

HORA MUSIC

USER MANUAL

VCO-VCF-VCA

MODULATIONS

PROCESSORS

PLUGINS FOR VCV RACK 1.0

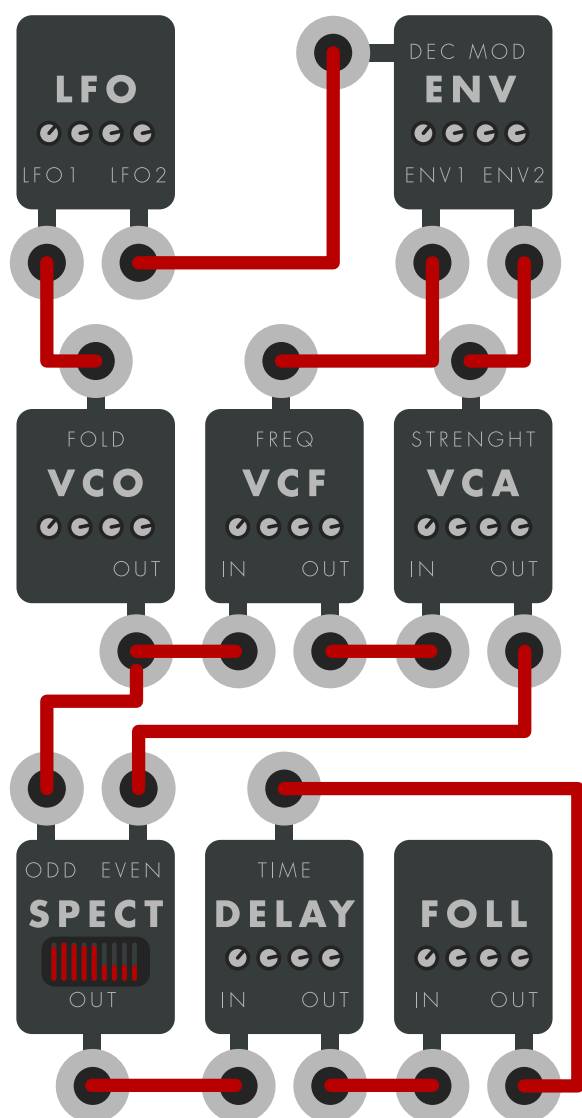
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MAIN CONCEPT

All the modules in this manual are made to work together for a complete synthesis chain management on different scales:



