Filterscape Manual

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01

Features

2 State Variable Filters with these powerful features:

- Simultaneous output for LP, BP, HP and Notch that can be panned and mixed individually
- Extensive modulation options:
- Step Sequencers, LFOs, Envelope Followers

Semi-modular architecture with:

- Tempo synced delay
- 2 flexible mixers (Panning, Balance, inverse stereo)
- Routing, Mixers, Delay
- Several different circuitry for different applications

Revolutionary parametric Morphing EQ:

- Up to 8 snapshots
- Snapshots can be automated/morphed in various ways
- Copy/paste between snapshots

Modulations:

- 2 Step Sequencers for rhythmic modulations and patterns
- 2 LFOs - synced to tempo
- 4 Envelope Followers with threshold, optional prefiltering and AHR-Envelope mode

02

General Controls

Filterscape's editor window features a broad range of different controls to access its vast sonic possibilities. These controls have been optimized for easy usage and high readability. In most situations, a quick glimpse will give you an impression of what's going on sound-wise.

In addition to the intuitive and familiar approach, there are some useful extra functions built into common controls like knobs and displays:

Knob controls

Knobs are typically used to control parameters in a continuous fashion. Dragging the mouse up and down lets you adjust their value in familiar ways. In addition, there are special functions available when clicking in conjunction with a modifier key pressed down:

- Option-clicking a knob will reset its parameter to a default value, i.e. zero in most cases.
- Shift-dragging will increase the resolution, allowing for fine adjustment of values.
- Ctrl-clicking (or a click with the right mouse button) puts the knob in Midi Learn mode (Midi Learn is explained below).

On the visual side, knobs don't just point into any direction to indicate their value, they also offer a "pie slice" visualization. There are two kinds of knobs which differ visually in respect of their value ranges:

Positive knobs

Positive knobs are used for paramaters that can only represent positive values, i.e. between 0% and 100%. Their "pie slice" looks like this:

Here, the pie slice looks like something elastic. It thins out with higher values, representing the 'tension' that arises from extreme settings.

Bipolar knobs

Bipolar knobs are used for parameters whose values typically range from -100% to +100%. They follow the convention that negative/low values are blue (cold) while high values are red (warm):

This makes it easy to distinguish between the meanings of parameter values according to their ranges!

Displays (associated with pop-up menus)

Displays are typically used for parameters that indicate different modes or options for a certain process, such as assigning a modulation source to a filter's cutoff.

Clicking on a display opens a menu with a list of options.

Option-clicking them sets them to the default option, which in most cases is 'none'.

Ctrl-clicking them invokes Midi Learn, just like on knobs.

If you have a mouse with a scrollwheel, you don't need to go through the list in the pop-up menu. Just move the mouse on any display (without clicking) and use the wheel to scroll through the options. This allows for very fast access, once you're familiar with the options available for each parameter.

Main Display

Each Filterscape plugin has a big main display:

It typically shows the exact value while you're changing a parameter.

It always displays the name of the module (in this case Envelope Follower 3) and the parameter ('Filter type') on the left side, while showing the current value in big letters/numbers on the right side.

General Controls and Midi Learn

Midi Learn is a popular way to use Midi data to quickly control parameters without having to use a mouse.

Many contemporary Midi keyboards offer a set of knobs or faders that can freely be assigned to Midi Control Change messages (abbreviated to 'MidiCC'). There are also dedicated Midi control boxes with 8, 16 or even more knobs for just this purpose.

Virtually all of Filterscape's parameters can be controlled by MidiCCs. But as there are a maximum of 128 different MidiCCs and because Filterscape offers over 600 (!) parameters, these connections are not fixed. You can decide which parameters you want to control this way, whether it's for the current situation or as a fixed set-up you often use.

All standard controls (knobs, displays, etc) are equipped with the Midi Learn function:

Ctrl-click (or use the right mouse button) on a control to set it to Midi Learn mode. Now, when you turn a knob on your control keyboard, that knob is automatically assigned to the parameter.

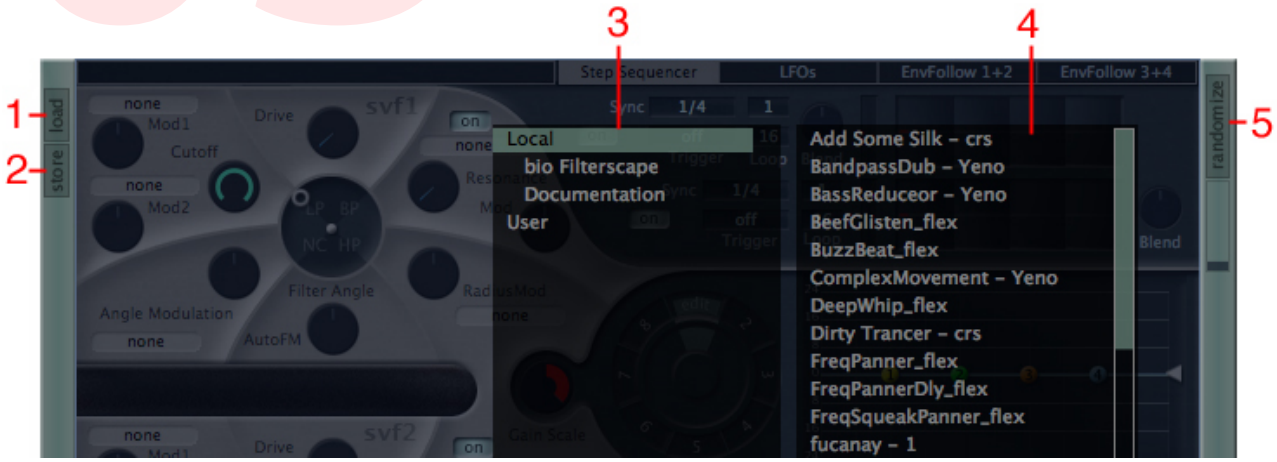
To unassign a knob from a parameter, just ctrl-click the corresponding knob or display twice, and the connection is cleared.

Filterscape automatically detects whether your Midi controller sends common MidiCCs ('absolute') or so-called incremental CCs ('relative), as used in the Doepfer Pocket Dial, for example. You can even use absolute and relative MidiCCs at the same time, but not on the same parameter.

Note: You can certainly use Midi Learn for FilterscapeVA with most applications that host virtual instruments. But using Midi Learn for Filterscape and FilterscapeQ6 only works in host software that can send Midi signals to effect plug-ins! Please refer to the manual of your audio software to see how to set up Midi for effects. In Apple's Logic software for example, you can only send Midi to effects if they are inserted in Instrument Tracks.

03

Preset Loading, Preset Management and Randomizing



These buttons are available on all three plug-ins and function exactly the same on all three.

1 Load preset button
2 Save preset button
3 Preset folder sctructure
4 Preset name
5 Random button

The load preset button **(1)** switches to the preset browser view. In this view the regular controls are greyed out and you see two columns: the preset folder structure **(3)** and the preset names **(4)**. You can organize presets any way you like. These are the locations of the presets:

Global presets (available to all users):

Hard drive / Library / Audio / Presets / u-he /

This is the root folder for u-he plug-ins. There is a separate folder for each plug-in. You can see the contents of this folder under Local.

User presets:

~user / Library / Audio / Presets / u-he /

There is a separate Folder for each plug-in. The contents of this folder is what you see under User

Saving presets:
Presets will be saved to the folder that is active in the preset browser. Presets can be reorganized in the Finder.

Randomization:

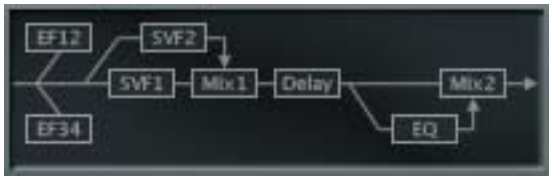
The random button **(5)** will randomly assign values to each parameter. This can create wild sounds so please watch your speakers while using random.

