

VECTOR

User guide and manual

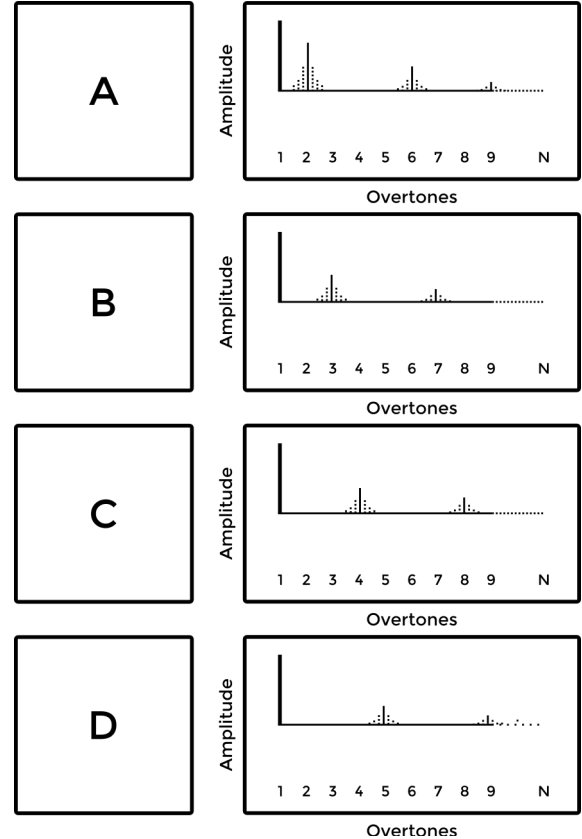
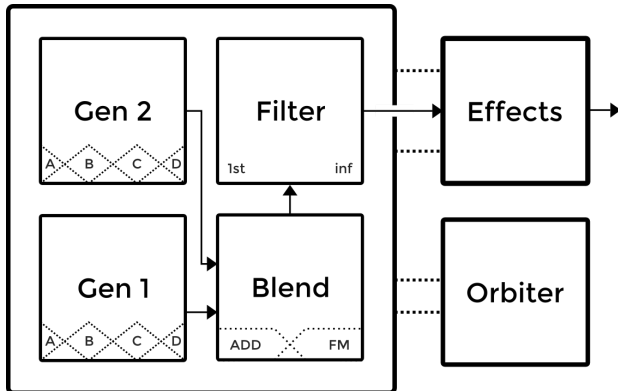
Revision 0

Synthesis

Vector uses additive synthesis to create various waveshapes. There are four overtone patterns – **A**, **B**, **C** and **D**. The patterns are further affected in several ways by **Detune** when in **Mono/Unison** mode, **Chorus Depth** etc.

Overtone Blend changes the way the **Overtone Gen 1** and **Overtone Gen 2** are combined. Additive in the first half, frequency cross-modulated in the second.

After the waveform is generated, each voice is processed by a separate resonant low pass **Filter**.



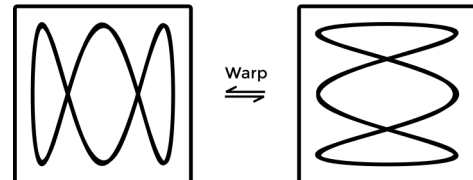
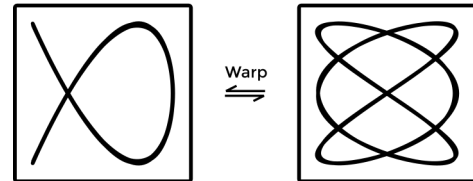
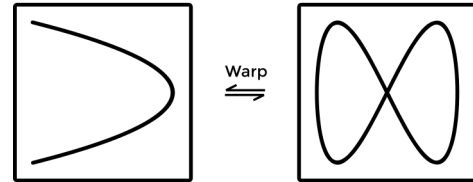
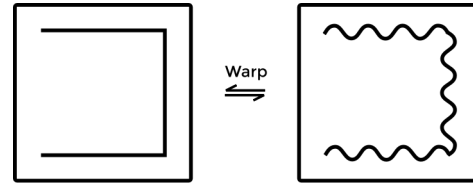
Warp

The **Warp** module distorts the orbiter's figure of motion. Three basic shapes with increasing complexity can be bent in real time by dragging a widget on the touchscreen interface.

