bass: moving it hp" as an example. You can see that in this patch the Mod Wheel is assigned with -45% amount. So if you open the Mod Wheel the LFO modulation of the target (destination) will be reduced. In fact with a fully open Modulation Wheel, the LFO does not modulate the destination anymore. This happens because the LFO destination amount is 45% and the modulation control is set to -45%.

Mod Matrix 1 - 4

SubBoomBass-RE has 4 slots to set your own modulation connection. Clicking on a modulation number label bypasses that modulation. There are 32 modulation sources that include midi sources and synth sources. These sources connect to 48 modulation destinations in the SubBoomBass-REs synth. There is also an amount control for each connection. So you could for instance control the modulation strength (or depth) by a Free Envelope.

Source 1 - 4

This is where you can select one of the 32 modulation sources.

Destination 1 - 4

Here you select one of the 48 modulation destinations.

Destination amount 1 - 4

This is where you select the amount or strength of the modulation. This can be a positive or a negative modulation depending on the selected parameter.

Amount control 1 - 4 destination

This is where you select the controller for dynamically adjusting the modulation strength. With amount you set yo what extent the modulation strength is manipulated. This can be either a positive or a negative amount. So you can enhance the modulation or flatten-out the modulation.



FX section

In this section you can configure up to 2 effects for a SubBoomBass-RE patch. By default these are connected in series. The output of FX1 feeds into the inputs of FX2. An exception to this is the Split Function.

On / Off

Clicking on the button next to the fx label turns that effect on or off .

Type

Here you can select one of the 24 effects for each of the FX units of SubBoomBass-RE.



Mix

Here is where you determine the balance between the original (direct) signal and the effect output. Turn is fully left and only the original signal is output. The more you move the knob to the right, the more of the effected signal will be added.

Pan

Controls the Panning of the selected Fx.

Split

The split function is only available if the signal routing switch in the Filter Section has been set to split. The FX Split button determines whether each filter output gets its own effect assigned (Split is 'On') or both filters share the same set of two effects (Split is off).

Effect Types

Mono Delay

A mono tempo based delay, great for making rhythmic grooves. For instance the 1/8* (1/8 dotted) is nice for all kinds of arpeggiator or lead sounds. To make the sound a bit spacey, modulation of the length is possible which makes the delay swirl.

<i>Length</i>	Length of the delay set in tempo based settings
<i>Feedback</i>	Feedback of the delay
<i>LP Filter</i>	Low pass filter frequency
<i>HP Filter</i>	High pass filter frequency
<i>Widen</i>	Stereo widening amount
<i>Mod Amount</i>	Delay modulation amount
<i>Mod Speed</i>	Delay modulation speed

Stereo Delay

Two tempo based delays. One delay for each of the audio channels (left and Right). This is useful for making deep pad sounds if you use 1/8* (Left) and 1/4 (right) settings. The Feed Equal option makes it possible to have equal feedback fade time, even if the left and right delay are have other length settings.

<i>Left Delay</i>	Left length of the delay set in tempo based settings
<i>Right Delay</i>	Right length of the delay set in tempo based settings
<i>Feedback</i>	Feedback of the delay
<i>CrossFeed</i>	Feedback between the left / right delay
<i>LP Filter</i>	Low pass filter frequency
<i>HP Filter</i>	High pass filter frequency
<i>Mod Amount</i>	Delay modulation amount
<i>Feed Equal</i>	Equal on makes that both L and R feedback do fade way equal, regardless which length you use.

Comb

The Comb Filter effect uses two joined comb filters where the output of one is fed back into the other one. Comb filters that are very short in delay and has a frequency, which in turn determines the length of this delay.

<i>Comb 1 Freq</i>	Comb Filter 1 Frequency
<i>Comb 1 Feed</i>	Comb Filter 1 Feedback amount
<i>Comb 1 Mod</i>	Comb Filter 1 Feedback modulation amount
<i>Comb 2 Freq</i>	Comb Filter 2 Frequency
<i>Comb 2 Feed</i>	Comb Filter 2 Feedback amount
<i>Comb 2 Mod</i>	Comb Filter 2 Feedback modulation amount
<i>Mod Speed</i>	Feedback tempo based modulation speed

Reverb

This effect reproduces the sound of acoustics in rooms using different sizes and reflections.