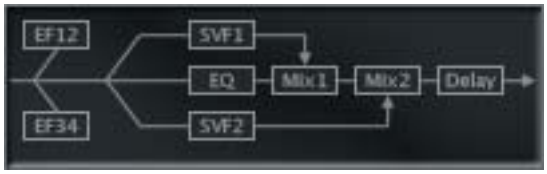
04

Routing, Mixer and Delay

Routing

Filterscape is based on a modular plug-in engine. Consequently, it provides a range of different routings so that you can use the filters, the EQ and the delay in series, in parallel or anything in between, at different order of processing. As a great source for complex effects, there are also some routings that place EQ or filters into the delay's feedback path.





Mixer

For further control of the signal flow there are two mixer units that control the dry/wet mix of parallel stages as well as the panning of the returned signal.

Both Mixers have a mix knob **(2)** that lets you control the ratio between the original signal (the horizontal line in the routing schemes above) and the signal returning from a parallel channel (displayed with an arrow), from 0% (dry) to 100% (wet). This way you can control how much any module in the signal path contributes to the overall effect.

The wet signal can also be panned **(4)** in various ways, set by a pop-up menu **(3)**:

- Bal L-R: Input Balance – in balance mode, the left channel's volume will be turned down in order to hear more of the right channel, and vice versa, thus 'balancing' the volumes, while still preserving the stereo image
- Pan L-R: Input Pan, for negative values (to left side) panning the right side over to the left side, and vice versa – so no information is lost during panning, but the stereo image narrows
- Bal R-L: same as Bal L-R, but with inverted stereo image
- Pan R-L: same as Pan L-R, also inverted
- Pan mono: panning the mono sum of the input signal

Panning can be modulated. Use the Pan Mod (5) to set the amount of modulation and the pop-up menu **(6)** to select the modulation source.

Delay

In the lower right corner of the editor window are the controls for the tempo-synced Delay. These controls are always visible.

At first glance, Filterscape's Delay is a very simple and basic digital delay. It's very straightforward to use, yet it is more powerful than it might seem!

You can choose a delay time from 1/64 to 1/1 for each channel from the pop-up menu **(8)**, including dotted and triplet values. The two knobs for Feedback **(9)** and Cross **(10)** control the amount of delayed signal that is fed back into the delay on the same channels (Feedback) and in a ping-pong manner (Cross).

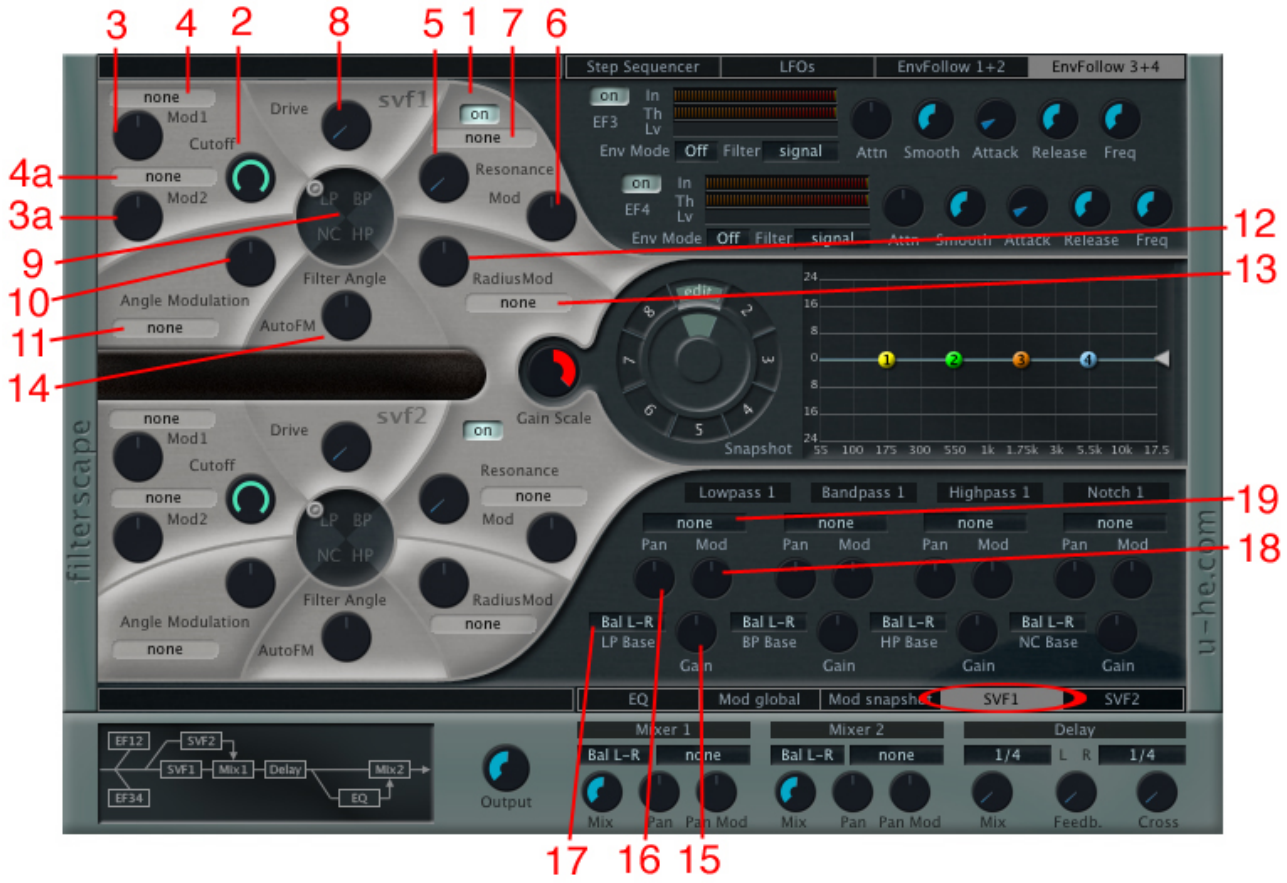
The Mix parameter **(7)** controls the ratio of dry/wet signal, just like the Mixers do.

However simple this sounds, there are routings where, for example, the EQ is sent into the delay's feedback path. With this you can create many, many different flavors of delay, from filtered spectrums to wildly evolving feedback.

And because it is very easy to overload the delay, it has a built-in limiter that keeps the overall level within a reasonable range. Or at least, it tries to, because you can still do things that no limiter on earth can correct ;-).

05

Filters



The filter controls

1 On/Off switch
2 Cutoff frequency
3 Cutoff modulation 1
4 Cutoff modulation 1 source selector
3a Cutoff modulation 2
4a Cutoff modulation 2 source selector
5 Resonance
6 Resonance modulation
7 Resonance modulation source selector
8 Filter drive
9 Filter type / filter output selector
10 Filter angle modulation
11 Filter angle modulation source selector
12 Radius modulation
13 Radius modulation source selector

14 Auto frequency modulation
15 Filter gain
16 Filter pan
17 Filter stereo base selector
18 Pan modulation
19 Pan modulation source selector

Filterscape features 2 Filters, which are modeled after classic analog State Variable Filters (SVF). This kind of filter is very popular among vintage gear as well as among software synthesizers. It provides simultaneous output for lowpass, bandpass, highpass and notch. Unlike most other plug-ins, Filterscape does not only let you switch between the different characteristics, it also lets you mix them dynamically!

The Filter Angle parameter controls the mix of the four filter outputs. The ring can be dragged freely, or it will rotate around the center while you drag the mouse in the dark area. The little ball shows the currently audible mix of the filter types, as you can modulate both angle and radius of the mix.

This way you can create filter sounds that i.e. blend seamlessly between lowpass and bandpass. If centered, the output is close to an allpass filter (used in phasing effects).

Of course, you also have the typical parameters that you expect from a common filter, like Cutoff and Resonance (both can be modulated). The Drive parameter boosts the input so that more distortions of the overdriven filter become evident. The AutoFM parameter can be used to modulate the cutoff frequency by the input signal (audio rate modulation), which will result in sounds ranging from 'wet' sounds to amp-like distortions.