Warped shapes are always periodic and synchronized with the master tempo, the **Suborbit** can be unsynced to roll freely.

When **Retrigger** is activated, the **Orbiter** will move to its starting position on note input or after each cycle of the **Arpeggiator** sequence.

You can switch to **ADSR Mode**, in which the orbiter follows a figure where all stages of the envelope cover a different side of the **2D Space**.



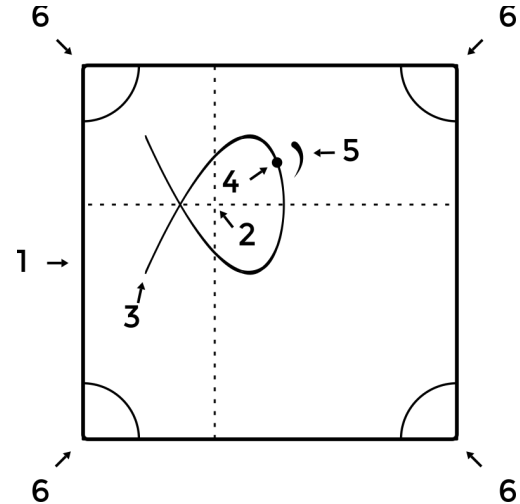
2D Space

There is a set of synthesis parameters at each corner of the universe, or rather, of the 2D space where the final mix of parameters for the synthesis engine is determined by the position of the green orb.

The green orb orbits around the blue orb in a circular motion. This motion is referred to as **Suborbit** and its speed can be synced to the host tempo.

The bigger orb follows a warped orbital motion around the user-set centre. The shape of this motion is determined by the **Warp** module.

The centre point and other orbital details can be set from the touchscreen interface, such as the orbits' sizes and speeds.



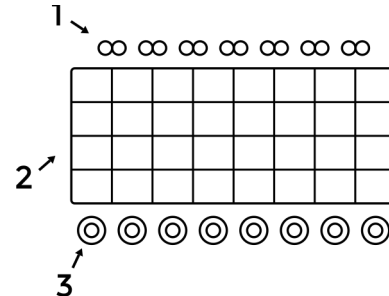
1. 2D orbiter space
2. Centre point of the orbiter shape
3. Start of the shape, phase zero
4. Orbiter position on the shape
5. Suborbiter in motion around the orbiter
6. Four corners which contribute to the final mix of the synthesis engine parameters.

Arpeggiator

The **Arpeggiator** records notes from the input and plays them out sequentially, with multi octave transpositions. The **Arpeggiator** note memory can be temporary, **Latched**, or **Step Recorded**. The order in which they are played out can be sorted **Up**, **Down** or **Shuffled**.

There are three **Arpeggiator** randomizers: one affects the octave placement in the sequence, the second randomly changes the time signature to which the arpeggiator is tied, and the **Humanize** parameter changes the gate length for each note.

Depending on the **Feed** configuration (described in *Hardware User Interface*), the **Arpeggiator** can play in the background.



1. The grid represents the arpeggiator sequence with octaves spread vertically.
2. Note velocity of each step in the sequence.
3. Joins the adjacent notes into one.