MODULATIONS

modulation source generator

VCO-VCF-VCA

complete synth voice ensemble

PROCESSOR

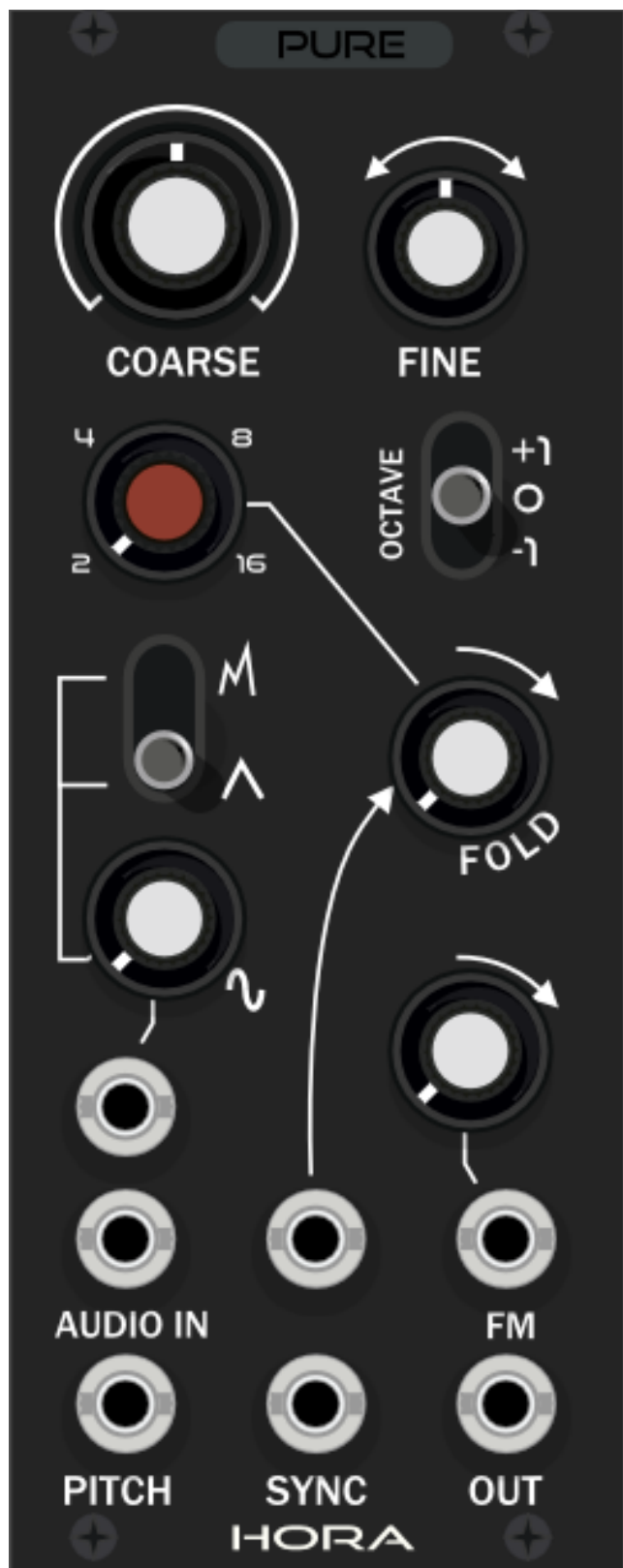
audio signal treatment and special FX

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USER MANUAL

VCO - VCF - VCA

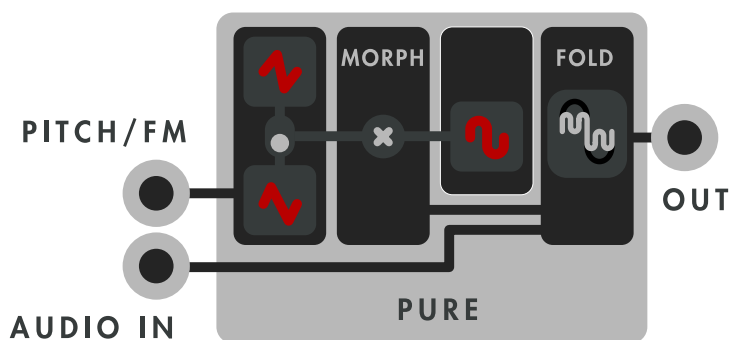