1 On/Off
Turns the filter on or off

2 Cutoff
This sets the cutoff frequency for the lowpass (LP) and highpass (HP) the center frequency for the bandpass (BP) and the base frequency for the notch (NC). Each of these four filters are audible if the ball **(8)** is in center position. The level of each filter can be adjusted in the SVF1 pane using the gain **(14)**.

3 to 4a Cutoff modulation
The cutoff can be modulated by two sources. Control 3 and 4 control modulation 1 and control 3a and 4a control modulation 2. Control 3 and 3a set the amount of modulation that is applied to the cutoff frequency. Control 4 and 4a select the modulation source from a pop-up menu.

5 Resonance
This controls the resonance that is applied to the filters. Knob 6 sets the amount of modulation applied to resonance and the pop-up menu **(7)** sets the modulation source.

The filter drive parameter **(8)** will add drive to the filter.

Filter type / filter output selector **(9)** and knobs 15 through 19
The ring (with the ball inside, that will move to visually represent the modulation) will let you select how much of each filter type is used in the signal. In center position all four filter types

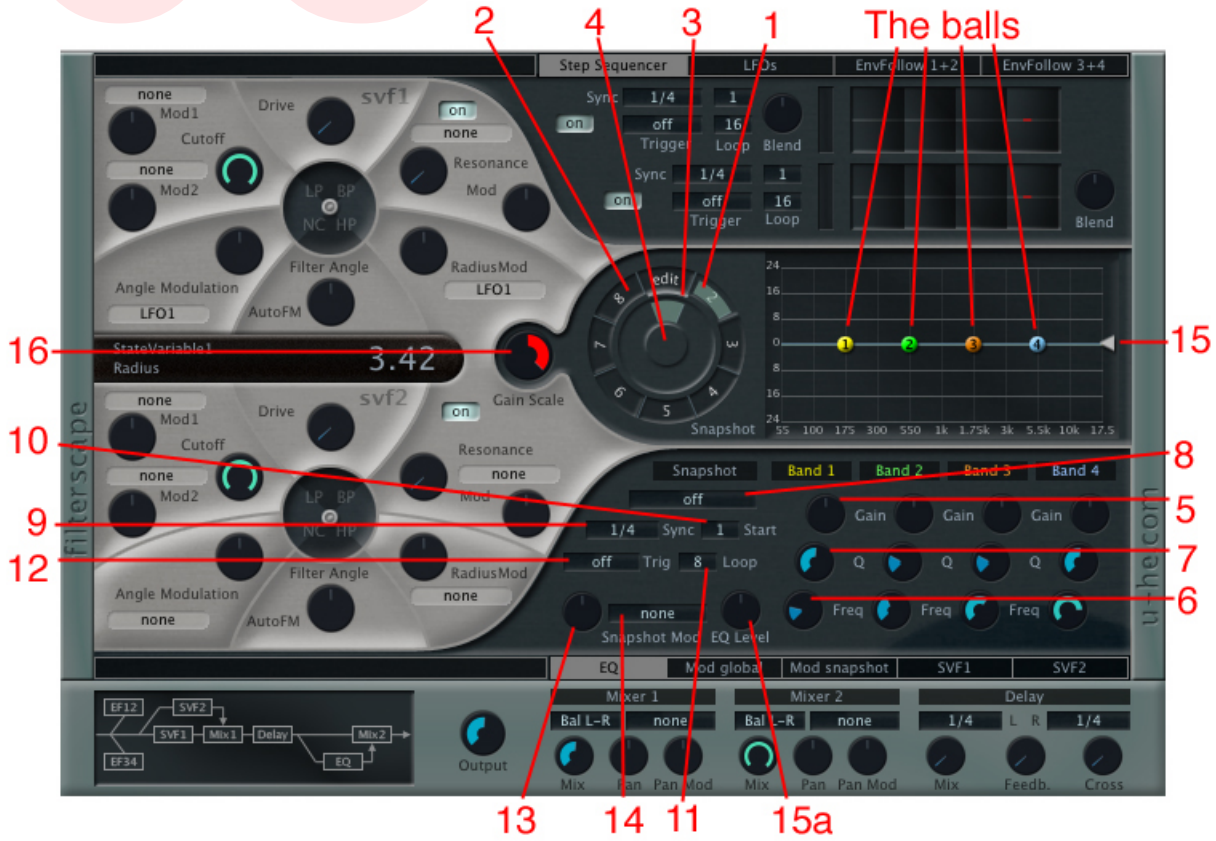
are used equally. Drag towards a filter type to accentuate that part of the sound. In addition to this the SVF1 and SVF2 panes below the EQ provide more in-depth parameters for controlling the filter's outputs. Controls 15 through 19 are present for all four filters. The manual will only discuss them for the lowpass filter but they work just the same on the other 3 filters. Each output can be panned **(16)** individually and adjusted in gain **(15)**. There are 5 different panning modes **(17)** for each output which let you determine how the panning affects the stereo image (read the mixer section for more details on the panning modes). The panning can be modulated **(18)**. Set the modulation source from the pop-up menu **(19)**.

Filter angle modulation 10 through 13
Control 10 will determine the amount with which the angle is modulated while the pop-menu **(11)** will set the modulation source. This will only have an effect if the filter type **(9)** is off center. When the control 10 is turned all the way up (value is 4) the inner ball will move through two complete circles around the filter type. For a visual idea of what's going on see presets "Doc Angle Modulation", "Doc Radius Modulation" and Doc "Angle + Radius Modulation".

Auto frequency modulation routes the input signal to the cutoff frequency (positive and negative). This can be used to achieve distortion effects.

06

The Equalizer



Filterscape's Equalizer is the heart of the effect. It's not just another 4-band equalizer. It goes way beyond typical EQs with its morphable snapshots, its deep modulation options and the possibility to use it as a filter.EQ.jpg ¨

1 Currently editable snapshot
2 Snapshot numbers
3 Currently audible snapshot
4 Blend control
5 Gain of the respective EQ band
6 EQ Frequency
7 Q or steepness
8 Snapshot loop mode
9 Sync speed of snapshot loop
10 First snapshort in loop
11 Number of looped snapshots
12 Restart loop selector
13 Snapshot modulation amount
14 Snapshot modulation source selector
15 Overall EQ gain
15a Overall EQ gain
16 Gain Scale

The EQ control shows the frequency and gain of each band as 4 colored balls that act as handles to quickly adjust the frequency **(6)** and gain **(5)**. When ctrl-dragging the balls you can adjust the Q (steepness, bandwidth or resonance) **(7)** for each band. The EQ pane contains knobs for each parameter of the EQ **(5 – 7)**, if you are more used to this than dragging the balls.
The resulting curve is shown as a grey line. The blue line that appears as soon as signal is flowing through the EQ shows the curve you actually listen to and visualizes the modulation of the EQ parameters.

The EQ has an overall gain that is represented with a triangle **(15)** or a knob **(15a)**

The Gain Scale knob **(16)** can be used to adjust the overall influence of the EQ between -100%, 0% and +100%. With this you can seamlessly fade the effect of the EQ in and out, and you can even reverse the influence of the EQ! For a visual representation of this concept, have a look at the blue line in the EQ view, which represents the actual sound you are hearing, after any modulation and morphing has been added. When the gain scale is set to -100%, this is entirely inverted.

Ctrl-clicking the background of the EQ-curve opens a contextual menu with further options, such as copy/paste and the modes for the EQ:

- EQ: Lowshelf - Peaking - Peaking - Highshelf
- Peaks: 4 x Peaking
- Filter: Lowpass - Bandpass - Bandpass - Highpass
- Bandpasses: 4 x Bandpass
- panned BPs: same as above, distributed left to right

Very handy: When you command-click the background, the balls snap to the settings currently represented by the blue line! This helps to create fluent transitions between different snapshots etc.