<i>Pre-Delay</i>	Pre-delay amount of the reverb signal
<i>Size</i>	Reverb room size
<i>Damp</i>	Reverb damping amount
<i>LP Filter</i>	Low pass filter frequency
<i>HP Filter</i>	High pass filter frequency
<i>Spread</i>	Stereo spreading amount
<i>Length</i>	Length of reverb

Chorus

The chorus is a modulated delay signal which is useful for thickening up the sound and making it sound 'fatter'.

<i>Length</i>	Length of the chorus
<i>Width</i>	Maximum change or modulation to chorus length
<i>Speed</i>	Speed that the chorus length changes
<i>Spread</i>	Difference in speed between the left and right hand channels
<i>LP Filter</i>	Low pass filter frequency
<i>Widen</i>	Stereo widening amount

Chorus/Delay

This is a combined chorus / delay. Specially developed in case you want to use another effect in combination with Chorus without losing a delay function.

<i>Length</i>	Maximum length of the chorus in milliseconds.
<i>Width</i>	The amount how much the chorus length will change
<i>Speed</i>	The rate the chorus length changes
<i>Spread</i>	The amount the chorus length differs between left and right channels.
<i>Delay</i>	Length of the chorus delay. Delay is behind the chorus.
<i>Feedback</i>	Amount the chorus delay feeds back into the sound
<i>Delay Vol</i>	Volume of the delay.

Flanger

The flanger effect is a very short delay which changes overtime, to make a whooshing type sound.

<i>Length</i>	Length of the flanger
<i>Width</i>	Maximum change to flanger length
<i>Speed</i>	Speed the flanger length changes, this is midi tempo based
<i>Feedback</i>	Feedback of the flanger
<i>Pan Mod</i>	Flanger panning amount
<i>LP Filter</i>	Low pass filter frequency
<i>HP Filter</i>	High pass filter frequency

Phaser

A phaser is a combination of filters that can create a phasing effect

<i>Stages</i>	Number of stages in the phaser
<i>Pitch</i>	Pitch of the phaser
<i>Feedback</i>	Feedback of the phaser
<i>Width</i>	Maximum change to phaser pitch
<i>Speed</i>	Speed the phaser length changes, this is midi tempo based
<i>Spread</i>	Amount the phaser stages are spread from the central pitch
<i>Pan Mode</i>	Speed the phaser pans from the left / right hand channels

Wah/Delay

This effect produces a wahwah type effect by running the sound through a lowpass-filter that's frequency is changed over time. There is a built in delay which adds delays to the sound.

<i>Low Range</i>	Lowest Frequency of the filter. Here you can adjust how deep the LP filter ranges. The more you move the dial to the left, the lower the filter goes.
<i>High Range</i>	Highest Frequency of the filter. Here you can adjust how high the LP filter goes. The more you move the dial to the right, the higher the filter goes.
<i>Speed</i>	The rate the filter frequency changes over time. Tempo based.
<i>Resonance</i>	Controls the resonance of the used low-pass filter.
<i>Delay</i>	Length of the wahwah delay. This delay is after the WahWah FX.
<i>Feedback</i>	Amount the wahwah delay feeds back into the sound
<i>Delay Vol</i>	Volume of the delay

Distort (distortion)

This distorts the audio by saturating, limiting, rectifying and bandpass filtering the input.

<i>Limit</i>	Hard limiter threshold
<i>Rect</i>	Amount of rectification, from -100% (no change) , 0% half to 100% - full
<i>Distort</i>	Amount of Distortion
<i>Tone</i>	Frequency of the band pass filter
<i>Emphasis</i>	Bandwidth of the band pass filter
<i>Post-Boost</i>	Amount the filter signal is boosted
<i>MWheel > Tone</i>	Amount the band pass filter frequency is changed by the modulation wheel

Low-Fi

This effect reduces the digital audio quality of the sound, which results in old style computer sound effects.

<i>Bits</i>	Bit level of the signal.
<i>Sample Rate</i>	Sample rate of the signal.
<i>LP Filter</i>	Frequency of the low pass filter.
<i>MWheel > Filter</i>	Amount the low pass filter frequency is changed by the modulation wheel.

Amp Sim

Several types of amp types are simulated. Great for creating edgy sounds.

<i>Type</i>	Type of amp simulation. Settings are:- None, 4x10" guitar speakers, 4x12" guitar speakers, Bass speaker, Combo speaker and Radio speaker. The "none" speaker setting is useful if you want to only use the distortion in the FX effect.
<i>Distort</i>	Amount of distortion added to the sound. Also works if the "none" speaker setting is selected.
<i>Bass</i>	Bass EQ Volume. Adds or removes low end from the speaker simulator.
<i>Treble</i>	Treble EQ Volume. Adds or removes high frequencies from the speaker simulator.
<i>Volume</i>	Volume boost. Adjusts the volume of the processed sound.