VECTOR

2

Envelope



Attack



Decay



Sustain



Release

3

Input



Corner Select



Control



Mod

Suborbit Size
Detune



Suborbit Speed
Glide

5



Vibrato Speed



Vibrato Depth



Tremolo Speed



Tremolo Depth



Overtone Gen 1
Drive Amount



Overtone Gen 2
Drive Colour



Overtone Blend
Reverb Size



Filter Cutoff
Reverb Colour



Filter Resonance
Master Resonance



Delay Time



Delay Feedback



Chorus Speed



Chorus Depth



Chorus Colour

1

Mixer



Reverb



Master



Chorus



Delay

4

Arpeggiator



Note Length



Feed



Active



Arp

Both

Delay

Feed Direction

6

Sync



Focus



Orbiter



Vibrato and
Tremolo



Tap



Delay



Chorus

Hardware User Interface

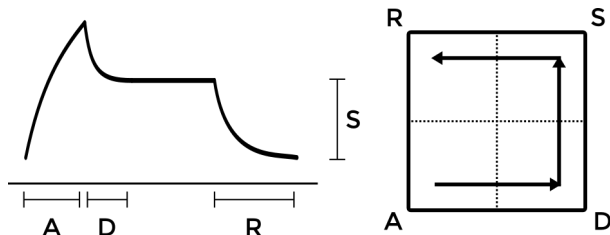
The hardware layout closely follows the arrangement of controls on the screen. The most immediate and tactile functionality is presented in hardware, other is available on the touchscreen.

1. Mixer

Controls the amount of the individual effects' outputs mixed with the dry signal. The **Master Volume** is the final stage of the audio chain.

2. Envelope

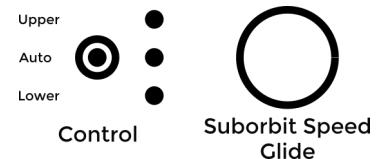
ADSR amplitude envelope, triggered per-voice. When the **Warp** is in **ADSR mode**, the orbiter moves along the four corners of the **2D Plane** and is warpable.



3. Input

Hold the **Corner Select** button to select which of the four corners are currently under editing. You can tap or sweep to select any combination. When a parameter is modified, it is synchronized across all selected corners.

Some rotary encoders have more than one function. In that case the two functions are written below the encoder. The **Control** switch sets which function is used. In **Auto** mode, the function follows the GUI interface screen for convenience.



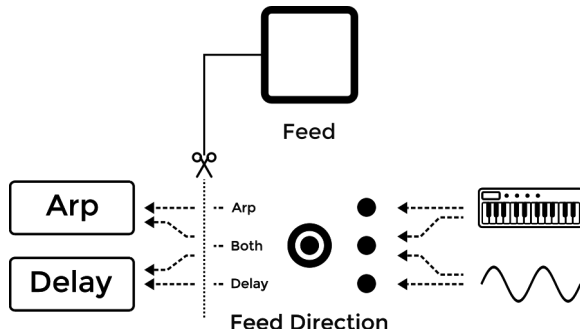
In the illustrated case above, the encoder either functions as **Suborbit Speed** or **Glide**.

4. Arpeggiator and Feed

Turn on the **Arpeggiator** with the **Enable** switch. **Humanize** and **Note Duration** control the duration of the gate.

Feed Direction controls if the **Arpeggiator** should record input notes and if **Delay** should record input audio.

Feed cuts the connections altogether, but both **Arpeggiator** and **Delay** modules will continue processing normally. When **Feed** is active, the respective LED is flashing.



5. Mod

Spread **Gen1** and **Gen2** frequencies when in **Mono/Unison** mode or by a fixed interval when in **Dual** mode with **Detune**, depending on **Input** setting in the **Mod Screen**. **Glide** controls the portamento time when **Vector** is set to **Mono/Unison** mode.

6. Sync

Some modules can be synchronized with the host tempo by flipping the toggle switches. When a module is synchronized, it snaps to the closest time signature.

The **Focus** button is an extension of the orbiter section. You can easily shuffle through all the corners' synthesis parameters. Hold to restore the original state.

The master **BPM** can be tapped on the **Tap** button, set manually in the touchscreen interface or synced via MIDI.