The snapshot dial **(4)** lets you walk through the 8 snapshots of EQ settings. The inner dial **(4)** acts like a knob for seamless blending between snapshots. The outer segments **(2)** with the numbers represent the different snapshots and the grey one **(1)** is the currently editable snapshot. The thin bright arc **(3)** represents the currently audible snapshot. This arc will move if the snapshot is modulated. - As with everything, you have to see it in action, it can hardly be described. Load the "Doc Snapshot loop" preset to see what the EQ curve does when moving through the different EQ snapshots.

The Snapshot Auto Proceed function makes automating the EQ snapshots very easy, all in sync to the host tempo, with adjustable loop points and direction. You turn on the Snapshot Auto Proceed by setting the pop-up menu **(8)** to either:

- Loop -> this will make the Snapshot Auto Proceed jump back to the first snapshot set by the start pop-up menu **(10)**
- Loop <->This will loop from the start (10) to the last snapshot set by the loop parameter **(11)** and then reverse direction.

The sync pop-up menu **(9)** lets you select the speed of the Snapshot Auto Proceed in sync to the host tempo from 1/64th note to 8 measures with triplets and dotted values. The trigger pop-up menu **(12)** sets the time in measures until the loop is retriggered. This will loop around the circle until the measures are reached and then jump back to the start snapshot.

Two other panes, Mod global and Mod snapshot keep an identical set of modulation options for each band of the EQ.

While Mod global assigns modulations working independently from the current snapshot, Mod snapshot provides all these options for each snapshot, meaning that you can have completely different modulations on different snapshots!

1 Gain modulation
2 Gain modulation source selector
3 Frequency modulation for band 4
4 Frequency modulation for band 1 source selector
5 Gain modulation for band 4
6 Gain modulation for band 4 source selector

In our example, 3, 5 and 6 refer to Band 4, but as you can see all four bands have identical controls.

The overall level of the EQ can be modulated by setting the gain **(1)** and modulation source **(2)**. If each band is set to zero gain (the EQ is completely flat) then the overall gain modulation will sound like a tremolo. See preset "Doc tremolo".

Knob 3 controls the global modulation for the frequency of band 1. Select the modulation source from the pop-up menu **(4)**. If this is turned on then the frequency of band 1 will be modulated in every snapshot. See preset "Doc Freq mod global". In this preset every snapshot has the same setting and thus the frequency modulation happens cyclically. In preset "Doc Freq mod global 2" snapshot 5 has a different setting than all the others. Listen to the effect.

Knob 5 and 6 work the same way as knob 3 and 4 only on the gain of the respective EQ-band.

Mod snapshot

Mod snapshot works just like Mod global, but specific to each snapshot, so here you can create eight sets of completely different EQ modulations which can be blended by the position of the snapshot dial, just like it morphs the EQ parameters. See preset 'Doc Freq mod snapshot' for an example. This preset loops back and forth between the first and fourth snapshot. Within the snapshots its set up is as follows:

Snapshot	*EQ-Band*	*Modulation target*	*Modulator*
1	1	Freq and gain	LFO 1
2	2	Freq and gain	LFO 1
3	3	Freq and gain	LFO 1
4	4	Freq and gain	LFO 1

07

Modulations

Step Sequencer

Filterscape offers 2 step sequencers for pattern-based modulations. We will only cover step sequencer 1 in the manual as step sequencer 2 works just the same way and has the same controls.

1 *On/Off switch*
2 *Speed*
3 *Retrigger*
4 *First step*
5 *Number of steps (loop length)*
6 *Blend*
7 *Drawable steps*

Button 1 turns the step sequencer on and off.

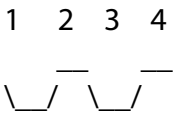
The Sync pop-up menu **(2)** lets you select the speed of the step sequencer. It is always synced to the host tempo and ranges from 1/64th notes to 8 bars.
The Trigger pop-up menu **(3)** lets you set the number of bars at which the step sequencer will be retriggered. In the off position the step sequencer just loops through all the time.

With the First step **(4)** and Loop length **(5)** pop-up menus you can set the loop. The first step sets the step in the graphical display at which the sequencer starts and the loop length determines how many steps will be gone through before looping.

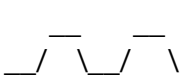
The Blend parameter **(6)** controls how the steps fade into each other.

At 0 (mid/default position) the steps will just jump from one value to the other. (See preset 'Doc step seq example 1'.)

For positive values (1%–100%) the value will start to fade from the previous step to the current once a new step is reached. (See preset 'Doc step seq example 2'.)



For negative values (-1% – -100%) the current step will fade into the succeeding value so that once the next step is due, the value is already there. (See preset 'Doc step seq example 3'.)



LFOs

There are two LFOs in Filterscape. Both work in exactly the same way, so for simplicity's sake we will only discuss LFO 1 here.

1 *On/Off switch*
2 *Waveform selector*
3 *Speed*
4 *Restart trigger selector*
5 *Phase*

The on/off switch **(1)** switches the LFO on and off.

The waveform selector **(2)** lets you choose from these waveforms for the LFO:

Sine
Triangle
Sawtooth
Square (hi-lo)
Square (lo-hi)
Random (hold)
Random (glide)

The first three are self-explanatory. Square hi-lo is a square wave starting with the amplitude full up and Square lo-hi starts with the amplitude at 0. Random hold will generate random values,

hold and jump to the next value with the speed determined by sync **(3)**. Random glide will generate random values and blend into the next value.

The Sync pop-up menu **(3)** lets you select the speed of the LFO. It is synced to the host's tempo and ranges from 1/64th to 8 bars.

The Restart pop-up menu **(4)** sets the number of bars after which the LFO will be restarted. In the off positions the LFO will just oscillate.

The phase knob **(5)** shifts the phase of the wave backwards or forwards.

Envelope Followers

There are four very powerful envelope followers available in Filterscape. All work in exactly the same way, so for simplicity's sake we will only discuss envelope follower 1.

1 *On/Off switch*
2 *In – input level display*
3 *Threshold slider*
4 *Modulation level display*
5 *Envelope mode on/off*
6 *Analysis mode selector*
7 *Attenuation*
8 *Smooth*
9 *Attack*
10 *Release*
11 *Frequency*

The on/off switch **(1)** turns the envelope follower on or off.

The Input level display **(2)** shows the signal amplitude on the input. The attenuation knob **(7)** controls the gain of the signal input. This makes it possible to use very loud and also very soft material.

The Threshold slider **(3)** sets the level at which the envelope follower becomes active. There is no handle, but you can just drag across the threshold display to adjust the threshold.

The Modulation level display **(4)** shows how much modulation value the follower is generating.

The Analysis mode selector **(6)** can be set to the signal (dry), lowpass, bandpass or highpass. This way you can narrow down the analyzed spectrum to a frequency band, as determined by the Freq parameter. This makes it possible to trigger Filterscape's modulations via different frequency bands.