PURE STRUCTURE



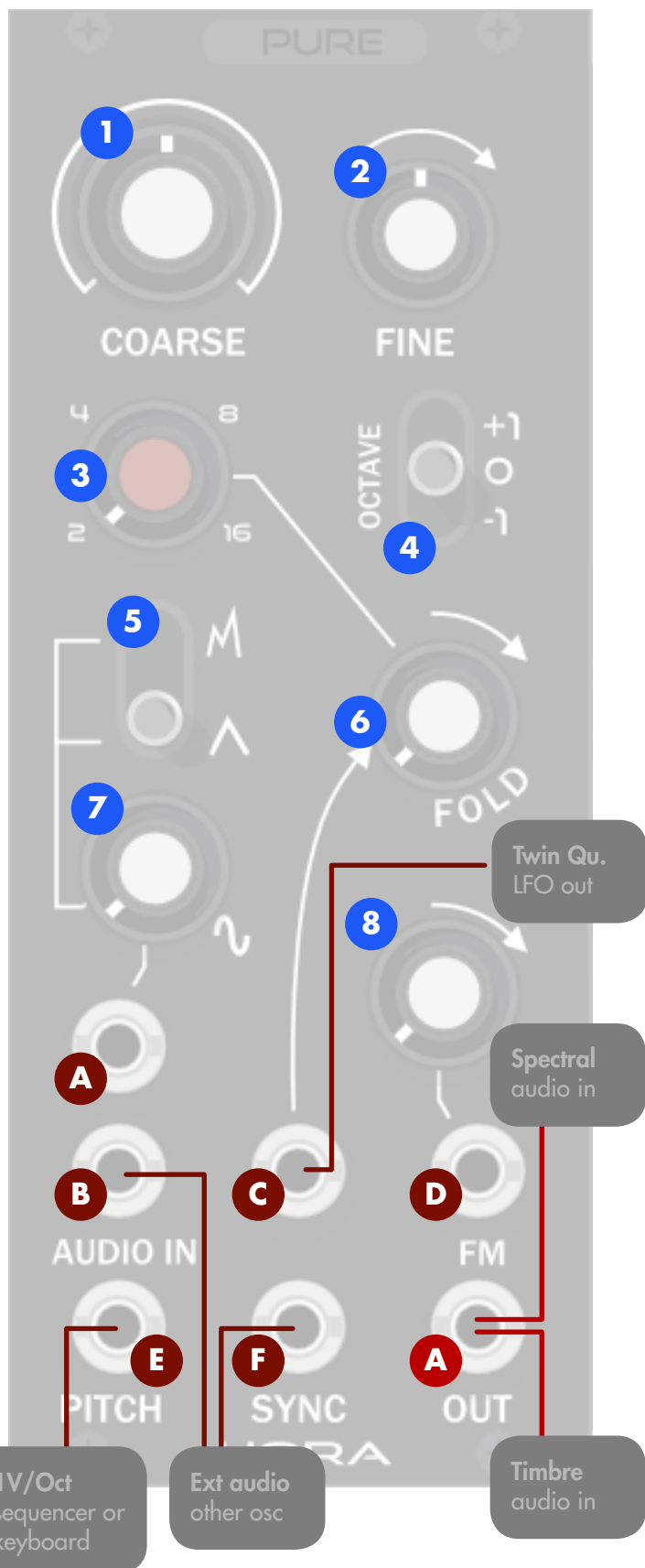
Pure VCO is a voltage-controlled oscillator that generates complex waveforms. The core wave can be morphed from sine to triangle and then is folded in a specific way to give harmonics without sharp edges in the folded waveform.