Note: with the Amp simulator FX it is recommended to fully open the Mix control knob (wet).

WaveShaper

The waveshaper effect shapes the in-going sound to a kind of distorted version of it. It is then passed through a low pass filter that's frequency is changed over time by a tempo based LFO.

<i>Top Amt</i>	The amount positive input is waveshaped.
<i>Bottom Amt</i>	The amount negative input is waveshaped.
<i>Rect</i>	The amount the sound is rectified, at -100% the sound goes through as normal, at 0% no negative output is heard and at 100% any negative output is made positive.
<i>Filter</i>	Low pass filter frequency. This filter does not filter the high frequencies.
<i>LFO Amount</i>	The amount the low pass filter frequency can change.
<i>LFO Speed</i>	The rate the low pass filter frequency can change.

Stereo Widener

This effect widens the stereo sound.

<i>Widen</i>	Stereo widening amount
<i>Width</i>	Maximum change to the stereo widening amount
<i>Speed</i>	Speed that the stereo widening amount changes.
<i>LP Filter</i>	Low pass filter frequency.
<i>HP Filter</i>	High pass filter frequency.

AutoPan

Autopan pans the sound between the left and right speakers.

<i>Amount</i>	Amount the autopan moves the sound in the stereo field.
<i>Speed</i>	The rate at which the autopan moves the sound. This is Tempo based so for example 1/1 does mean that the pan moves from left to right within 1bar.

Note: for maximal effect you also need to open the Fx Mix control knob fully right (wet)

Gator

The gator uses a 16 step sequencer to alter the volume of the sound to give a 'trancegate' type effect. Basically it is a sequencer controlled audio gate.

<i>Speed</i>	The speed of the gator. Speed is time based from 16/1 up to 1/32T speed. If for example the speed is set to 1/1 each step is 1/16 note. If for example the speed is set to 2/1 then each step is 1/8 of a note.
<i>Smooth</i>	How much the volume changes are smoothed out. This helps to avoid clicks.
<i>Mode</i>	Whether the gator affects the left & right channels, the left channel only or the right channel only or both.
<i>Sync</i>	Turns on / off the host syncing. For example if you do not hear the gator FX in standalone host, then switch to off. Inside a host sequencer program the best setting is auto or sync. The default setting in most patches is auto. So if you have problems with these settings, try off.
<i>Left</i>	Left channel sequencer. Clicking here turns on / off that step in the gator. When a step is on (light colour) the gate is open and you can hear the audio. When a step is off (dark colour) the audio is muted.
<i>Right</i>	Right channel sequencer. Clicking here turns on / off that step in the gator. When a step is on (light colour) the gate is open and you can hear the audio. When a step is off (dark colour) the audio is muted.

Note: FX Mix sets how much of the Gator FX is added. With the Gator FX it is wise to fully open the Mix control knob (wet).

Bass Enhancer

This effect emphasises bass frequencies.

<i>Freq</i>	Frequency below which the bass signal is enhanced
<i>Pre-Boost</i>	Pre-boost amount of the bass signal
<i>Distort</i>	Amount of distortion applied to the bas signal
<i>Post-Boost</i>	Set the amount of additional boost after the distortion section

FX Filter

This is an analogue modelled stereo Multimode Filter, which has all the properties of SubBoomBass-RE's main filter.

<i>Type</i>	Sets the type of filter, offering 6dB LowPass and HighPass, 12dB, 18dB and 24dB LowPass, HighPass, 12dB and 24dB BandPass, 12dB and 24dB Notch and Comb Filter modes.
<i>Frequency</i>	Sets the Cutoff frequency of the filter
<i>Q</i>	Sets the Resonance level of the filter
<i>Distort</i>	Sets the pre-filter distortion of the filter
<i>Smooth</i>	Sets the pre-filter distortion as smooth or edgy in sound.

Equalizer

The equalizer uses 5 bands at 60Hz, 200Hz, 600Hz, 2000Hz and 8000Hz frequencies. The control knob for each band controls that bands volume, from -20db to +20db When using the equalizer, it is recommended that you use a fully (100%) wet signal.