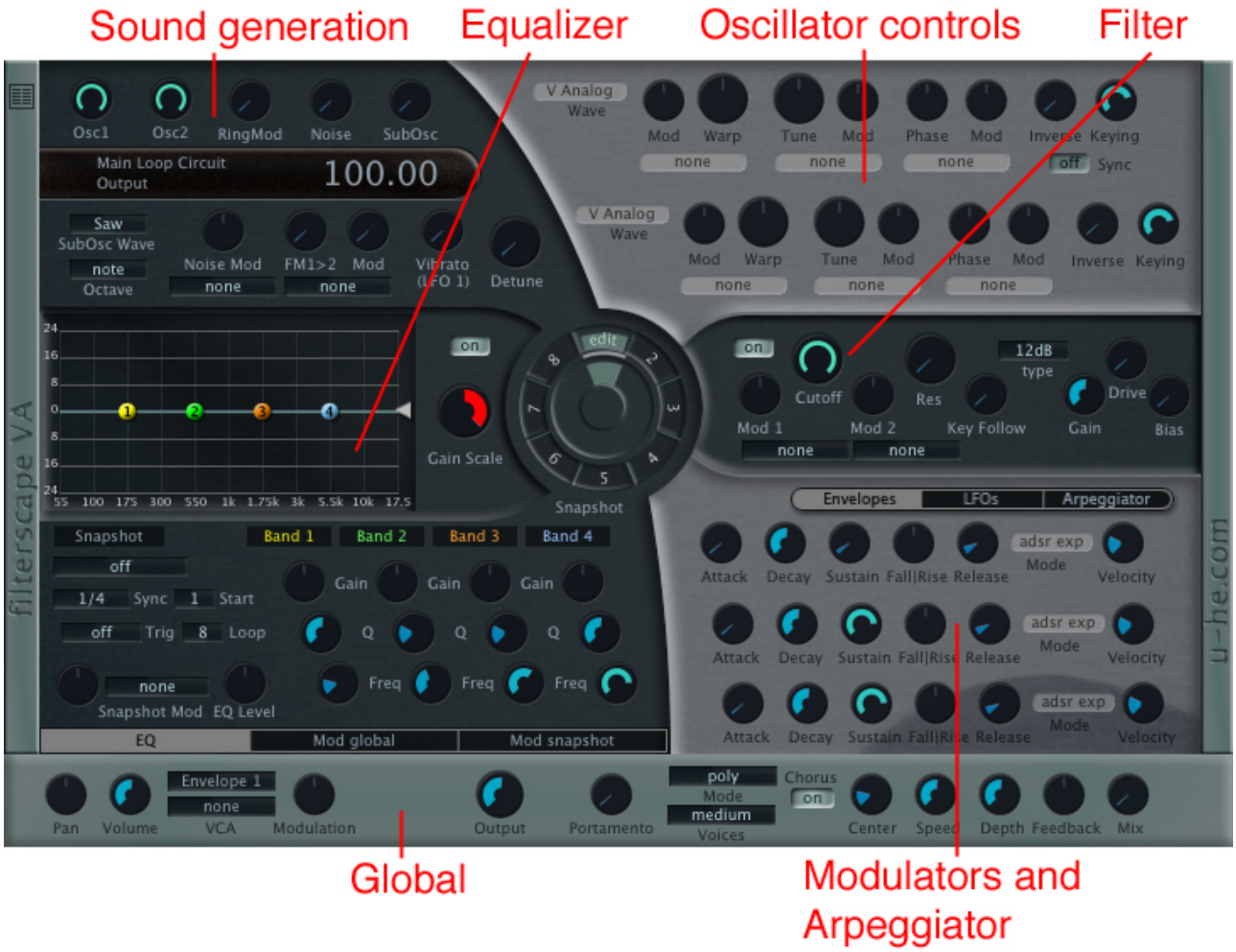
The Attack **(9)** and Release **(10)** parameters control the rate at which the envelope actually follows the input signal (between 1ms and 650ms).

The Smooth parameter **(8)** adds some inertia to the analyzer stage, making it more sluggish. This also affects the attack and release. The Smooth parameter makes it easier to control dynamic material. In its extreme position (100%), the analyzer is slowed down dramatically so that the envelope follower changes smoothly over a couple of beats or even bars!

A special function is the Env Mode **(5)**. When activated, the envelope follower doesn't work as a normal envelope follower, but as an Attack-Hold-Release envelope. Thus, whenever the input level crosses the threshold, the AHR will be triggered (like a gate), and released when the input level falls below the threshold.

08

Filterscape VA



Features

Filterscape VA is a polyphonic synthesizer plug-in sporting some intriguing features. It's easy to use with its familiar parameter set, but it also features some elements that go beyond traditional analog emulations.

The rich sound and flexibility of the oscillators with their ability to perform high quality FM, PWM, Hard Sync and ring modulation (even all at once, if you like!), along with the deep impact of a 12/24/36 dB resonant lowpass filter and Filterscape's EQ make Filterscape VA the ideal solution for a broad range of sounds, starting from fat vintage basses, warm and digital pads up to heavily distorted leads. Whatever synth character you need, Filterscape VA can deliver!

Filterscape VA synthesis:

- 2 Oscillators, Noise and Suboscillator
- 3 Envelope Generators
- 3 LFOs (1 global, 2 per voice)
- Waveform Warp for Osc1 and Osc2 (seamlessly alters the waveform spectrum, in different ways for different waveforms)
- Osc1 can modulate Osc2's frequency (FM) with arbitrary waveforms, at minimum aliasing (audio rate modulation). A special waveform set (Sine Stacks) allows for classic digital FM sounds
- Ring modulation
- Hard Sync (Osc1 -> Osc2) with the quality you'd expect from the maker of Zebra
- Inverse Oscillator Volume: Mix the waveform with its phase-shifted inversion, i.e. for PWM

09

Global

1 Pan control
2 Sound generation volume
3 Volume envelope
4 Volume modulation source
5 Volume modulation
6 Global output
7 Portamento
8 Synthesizer mode
9 Number of voices
10 Chorus on/off switch
11 Chorus delay amount
12 Chorus speed
13 Chorus depth
14 Chorus feedback
15 Chorus mix

The pan control **(1)** sets the overall panning. The volume for the sound generation section can be set with knob **(2)**. You can choose which envelope should apply to the volume from the Volume envelope pop-up menu **(3)** and also set up a modulation – pop-up **(4)** for the modulation source and knob **(5)** for the amount – for the volume.

The Global output **(6)** controls the actual output that is sent to your host.

You can set the Portamento (glide) **(7)** here and also the mode of the synthesizer **(8)**: poly, retrigger, legato or arpeggiator. The Voices pop-up menu **(9)** sets the amount of voices generated. This will also determine CPU use.

The chorus

The chorus can be turned on or off with the on/off switch **(10)**.
If the chorus is on, the Center knob **(11)** controls the phase shifting, Speed **(12)** the speed of the chorus and Depth **(13)** the amount of chorus. The Feedback knob **(14)** controls the feedback for the chorus and finally you can mix the chorus signal with the original with the Mix knob **(15)**.

10 Sound Generation

Filterscape VA's sound generation consists of two oscillators, a noise generator and a sub-oscillator.

1 *Information display*
2 *Level of Oscillator 1*
3 *Level of Oscillator 2*
4 *Ring modulation*
5 *Noise*
6 *Sub-oscillator*
7 *Sub-oscillator wave type selector*
8 *Sub-oscillator octave selector*
9 *Noise modulation*
10 *Noise modulation source selector*
11 *FM synthesis*
12 *FM synthesis modulation*
13 *FM synthesis modulation source selector*
14 *Vibrato*
15 *Detune*

This area lets you control the overall sound generation of Filterscape VA. It also contains the information display **(1)** that shows the name and value of the last touched control.

Osc1 **(2)** and Osc2 **(3)** control the level of the respective oscillator.

RingMod **(4)** adds a signal gained from ringmodulation between Osc1 and Osc2.

Noise **(5)** adds white noise to the signal

SubOsc **(6)** controls the level of another oscillator. The SubOsc Wave type selector **(7)** sets the wave of the SubOsc to saw, pulse or sine wave. The octave for the SubOsc can be set from the SubOsc Octave selector **(8)**. The SubOsc can sound at the octave of the note that is played or either one or two octaves below that.

Noise Mod **(9)** controls the modulation amount of the noise level and the pop-up menu **(10)** selects the modulation source.

FM1 > 2 **(11)** adds frequency modulation. Osc2 is modulated by Osc1. The amount of frequency modulation can also be modulated. Knob **(12)** controls the amount of modulation while the pop-up menu **(13)** sets the modulation source.

Vibrato **(14)** adds, you guessed it, just that to the signal. The speed of the vibrato is determined by LFO 1 (not to be confused with LFO global!)

Detune (**15)** tunes Osc1 down and Osc2 up by 100 cents. Turning this up all the way will result in a major second between Osc1 and Osc2.