A switch allows to use another type of folding that create unbalanced folding with different amplitudes in the resulting ripples. This creates different rich harmonics in a way that avoid aliasing.

Thanks to its audio input, the module can also be used as a voltage-controlled wave folder that can add harmonics and distortion to the incoming signal in a very specific way.



PURE FEATURES



CONTROLS

- 1** Coarse
Set the general pitch
- 2** Fine
Set the precise pitch
- 3** Multiplier
how many time the wave is folded
- 4** Octave
Set the pitch by octaves
- 5** Triangle switch
triangle wave or unbalanced folding
- 6** Fold
fold intensity
- 7** Sine/tri morph
fade between sine and triangle
- 8** FM
pitch modulation

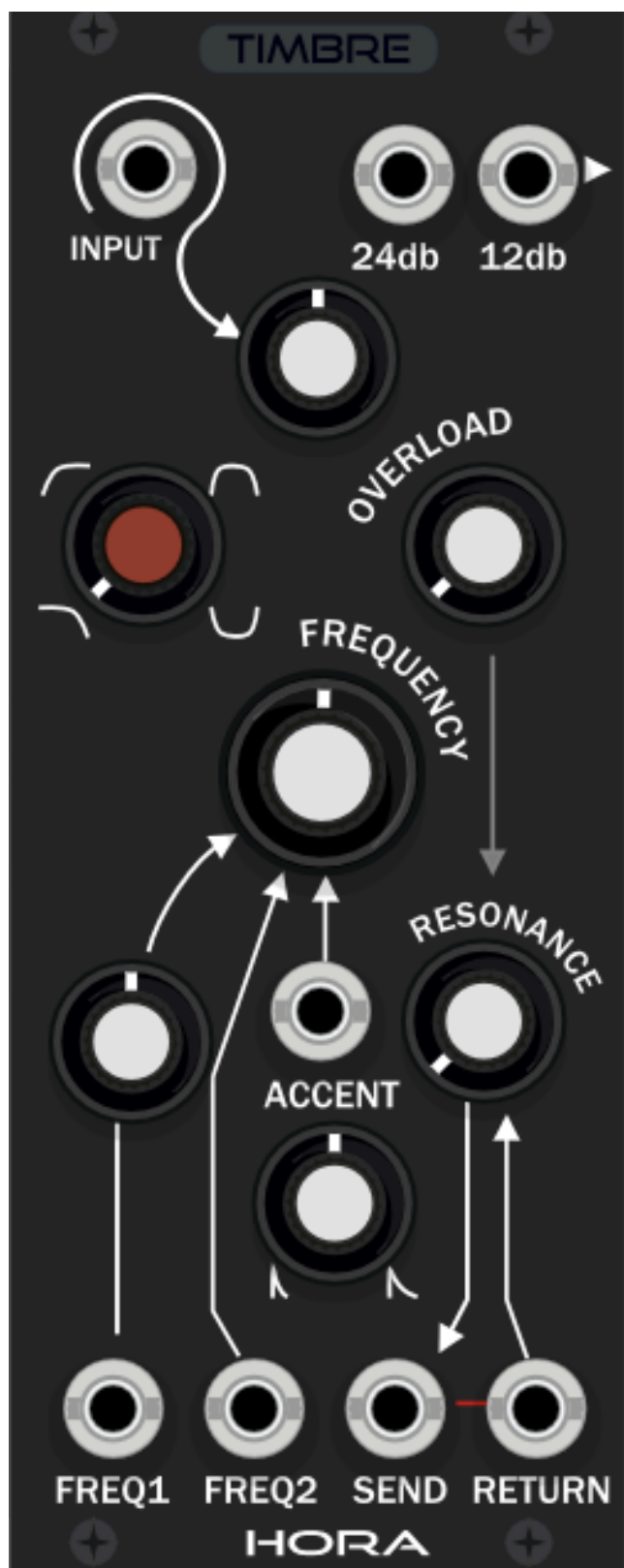
INPUTS

- A** Sine/tri morph
fade CV input
- B** Audio in
wavefolder external input
- C** Fold
fold intensity CV input
- D** FM
pitch modulation CV input
- E** Pitch
Pitch control 1V/Oct CV input
- F** Sync
Oscillator phase reset gate input

OUTPUTS

- A** Out
osc+wavefolder output
wavefolder output when audio in connected

TIMBRE STRUCTURE



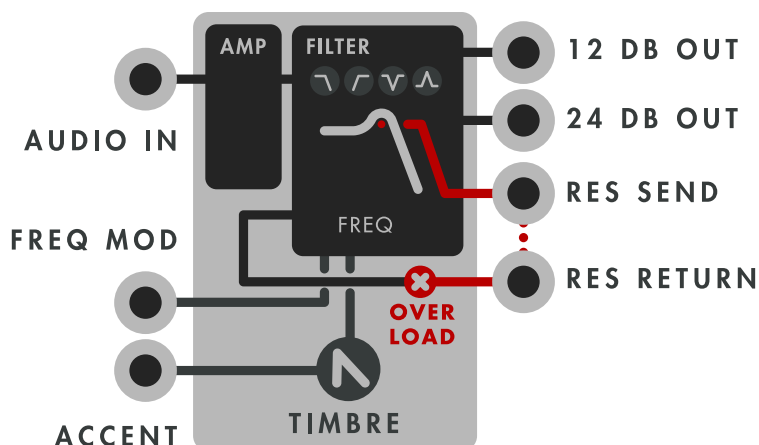
Timbre is a 4 modes VCF inspired by experiences on analysing, copying and modifying real hardware OTA VCFs.

The filter is not based on VCV filter algorithms but developed with Vult (trans-compiler for high performance DSP, developed by Leonardo Laguna Ruiz).