Compressor

The compressor is an audio effect that changes the dynamic range and response of a signal.

<i>Threshold</i>	This sets the threshold on which the compressor starts to work
<i>Ratio</i>	This sets the amount of dB reduction. So if a signal exceeds the threshold the 4dB gets 2dB with a ratio setting of 1:2.
<i>Attack</i>	This sets how fast the compressor kicks in.
<i>Release</i>	This sets how long the compressor takes to react to a reduction in volume
<i>Volume</i>	This allows you to correct the volume after the signal has been compressed.

Note: FX Mix sets how much of the Compressor FX is added. With the Compressor FX it is wise to fully open the Mix control knob (wet).

Ensemble

This effect uses 6 choruses, each having its own setting, to give the effect of several copies of the sound playing at once.

<i>Length</i>	Length of the ensemble effect
<i>Width</i>	Maximum change to ensemble length
<i>Speed</i>	Speed the ensemble length changes
<i>Feedback</i>	Amount the choruses differ from each other
<i>Spread</i>	Spread

Cabinet

Several types of cabinets are simulated. Great for creating edgy sounds.

<i>Type</i>	Type of cabinet simulation. Settings are: None, Fender, Marshall and Off Axis. The none speaker setting is useful if you want to only use the distortion in the FX effect..
<i>Distort</i>	Amount of distortion added to the sound. Also works if the "none" cabinet setting is selected.
<i>Bass</i>	Bass EQ Volume. Adds or removes low end from the speaker simulator.
<i>Treble</i>	Treble EQ Volume. Adds or removes high frequencies from the speaker simulator.
<i>Volume</i>	Volume boost. Adjusts the volume of the processed sound.

Note: with the Amp simulator FX it is recommended to fully open the Mix control knob (wet).

Multi Distort

Allows you to use several different types of distortion effects

<i>Type</i>	Different type of distortion allowed, they are None, Atan, Cos, Cross, Foldover, Fuzz, Limiter, Overdrive, Power, Rectifier, Saturator, Square. None means no distortion is used
<i>Pre-Boost</i>	How much the signal is boosted before going into the distortion
<i>Amount 1</i>	Control how much the signal is distorted
<i>Amount 2</i>	Additional distortion parameter for Fuzz
<i>Normalize</i>	How much the output volume is normalized to the input volume, at 100% the output volume should be the same as the input volume.
<i>Low Filter</i>	Post distortion low-pass filter
<i>High Filter</i>	Post distortion high-pass filter
<i>Post-Boost</i>	How much the output of the distortion is boosted

Auto Wah

Autowah uses a low/bandpass filter to filter the signal using the volume of signal to alter the frequency of the filter.

<i>Type</i>	Type of auto-wah filter, lowpass or bandpass
<i>Low Frequency</i>	Lowest frequency of auto-wah filter
<i>High Frequency</i>	Highest frequency of auto-wah filter
<i>Amount</i>	How much the volume of the signal alters the filter's frequency
<i>Q</i>	Resonance / Bandwidth of autowah filter
<i>Smooth</i>	How much signal volume is smoothed

Sequencer

The sequencer is SubBoomBass-RE' "Groove Heart". It's a placeholder for bass-lines, riffs and percussion patterns.

The sequencer uses up to 16 steps. Each step represents a note, a note-tie or a rest. If the parameter speed is set to 1x bpm, the step size is 1/16th note each. The sequencer is represented in a grid. Each grid-row displays the values of the sequencer parameter and all parameters for a particular step are in a single column.

To activate the sequencer, set the Play Mode to Seq. The first MIDI-note that SubBoomBass-RE receives will kick-off (trigger) the sequencer.



Sequencer Setup

Steps

Determines the number of steps in the sequence. The range runs from 1 to 16 steps.

Speed

Speed of the sequencer in respect to the host tempo, from 1/4 of the tempo up to 4 times the tempo.

Tie Mode

- normal: steps with tie do not have an individual velocity and free setting
- special: steps with tie do have still individual velocity and free settings

Free / Osc Selector

The Free / Osc selector above the sequencer grid allows you to select the target for the sequencer driven modulation. Click on the Free / Osc selector to change the rows visible in the sequencer panel.

Sequencer Grid

Step number

Current step number; clicking on the step number turns the step on or off

Tie

Sets if the current note (step) is tied to the previous one. If it is, the previous note continues to play as if you held the note across the two steps. So it allows you to play notes which are twice (or more) as long as the normal sequencer note. In other words, you can tie notes together using this function. When using notes with tie, there are two different modes, that you select with the Tie Mode button.