11 Oscillators

1 *Waveform selector*
2 *Warp modulation amount*
3 *Warp modulation source*
4 *Warp*
5 *Tune*
6 *Tune modulation source*
7 *Tune modulation amount*
8 *Phase*
9 *Phase modulation source*
10 *Phase modulation amount*
11 *Inverse*
12 *Sync*
13 *Keying*

The waveform selector **(1)** lets you select the waveform from a pop-up menu.

The Warp parameter **(4)** works like a movable wavetable. It alters the way the current waveform sounds.

Example: Warp results for waveform 'V Analog'

0% -> A mixture of Sawtooth and Square
25% -> Zoyd's Sawtooth set to 'Even'
50% -> Sawtooth
75% -> Triangle
100% -> Sine

You can try out for yourself the effect it has on the other waveforms.

Warp can be modulated by selecting a modulation source from the pop-up menu **(3)** and setting the modulation amount **(2)**.

Tune **(5)** adjusts the frequency of the oscillator by +/- two octaves. Tune can be modulated by selecting a modulation source **(6)** and setting the modulation amount **(7)**.

Phase **(8)** shifts the phase of the wave by +/- 180°. This can also be modulated by selecting a modulation source **(9)** and setting the modulation amount **(10)**.

The inverse parameter **(11)** blends the current waveform with an inverted version of itself while the phase is shifted in the opposite direction.

Example: to create a square wave (preset 'Template Pulse'):

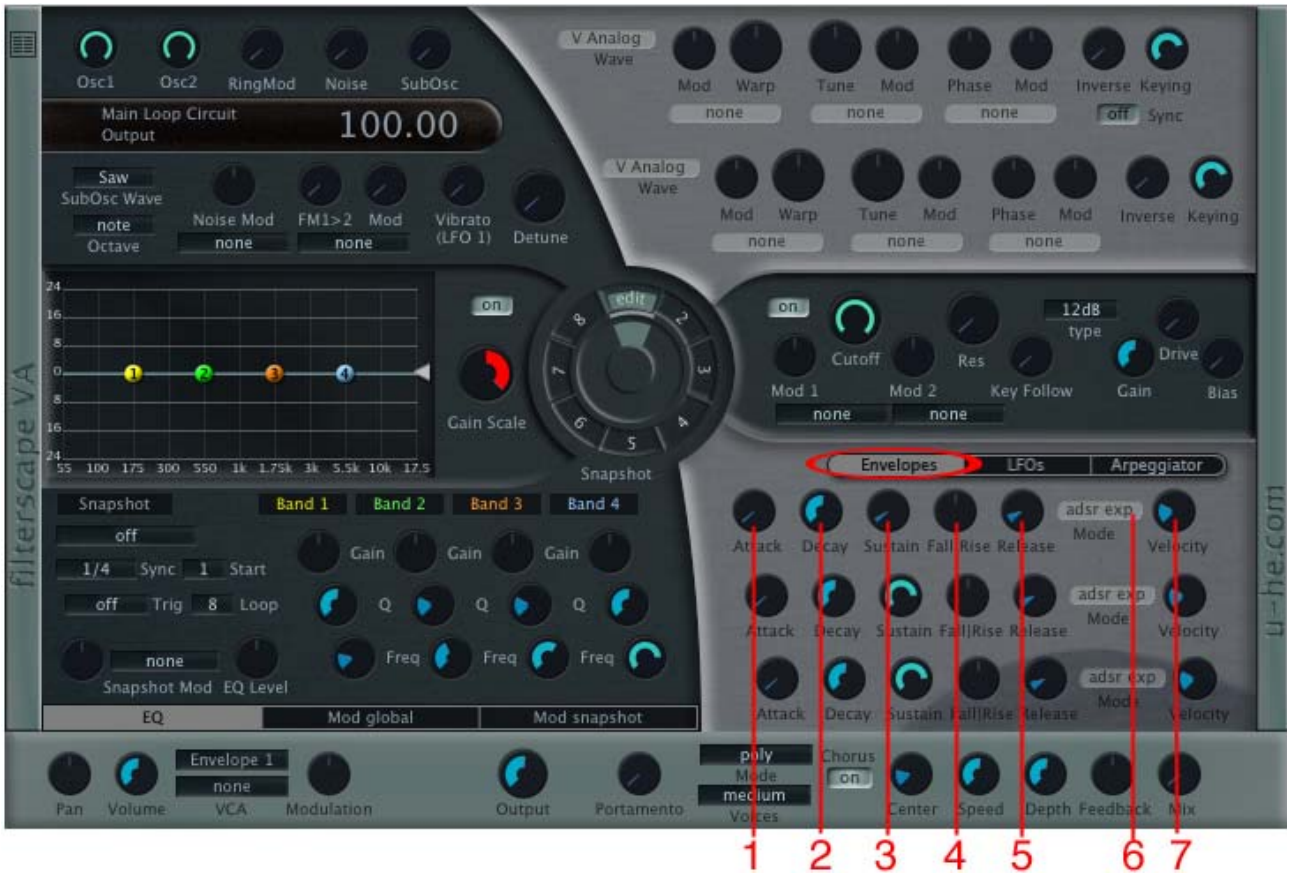
Set Osc to sawtooth (Warp at 50% – see example above)
Set Inverse (11) to 50%
Modulate Phase for PWM

Sync **(12)** enables the hard sync effect familiar from vintage synthesizers: each time Osc1 finishes a waveform cycle, it will not only restart its own cycle, but will also force Osc2 to restart. You'd typically sweep Osc2's Tune to create a typical 'biting' sound.

Keying **(13)** changes the way pitches are produced. At 100 the notes played are the notes generated. At -100 the pitches are inverted (if you play a scale upwards on the keyboard it will sound as if it was played downwards).

12

Envelopes



Filterscape VA features 3 envelopes.

1 *Attack*
2 *Decay*
3 *Sustain*
4 *Fall / Rise*
5 *Release*
6 *Mode selector*
7 *Velocity*

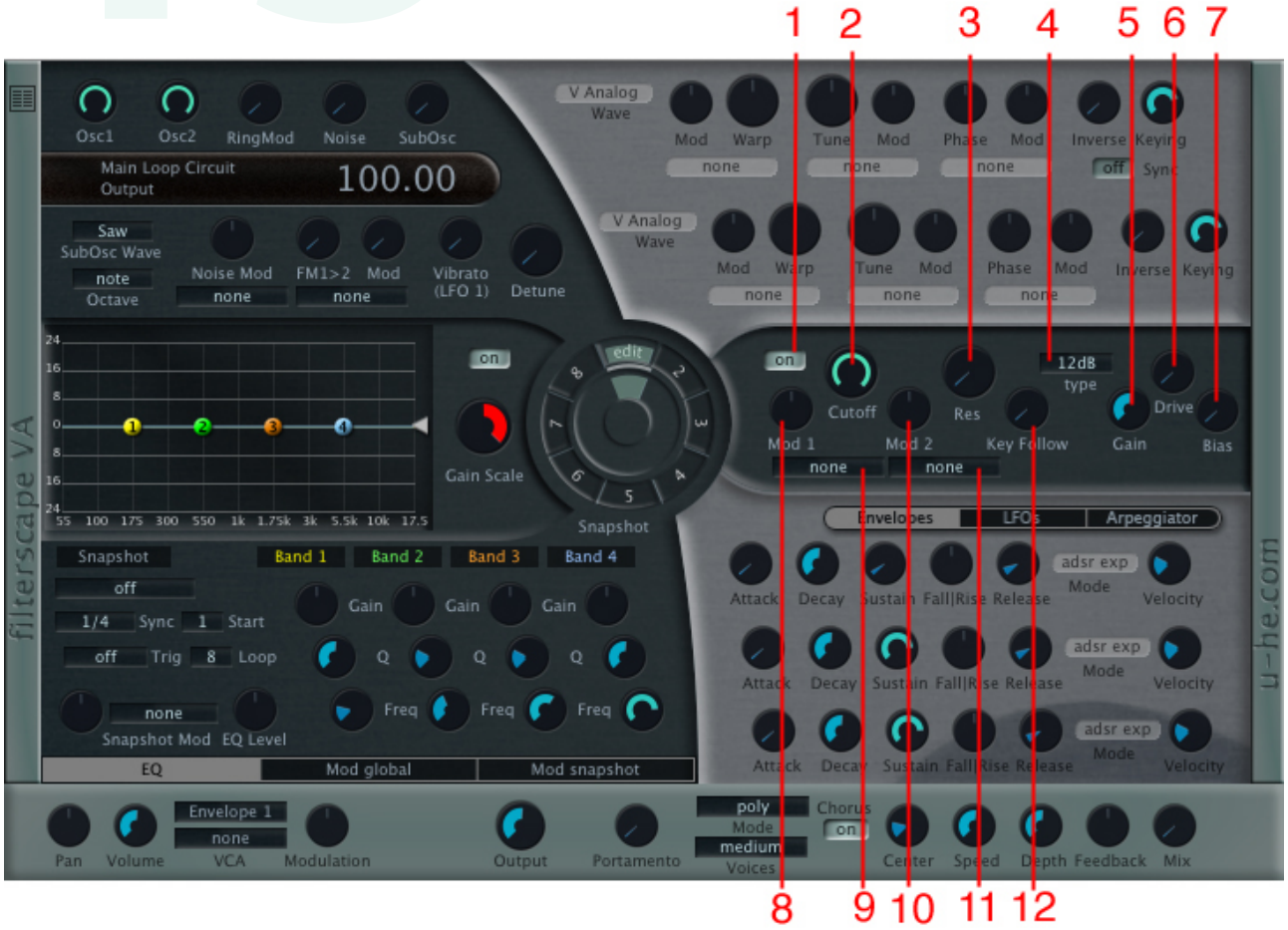
The Attack **(1)**, Decay **(2)**, Sustain **(3)** and Release **(5)** work the same way as they do in every other synthesizer. However, on top of this Filterscape also features a Fall/Rise parameter **(4)**. This parameter sets the time it takes to get from the sustain value once it is reached, to 100% (rise) or 0% (fall).