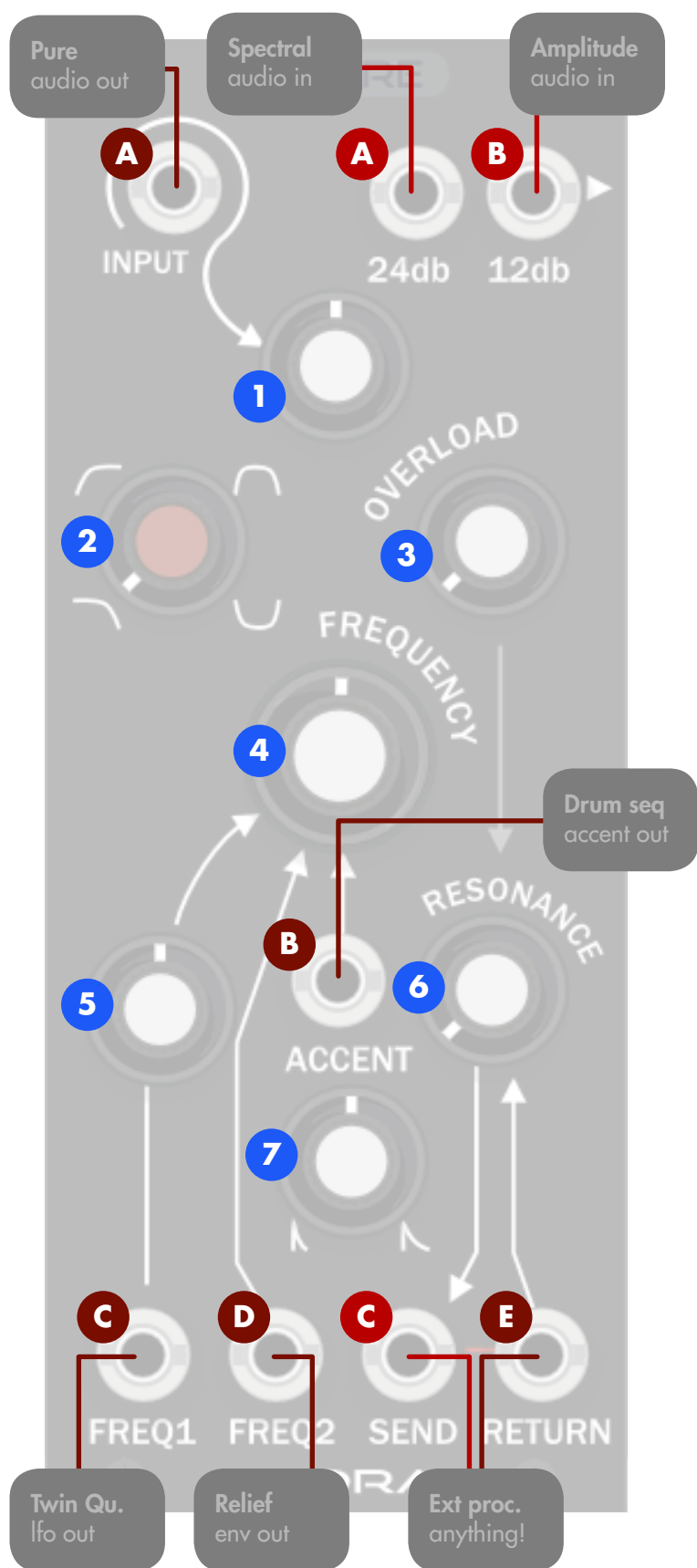
The algorithm offers non-linearity into the gain structure of the filter and a specific type of resonance. The resonance can also be "overloaded", for a warm bass sound in low pass mode.

As the development stage allowed to try several interesting sound path circuitry for the resonant feedback loop (linear, non-linear, clip), the module allows the user to do the same. The filter offers send and return in/out that bypasses the internal feedback loop and allows to modify it with sound effects or VCA to get voltage-controlled resonance.

Another specific feature of this filter is the accent input that can be used for XoX bassline sequences.



TIMBRE FEATURES



CONTROLS

- 1** **Gain**
Input level
- 2** **Mode**
set the filter mode: LP HP BP Notch
- 3** **Overload**
resonance feedback
- 4** **Frequency**
filter cut off frequency
- 5** **Freq. mod**
filter frequency modulation attenuator
- 6** **Resonance**
resonance of the filter
- 7** **Accent**
internal envelope boost

INPUTS

- A** **Input**
signal to be treated
- B** **Accent**
Internal envelope trigger input
- C** **Freq 1**
Filter frequency Cv input 1
- D** **Freq 2**
Filter frequency Cv input 2
- E** **Return**
Resonant feedback loop return

OUTPUTS

- A** **24 db**
filter output with 24db/Oct slope
- B** **12 db**
filter output with 12db/Oct slope
- C** **Send**
Resonant feedback loop send