- normal: steps with tie do not have an individual velocity and free setting
- special: steps with tie do still have their individual velocity and free settings

Slide

The slide setting determines whether pitch change between steps is instantaneous or carried out with a portamento effect. The amount of time it takes to change the pitch from one step to the next is set by the Slide control in the sequencer. The Slide setting is either on or off for each step.

Tune

Sets the pitch of each step, relative to the trigger key pitch. Each step is defined in semi-tones below or above the trigger key.

Velocity

Sets the velocity value for each note (step) of the sequencer. Note: this is used in combination with the Seq/Keyboard control knob which determines how the velocity of the sequencer controls the SubBoomBass-RE synthesizer parts. This Vel/Keyboard parameter needs to be fully turned to 'Seq' to make the velocity settings of the steps work! If you use tie in a step, the velocity does not work at that step if the sequencer is in Tie Mode 'Normal'.

Free

Free control allows you to control other parameters of SubBoomBass-RE dynamically, using the sequencer. The Sequencer Free control becomes the source in a Modulation Matrix setup. Select 'Seq Free' as the modulation source and SubBoomBass-RE will use the Free value of each sequencer step as the value of the modulation source. If you use tie in a step, the free setting does not work at that step if the sequencer is in Tie Mode 'Normal'.

Try patch 'seq: Wicked 8' to hear how the free row of the sequencer changes the volume of the Oscillator 1.

Click on the Free / Osc selector above the sequencer grid in case the Free row is not visible in the sequencer panel.

Osc1 and Osc2

With Osc 1 and 2, you can change the oscillator waveform for each step of the sequencer. This works independently for Osc1 and Osc2. Here is how you use it: You see two rows in the sequencer grid - one for Osc1 and one for Osc2. The number in each step indicates the number of the waveform / sample used in that step. There are 52 different waveform and samples to choose from.

- Click on a step to set the oscillator waveform for that step.
- When you click and hold, a pop-up menu displays all available oscillator waveforms and samples.
- There are two additional choices: '-' and '='.
- The '-' setting silences the oscillator for that step.
- Same as '=' uses the setting as defined in the main oscillator section.

Using the sequencer Osc mode is an excellent way to achieve wave-sequencing effects and to create rhythmic patterns with SubBoomBass-RE. Listen to patch 'seq: Sequence 5b' to hear an example of sequencer driven waveform selection.

Sequencer Performance Controls

The dials and buttons below the sequencer grid alter performance related aspects of the sequencer such as timing, dynamics and rhythm.

Swing

This controls the swing factor of the sequence. It is the difference in timing between consecutive notes and it gives a more human/swing feel to the sequence.

The SubBoomBass-RE sequencer is setup with a default of 1/16 note. When using swing, the steps 2/4/8/10/12/14/16 are moved backwards towards the triplet note value. In case you need 8th note swing, please set the sequencer speed to 'half' the original tempo. This applies also to other settings and swing functions you might need.

Slide

The slide control determines the glide time it takes to move from the pitch in one step to the pitch of the next step. This setting is relevant only for those steps that have glide enabled in the grid.

Velocity / Key

This controls whether the sequencer velocity parameter settings are controlled by the sequencer step settings (at 0%) or the pressed key's velocity (at 100%) or a combination of the two values. The control sets the balance between the two.

Step / Len

The Step / Len sets the relative duration of each step. Smaller values create give a stacatto effect to the sequence while long value make the note in each step continue for the full length of the step. This corresponds to playing in legato style.

Key Entry

Activating Key Entry allows for entry of sequencer step data through a connected midi keyboard. SubBoomBass-RE records note (tune) and velocity data for each step for each key pressed.

Latch

When latching is turned on you don't need to keep a key pressed down for the sequencer to continue to play. Tip: you can use also the sustain pedal to Latch and Unlatch the sequencer.

Retrigger

When retrigger is off, when you press a new key, when one is still pressed down, the sequencer carries on to the next step, i.e. If you were at step 6 when you pressed the new note the sequencer continues with step 7. Keep in mind that with SubBoomBass-RE you only need to play one note.

Back Panel

If you go to SubBoomBass-RE back panel, you will find a number of less frequently used controls, settings and inputs. It also lists the credits and information about the controls.



Input

Here you connect audio input into SubBoomBass-RE, The signal can be used as a modulation source.