Filterscape features several modes for the envelopes:
There are two kinds of envelopes that you can select with the Mode selector **(6)**: the regular ADSR envelope and an HDSR. In HDSR mode, the attack parameter controls the time the level is held until the decay kicks in. Both modes can function in a linear or exponential way.

Velocity **(7)** sets the extent to which the key velocity will add to the envelope values.

13

FIlter



1 *On/Off switch*
2 *Cutoff*
3 *Resonance*
4 *Filter type selector*
5 *Drive Gain*
6 *Drive (mix)*
7 *Bias*
8 *Cutoff modulation 1*
9 *Cutoff modulation 1 source selector*
10 *Cutoff modulation 2*
11 *Cutoff modulation 2 source selector*
12 *Key follow*

The on/off switch **(1)** turns the filter on and off. With the Cutoff **(2)** you set the frequency at which the signal is cut off and with Resonance **(3)** you set the amount by which the cutoff frequency is attenuated. The resonance goes way beyond the normal range for a resonant filter – this can produce screaming sounds!

The steepness of the filter can be set to 12, 24 or 36 db with the Filter type selector **(4)**. The 36db filter adds an additional 12dB filter after the drive section. Cutoff can be modulated by two different modulation sources. Select the modulation source from the pop-up menu.

Drive **(6)** mixes the signal as it was before going into the drive with the overdriven signal. Gain **(5)** increases the amount of harmonics (while losing some bass frequencies). Bias **(7)** adds a current (DC-Offset) to the input, which can give very good results for some sounds.

The filter has a built-in limiter, so that you normally won't have to worry about overly harsh self-oscillating loudness.

The filter can be modulated by two Modulators **(8 and 10)** and you can choose the modulation source from the Source selectors **(9 and 11)**. Key follow **(12)** will open up the filter for higher notes and close it for lower notes.

14

EQ

This works the same way as in Filterscape. Please read the section above on the Filterscape EQ.

15 LFO

LFO global

1 *On/Off switch*
2 *Waveform selector*
3 *Speed*
4 *Phase*
5 *Restart selector*

LFO 1 and LFO 2

6 *On/Off switch*
7 *Waveform selector*
8 *Speed*
9 *Restart*
10 *Modulation source selector*
11 *Modulation*
12 *Delay*
13 *Phase*

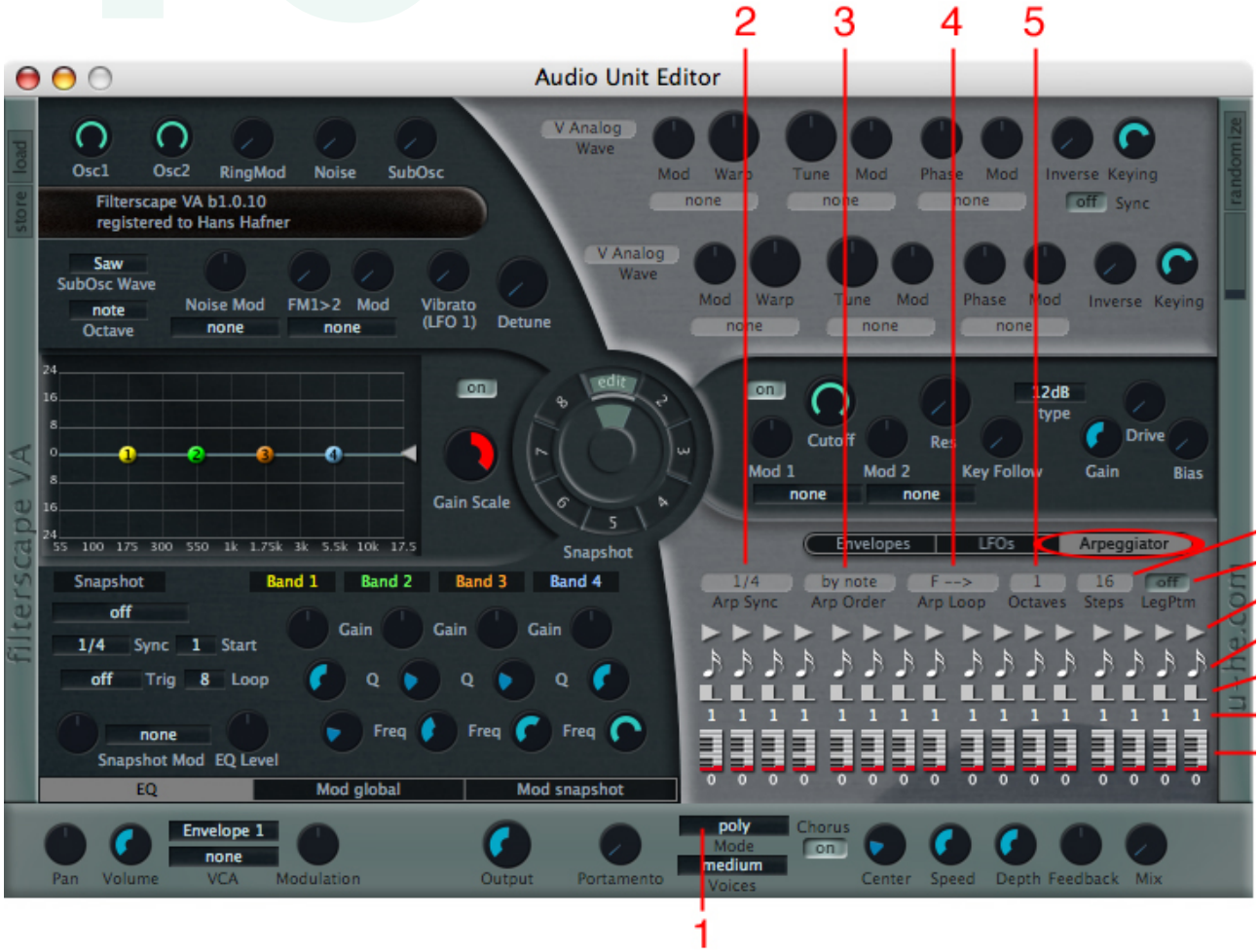
Filterscape VA features 3 LFOs.
Every LFO **(1 and 6)** can be switched off to preserve CPU power.
Every LFO features a variety of waveforms that can be selected from a pop-up menu (2 and 7):

- sine
- triangle
- saw up
- saw down
- square hi-lo
- square lo-hi
- random hold
- random glide

The speed **(3 and 8)** of the LFOs is synced to the host tempo and can be adjusted in musical values.
There is also an option to Restart **(5 and 9)** the LFO on beat one of a measure. This can be set to happen between 1 and 32 measures.
With the phase knob **(4 and 13)** you can adjust the phase of the LFO's wave.