AMPLITUDE STRUCTURE



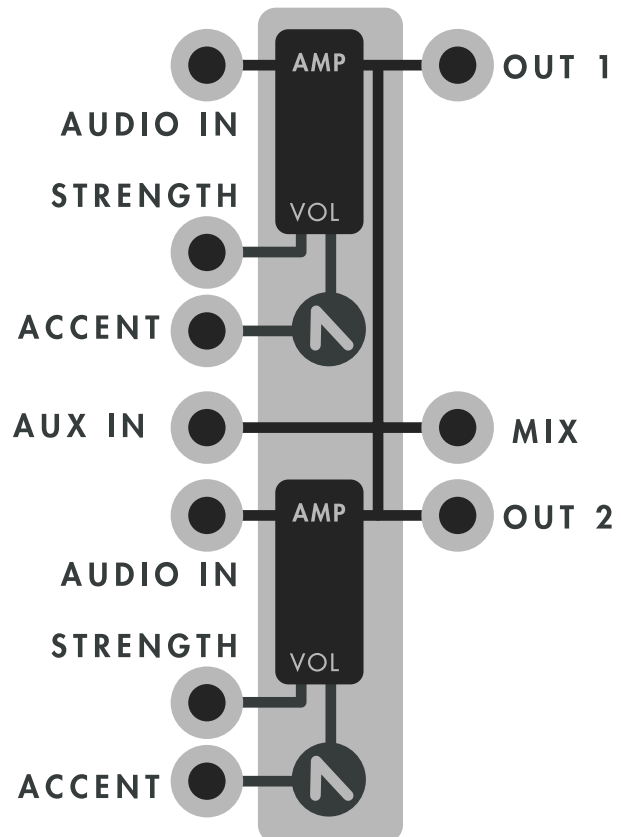
Amplitude is made of two VCAs that offer voltage-controlled attenuation - inversion (called strength). The two VCAs outputs and an auxiliary input are sent to a mixer. The aux input has a dedicated attenuator.

It also includes a led quadrant on each VCA :

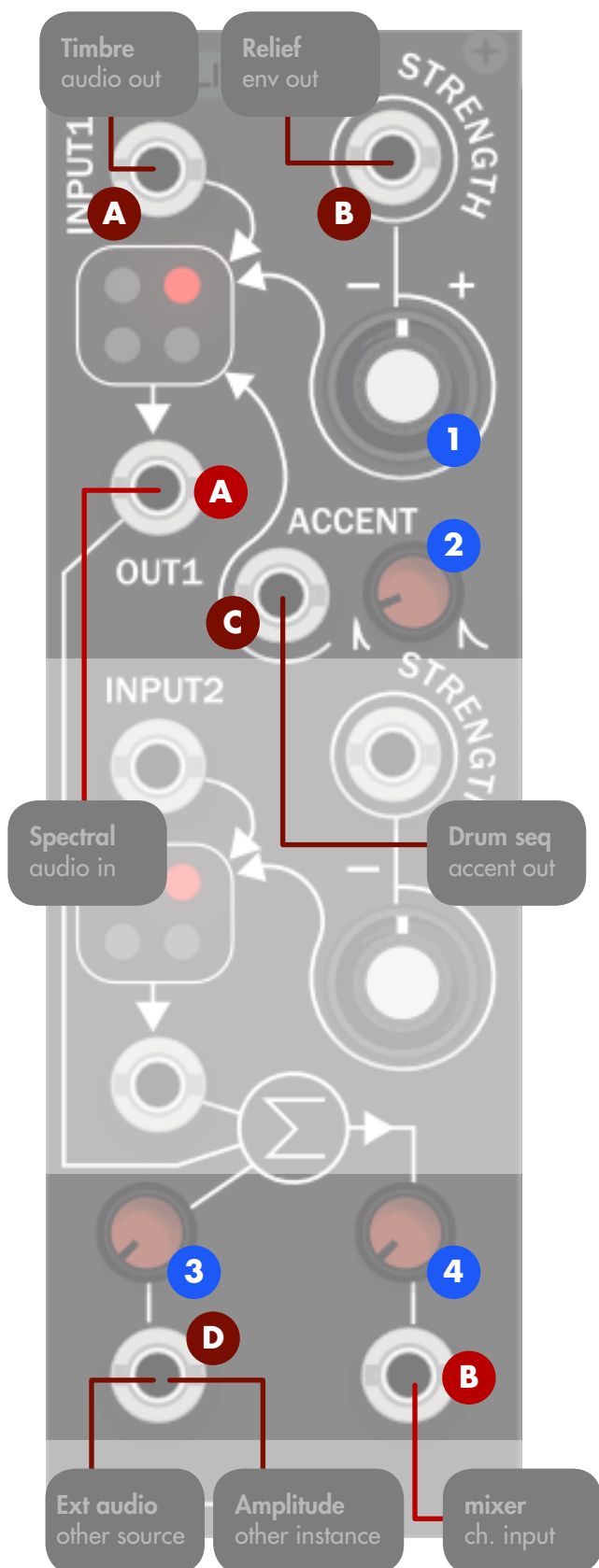
- Vertical position displays the phase and amplitude of the incoming signal (positive or negative)
- Horizontal position displays the phase and amplitude of the control signal (strength).