CV Input

SubBoomBass-RE has four CV inputs, which can be used as modulation sources.

Note Input

SubBoomBass-RE has Note Gate and CV inputs, which allow SubBoomBass to be controlled by other units, such as the Matrix Pattern Sequencer.

Gate Input

SubBoomBass-RE has six CV Gate inputs, which are used to reset the arpeggiator, the trancegater, free envelope 1 & 2 and free LFO 1 & 2 respectively.

Sequencer Output

Here you can output the Sequencer notes, as being played by the Sequencer, their velocity, the current free value, and also a CV / Gate message corresponding with the most recently played note.

Output

Here you grab SubBoomBass-RE's output signal, and also set the tuning.

Analog

This sets the amount of analog drifting, similar to that of an old analog synthesizer. The higher the setting, the more the SubBoomBass-REs oscillator pitch will drift over time. The setting is stored as part of each patch. The default is 20%, which is a great setting.

Global tuning

This sets the global tuning of a patch. The default is 440Hz. Note: this setting is stored as part of each patch.

Oscillator Waveforms

The SubBoomBass-RE oscillators draw from a collection of sources that include analog modelled waveforms and samples. Waveforms are selected directly in the oscillators for Osc1 and 2. Alternatively, in the sequencer section, each sequence step allows you to assign a different wave or sample for both Oscillator 1 and 2. The available waveforms are listed below.

Analog modelled waveforms

Sine	Saw	Square	Triangle
Rez 1	Rez 2	Rez 3	HalfSine
SineSaw	SineSqr	SineRez	SawSqr
SawRez	SqrRez	White Noise	Pink Noise

Sampled Waveforms

Cajon 1	Cajon 2	Conga	Djembe1 (Looped)
Djembe2 (Looped)	DowDr (DowDrums)	FrmeDr (FrameDrum looped)	Kick (not looped)
TuneKick (Looped)	Kick2 (Acoustic looped)	Kick3 (Acoustic looped)	SubKick1 (not looped)
SubKick2 (looped)	Quinto (not looped)	SprDrum (Springdrum)	Tom1 (Acoustic looped)
Tom2 (Acoustic looped)	Tom3 (Acoustic looped)	Tom4 (Acoustic looped)	Tumba1 (looped)
Tumba2 (looped)	Udo (looped)	Xylo (looped)	Bass1
Bass2 (variation of Bass1)	PickBass (Plucked bass looped)	AccBass1 (Acoustic bass)	AccBass2 (variation of AccBass1)
Contra (Contra bass looped)	Fretless (Fretless bass)	Tube1 (RP Tube looped)	Tube2 (RP Tube looped)
BassH (Bass1 with Harmonics above C4)	Harm (Bass harmonics looped)	Surdo (looped)	Buffalow
Breathed Snare	Flap	Jungle	

Modulation Sources

<i>ModWhl</i>	Mod Wheel
<i>ModAft</i>	Mod Wheel / Aftertouch
<i>After</i>	Aftertouch
<i>Velocity</i>	Last note velocity
<i>Pitchbend</i>	Pitch
<i>Breath</i>	Breath (midi CC 2) input
<i>Foot</i>	Foot (midi CC 4) input
<i>Expressn</i>	Expression (midi CC 11) input
<i>CC16</i>	Midi CC 16 input
<i>CC17</i>	Midi CC 17 input
<i>CC18</i>	Midi CC 18 input
<i>CC19</i>	Midi CC 19 input
<i>CC20</i>	Midi CC 20 input
<i>CC21</i>	Midi CC 21 input
<i>CC84</i>	Midi CC 84 input
<i>CC85</i>	Midi CC 85 input
<i>CC86</i>	Midi CC 86 input
<i>CC87</i>	Midi CC 87 input
<i>CC88</i>	Midi CC 88 input
<i>CC89</i>	Midi CC 89 input
<i>CC90</i>	Midi CC 90 input
<i>Env</i>	Free Envelope
<i>LFO</i>	Free LFO
<i>SeqFree</i>	Seq Free Row
<i>SeqVel</i>	Seq Velocity Row
<i>Note</i>	Last note played
<i>Offset</i>	Constant offset
<i>FilterEnv</i>	Filter Envelope