Presets

To save a preset into **Vector's** internal memory, go to the **Presets Screen**, select a slot and tap on the **Save** button. Similarly with **Load** and **Rename**, select the desired preset and then choose the action.

When you load a preset, the hardware toggle switches need to be updated manually. When a toggle switch is not in the correct position, its LED will be blinking occasionally until you synchronize the states.

When saving, always wait until the confirmation pops up, otherwise the presets may get corrupted. The top presets are fixed and cannot be overwritten.

Updating firmware

To update **Vector** from the GUI, connect **Vector** to a local network with Internet access and follow the instructions on the **System Screen**.

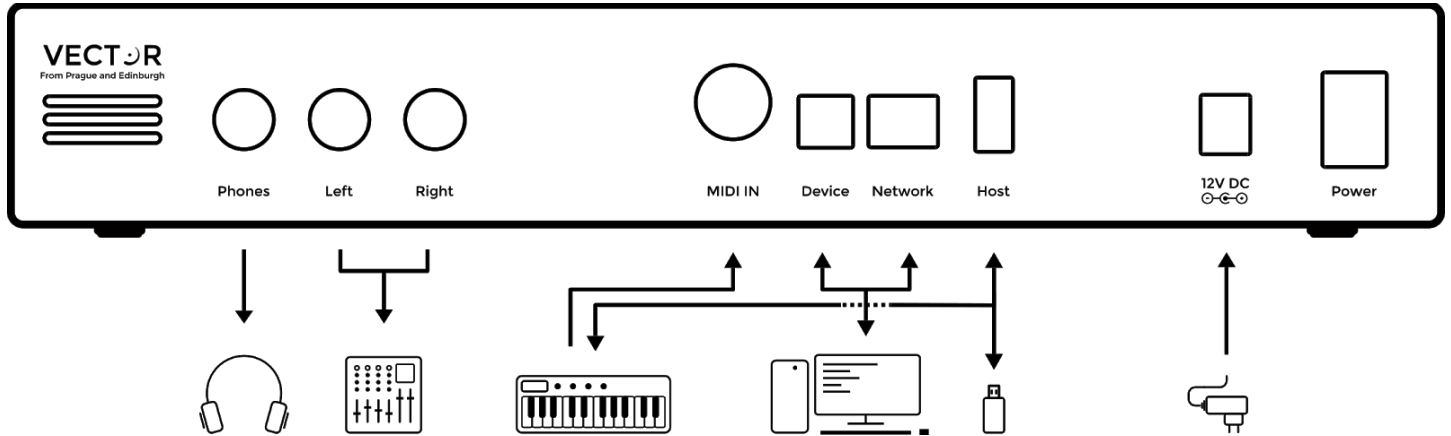
To flash from a USB drive, burn the system image file on a USB drive, and let **Vector** boot from it.

Then, follow the instructions on the **System Screen**.

Miscellaneous

- Instantly erase the **Delay's** tape contents using the **Dustbin** icon.
- You can play over the **Arpeggiator** and looped **Delay** by appropriately setting the **Feed** section.
- The **Overdrive** can be turned into a parallel band-pass filter with the **Bypass** icon. Then, the **Drive** parameters sets the mix level, otherwise the overdrive amount.

Connectivity & Specs



- 7" capacitive touchscreen display
- ARM® Cortex™-A53
- 32-bit DAC, 48kHz, -105dB SNR
- Headphone amplifier
- Runs Linux with a realtime kernel
- USB MIDI I/O host
- Ethernet (LAN) connection
- 10-voice polyphony
- Easy firmware updates over the network or with a USB flash drive
- MIDI DIN input
- MIDI USB I/O device

Health & Safety

Use common sense when handling **Vector**, standard electronic devices guidelines apply, which, among others, are:

- No liquids
- Use only regulated and voltage-matched power supply
- Do not cover the ventilation holes
- No funny business

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Play.