LFO 1 and LFO 2 feature a delay parameter **(12)** that sets the fade-in time of the LFO.
Also, the depth (amplitude) of LFO 1 and LFO 2 can be modulated **(11)** with any of the available modulation sources from the pop-up menu (10).

16 Arpeggiator



1 *Mode selector*
2 *Arpeggiator sync speed*
3 *Arpeggiator order*
4 *Arpeggiator loop*
5 *Octaves*
6 *Number of steps*
7 *Legato/portamento switch*
8 *Note selection*
9 *Note value selection*
10 *Note duration*
11 *Chord selection*
12 *Pitch selection*

The arpeggiator becomes active if you select it from the pop-up menu in the global section **(1)**.

With the Arpeggiator Sync speed **(2)** pop-up you can set the overall speed of the arpeggiator. From this pop-up menu you can select the underlying note value for the arpeggiator. The arpeggiator is always synced to the host tempo.
The Arpeggiator order **(3)** defines the way that Filterscape VA will determine the first note. In 'note' mode the lowest played note is considered the first note. In 'as played' mode the note received first is considered the first note.

The Arpeggiator loop **(4)** determines the direction of the loop. You can either loop:

F --> Loops from left to right
B --> Reverses the loop and plays from right to left
FB <-> Plays forward then backwards
BF >-< Plays backwards then forward

The Octaves selector **(5)** sets the range of the arpeggio. You can choose between:

0 All notes played at the pitch they were originally played
1 Original pitch plus one octave
2 Original pitch plus two octaves

The Steps pop-up menu **(6)** sets the amount of notes the arpeggio plays before jumping back to the beginning. This can be between 1 and 16.

If the Legato portamento switch **(7)** is turned on, then portamento will only happen on the notes that are actually played legato (see note duration control no. 10). In the off position, portamento is controlled by the overall portamento.

The note selection row **(8)** shows a couple of triangles resembling play buttons. These are also pop-up menus and their function can be assigned to the following:

Symbol	*Action*	*Description*
>	Next	The next note of the pressed notes is played
||	Same	Plays the same note as the one preceding it
|<	First	Plays the first note (as explained for control no. 3)
>|	Last	Plays the last note (as explained for control no. 3)

The row with the note value selection **(9)** lets you set the note value of each step. The values are as follows:

1 16th note (default)
2 8th note
3 dotted 8th note
4 quarter note

With this you can actually create very intricate patterns.

The row with the note durations **(10)** lets you set the length of the note. The values go from 0 to 5, with 0 being very short (but it is played) and 5 being legato into the next note. For legato the envelopes will not be retriggered. There is one exception though: if the next step plays more voices (see next paragraph) the envelope will be retriggered.

Chord selection **(11)** sets the number of notes that are played on the keyboard. 1 plays only the first note, 2 plays the first and second note and so on. This way you can have single note and chords mixed and matched in the arpeggio.

The pitch selection row **(12)** with the little keyboard pictograms sets the transposition relative to the played note.

17

Filterscape Q6

Filtercape Q6 is basically a dynamic EQ with morphing modulation capability.

Filterscape Q6 features four envelope followers. For simplicity's sake, we will discuss only one as they all function the same way. Most of these features have already been discussed in the Filterscape section.

1 *On/Off switch*
2 *Envelope Mode switch*
3 *Attenuation*
4 *Smooth*
5 *Attack*
6 *Release*
7 *In – input level meter*
8 *Threshold slider*
9 *Modulation level display*
10 *Analysis mode*
11 *Output*
12 *Frequency analysis slider*
13 *Gain scale*

The on/off switch **(1)** turns the envelope follower on or off.

A special function is the Env Mode **(2)**. When activated, the envelope follower doesn't work as a normal envelope follower, but as an Attack-Hold-Release envelope. Thus, whenever the input level crosses the threshold, the AHR will be triggered (like a gate) and released when the input level falls below the threshold.

The Input level meter **(7)** shows the signal amplitude on the input. The Attenuation knob (3) controls the gain of the signal input. This makes it possible to use very loud and also very soft material.

The Threshold slider **(8)** sets the level at which the envelope follower becomes active. There is no handle, but you can just drag across the threshold display to adjust the threshold.

The Modulation level display **(9)** shows how much modulation value the follower is generating.

The Analysis mode selector **(10)** can be set to the signal (dry), lowpass, bandpass or highpass. The frequency for the analyzer is set with the Frequency analysis slider **(12)** – the frequency corresponds to the frequency in the main EQ display matrix above the sliders. The top slider corresponds to envelope follower 1.

The Attack **(5)** and Release **(6)** parameters control the rate at which the envelope actually follows the input signal (between 1ms and 650ms).

The Smooth parameter **(4)** adds some inertia to the analyzer stage, making it more sluggish. This also affects the attack and release. The smooth parameter makes it easier to control dynamic material. In its extreme position (100%), the analyzer is slowed down dramatically so that the envelope follower changes smoothly over a couple of beats or even bars!

The general output can be set by the output knob **(11)**.

The Gain Scale knob **(13)** can be used to adjust the overall influence of the EQ between -100%, 0% and +100%. With this you can seamlessly fade the effect of the EQ in and out, and you can even reverse the influence of the EQ! For a visual representation of this concept, have a look at the blue line in the EQ view, which represents the actual sound you are hearing, after any modulation and morphing has been added. When the gain scale is set to -100%, this is entirely inverted.

The EQ

The EQ in Q6 is a 6 band EQ with low shelf, four parametric bands and high shelf. The EQ works the same as in Filterscape. There are eight snapshots available that function like the snapshots in Filterscape and Filterscape VA. You can read up on it in the respective section. You also have the possibility of modulating through the snapshot using MIDI controllers or the envelopes as modulation sources. This is also documented in the equalizer section of Filterscape.

There are three panes at the bottom of the interface:

EQ pane:
This represents the setting of the EQ for the selected snapshot. It shows the gain, Q and frequency of each band as well as the snapshot dial modulation. For in-depth descriptions of these please refer to the equalizer section above in the documentation for Filterscape.

Mod global:
This pane is used to globally modulate the frequency and gain of each of the bands. Please refer to the equalizer section above in the documentation for Filterscape.

Mod snapshot:
In this pane you can set up modulation for each band within each snapshot. Please refer to the equalizer section above in the documentation for Filterscape.

19 Applications for Filterscape Q6

One of the most obvious applications is loop mangling and the shaping of rhythmic material.

However, Filterscape Q6 can also be used for traditional mixing purposes such as de-essing and the removal of unwanted pops and blops created by either singing or strumming guitars. There are a few presets included that demonstrate this purpose.

Manual contributors:
Hans Hafner, Urs Heckmann and John Adair

Manual design by:
shee r

sheer@gfxdesign.eclipse.co.uk

Concept, Graphics & Code:
Urs Heckmann

Thanks:
Airy André, Cris 'atariboy' Pearson, Matthew Fischer, Ned Bouhalassa, Thorsten Quandt, Putte, Paul Rodriguez, Colin Fairbairn, Stewart Moroney, James Coker, David Eager, Tony David Cray, Hans Hafner, Donald Gunn, Frank Hoffmann, Chris Scheidel, Richard Brackin, Anthony Burgess, Scott Gilfix, jb, Andy Davis, John Adair, Jeremy Burchett, Ron James, Matthew Johnson, Peter Isaacs.

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