<i>FilterLFO</i>	Filter LFO
<i>WhiteNoise</i>	White Noise
<i>PinkNoise</i>	Pink Noise
<i>Input</i>	External input into SubBoomBass-RE
<i>Input Left</i>	External Left input into SubBoomBass-RE
<i>Input Right</i>	External Right input into SubBoomBass-RE
<i>CV1</i>	External CV input 1
<i>CV2</i>	External CV input 2
<i>CV3</i>	External CV input 3
<i>CV4</i>	External CV input 4

Modulation Destinations

Global Controls

None

Volume

Panning

Amp Speed

Amp Attack

Amp Decay

Amp Sustain

Amp Fade

Amp Release

Global Pitch

Portamento Amount

Pitch LFO Speed

Pitch LFO Amount

Oscillator 1

Volume 1

Semi-tuning 1

Fine-tuning 1

Symmetry 1

Sub-Oscillator 1

PWM Amount 1

PWM Speed 1

Oscillator 2

Volume 2

Semi-tuning 2

Fine-tuning 2

Symmetry 2

Sub-Oscillator 2

PWM Amount 2

PWM Speed 2

FM Amount 2

Filter

Filter Frequency

Filter Q

Filter Distort

Filter Vowel

Filter Envelope Amount

Filter Envelope Speed

Filter LFO Amount

Filter LFO Speed

Filter Attack

Filter Decay

Filter Sustain

Filter Fade

Filter Release

Filter2 Frequency

Filter2 Q

Free Modulations

Free Envelope Speed

Free Envelope Amount

Free Envelope Attack.

Free Envelope Decay.

Free Envelope Sustain.

Free Envelope Fade

Free Envelope Release.

Free LFO Amount

Free LFO Speed

FX 1

FX 1 Mix

FX 1 Pan

FX 1 1

FX 1 2

FX 1 3

FX 1 4

FX 1 5

FX 1 6

FX 1 7

FX 1 8

FX 2

FX 2 Mix

FX 2 Pan

FX 2 1

FX 2 2

FX 2 3

FX 2 4

FX 2 5

FX 2 6

FX 2 7

FX 2 8

Sequencer

Sequencer Speed

Sequencer Swing

Sequencer Slide

Sequencer Velocity / Key

Sequencer Step Length

Default Midi Settings

CC	Control
4	Midi CC4
7	Main Volume
10	Panning
16	Midi CC16
17	Midi CC17
18	Midi CC18
19	Midi CC19
20	Midi CC20
21	Midi CC21
22	Osc 1 Type
23	Osc 1 On
24	Osc 1 Output
25	Osc 1 Volume
26	Osc 1 Symmetry
27	Osc 1 Sub-Osc Volume (Sine / Square)
28	Osc 1 Octave
29	Osc 1 Semi
30	Osc 1 Fine
31	Osc 1 PWM Amount
44	Osc 1 PWM Speed
45	Osc 2 Type
46	Osc 2 On
47	Osc 2 Volume
48	Osc 2 Symmetry
49	Osc 2 Sub-Osc Volume (Sine / Square)
50	Osc 2 Octave
51	Osc 2 Semi

52	Osc 2 Fine
53	Osc 2 PWM Amount
54	Osc 2 PWM Speed
55	Osc 2 FM Amount
56	Filter 1 Type
57	Filter 2 Type
58	Filter 1 Frequency
59	Filter 1 Resonance
60	Filter 1 Vowel
61	Filter 1 Distortion
62	Filter 1 Key Tracking
63	Velocity > Filter Frequency
70	Mod Wheel > Filter 1 Frequency
71	Filter 1 LFO Amount
72	Filter 1 Envelope Amount
73	Filter 1 Envelope Attack
74	Filter 1 Envelope Decay
75	Filter 1 Envelope Sustain
76	Filter 1 Envelope Fade
77	Filter 1 Envelope Release
78	Filter 1 LFO Speed (ms)
79	Filter 1 LFO Speed (qb)
80	Filter 1 LFO Amount Control
81	Filter 2 Frequency
82	Filter 2 Resonance
83	Unison Amount
84	Midi CC84
85	Midi CC85
86	Midi CC86

87	Midi CC87
88	Midi CC88
89	Midi CC89
90	Midi CC90
91	Port Speed
92	Volume Envelope Attack
93	Volume Envelope Decay
94	Volume Envelope Sustain
95	Volume Envelope Fade
102	Volume Envelope Release
103	Velocity > Volume
104	Pitch LFO Speed (ms)
105	Pitch LFO Speed (qb)
106	Pitch LFO Amount
107	Free Envelope Attack
108	Free Envelope Decay
109	Free Envelope Sustain
110	Free Envelope Fade
111	Free Envelope Release
112	Free Envelope Amount
113	Free LFO Speed (ms)
114	Free LFO Speed (qb)
115	Free LFO Amount
116	FX 1 On
117	FX 1 Pan
118	FX 2 On
119	FX 2 Pan
128	Osc 1 Free Running
129	Osc 1 Keytracking