Like on the "timbre VCF" there is an accent input for x0x style sequences.

This module is more than a VCA and can be used as a mixer, attenuator, inverter, VC polariser,...



AMPLITUDE FEATURES



CONTROLS

- 1 Strength**
amplitude/phase of the signal
- 2 Accent**
internal envelope boost
- 3 Aux**
additional input level
- 4 Mix level**
mix of the 3 treated signals

INPUTS

- A Input**
signal to be treated
- B Strength**
amplitude/phase CV input
- C Accent**
Internal envelope trigger input
- D Aux**
additional input

OUTPUTS

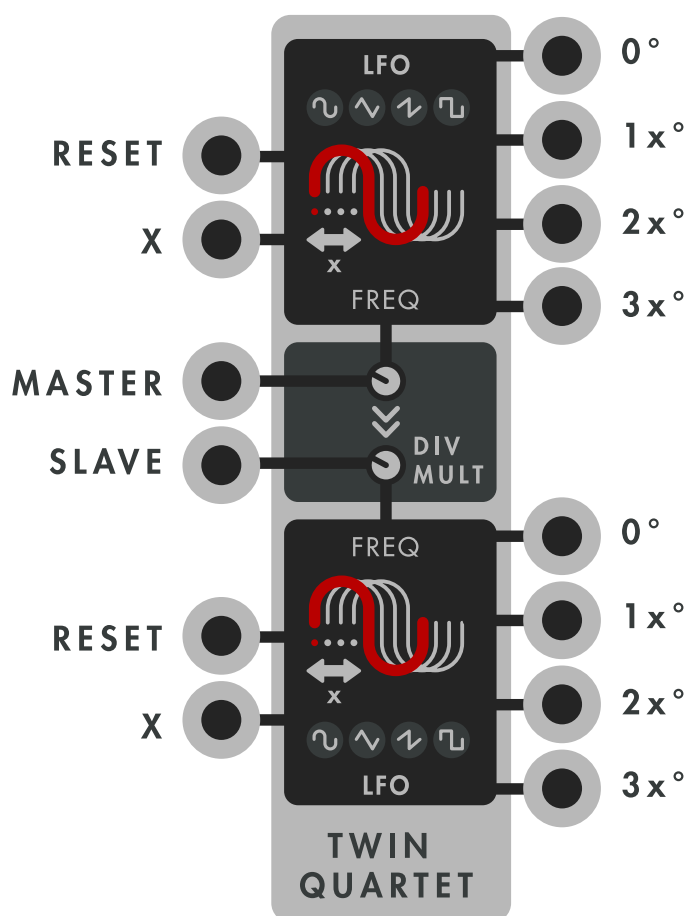
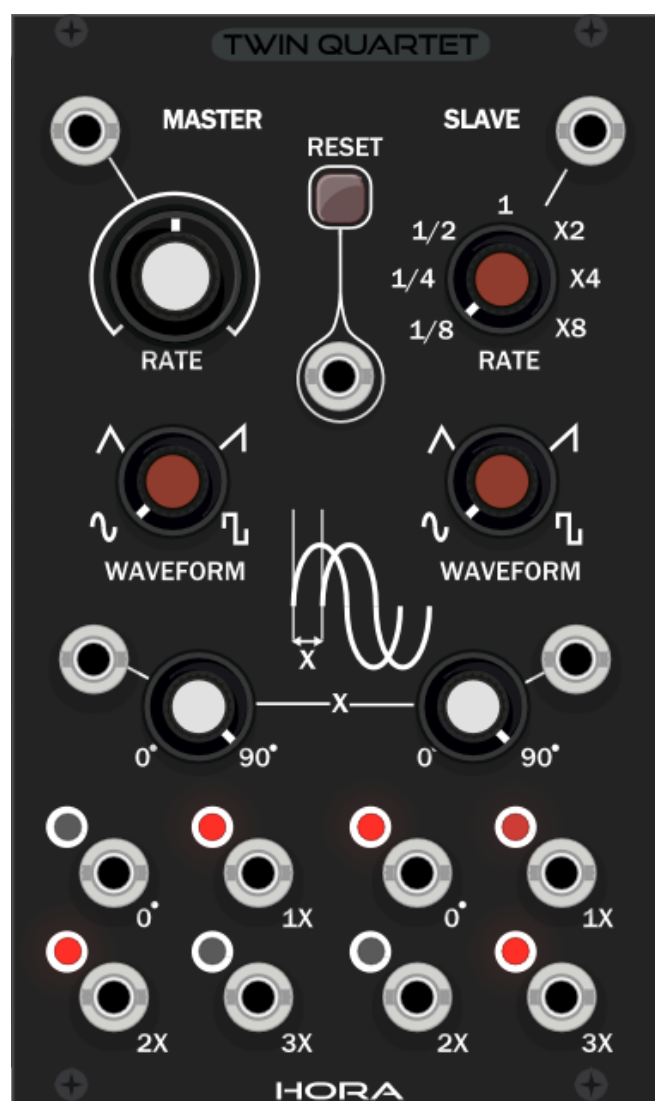
- A Out**
Treated signal
- B Mix**
mix of the 3 treated signals