130	Osc 2 Free Running
131	Osc 2 Keytracking
132	Osc 2 Sync
133	Osc 2 FM Mode
134	Filter Path
135	Filter 1 LFO Wave
136	Filter 1 LFO Sync
137	Play Mode
138	Unison Mode
139	Port Mode
140	Decay / Release Shape
141	Pitch Bend Up
142	Pitch Bend Down
143	Pitch LFO Wave
144	Pitch LFO Sync
145	Pitch LFO Amount Control
146	Vel > Free Envelope Speed
147	Key > Free Envelope Speed
148	Free Envelope Mod Source
149	Free LFO Sync
150	Free LFO Wave
151	Free LFO Amount Control
152	Mod 1 Amount
153	Mod 2 Amount
154	Mod 3 Amount
155	Mod 4 Amount
156	Mod 1 Control Amount
157	Mod 2 Control Amount
158	Mod 3 Control Amount

159	Mod 4 Control Amount
160	FX 1 Type
161	None 1 Wet / Dry Mix
162	Mono Delay 1 Wet / Dry Mix
163	Stereo Delay 1 Wet / Dry Mix
164	Comb Filter 1 Wet / Dry Mix
165	Reverb 1 Wet / Dry Mix
166	Chorus 1 Wet / Dry Mix
167	Chorus / Delay 1 Wet / Dry Mix
168	Flanger 1 Wet / Dry Mix
169	Phaser 1 Wet / Dry Mix
170	Wah/Delay 1 Wet / Dry Mix
171	Distortion 1 Wet / Dry Mix
172	Low-Fi 1 Wet / Dry Mix
173	Amp Sim 1 Wet / Dry Mix
174	Waveshaper 1 Wet / Dry Mix
175	Widener 1 Wet / Dry Mix
176	Autopan 1 Wet / Dry Mix
177	Trance-Gate 1 Wet / Dry Mix
178	Bass 1 Wet / Dry Mix
179	FX Filter 1 Wet / Dry Mix
180	EQ 1 Wet / Dry Mix
181	Compressor 1 Wet / Dry Mix
182	Ensemble 1 Wet / Dry Mix
183	Cabinet Sim 1 Wet / Dry Mix
184	Multi-Distort 1 Wet / Dry Mix
185	AutoWah 1 Wet / Dry Mix
186	FX 2 Type
187	None 2 Wet / Dry Mix

188	Mono Delay 2 Wet / Dry Mix
189	Stereo Delay 2 Wet / Dry Mix
190	Comb Filter 2 Wet / Dry Mix
191	Reverb 2 Wet / Dry Mix
192	Chorus 2 Wet / Dry Mix
193	Chorus / Delay 2 Wet / Dry Mix
194	Flanger 2 Wet / Dry Mix
195	Phaser 2 Wet / Dry Mix
196	Wah/Delay 2 Wet / Dry Mix
197	Distortion 2 Wet / Dry Mix
198	Low-Fi 2 Wet / Dry Mix
199	Amp Sim 2 Wet / Dry Mix
200	Waveshaper 2 Wet / Dry Mix
201	Widener 2 Wet / Dry Mix
202	Autopan 2 Wet / Dry Mix
203	Trance-Gate 2 Wet / Dry Mix
204	Bass 2 Wet / Dry Mix
205	FX Filter 2 Wet / Dry Mix
206	EQ 2 Wet / Dry Mix
207	Compressor 2 Wet / Dry Mix
208	Ensemble 2 Wet / Dry Mix
209	Cabinet Sim 2 Wet / Dry Mix
210	Multi-Distort 2 Wet / Dry Mix
211	AutoWah 2 Wet / Dry Mix
212	Seq Retrigger
213	Seq Speed
214	Seq Latch
215	Seq Slide
216	Seq Note Length

217	Seq Swing
218	Seq Host Sync
219	Seq Tied Mode
220	Seq Vel / Keyboard
221	Seq Speed
222	FX Split

Note: CC1, 4, 7, 10, 16-21 & 84-95 are all used internally and should not be used to control parameters.