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USER MANUAL

MODULATIONS

TWIN QUARTET STRUCTURE



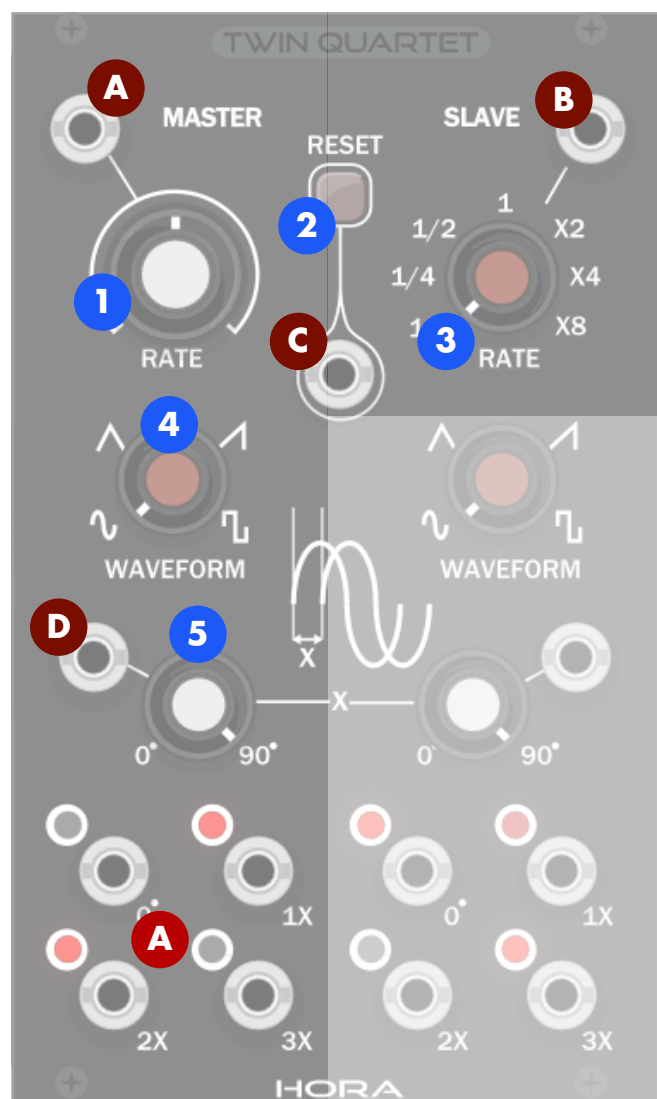
Twin Quartet is a dual quadratic LFO. It can be used for rotary effect, Shepard tones, stereo/quadrasonic control.

The core of the module has two separated LFO with a selectable waveform for each. They are linked by their frequencies.

The left LFO (master) has a fully controllable frequency, while the frequency of the right LFO (slave) uses a multiple of the master LFO from /8 to x8.

Each LFO has 4 phase state outputs. The phase (X) can be set by the user or by CV control, from 0° to 90° between each output.

TWIN QUARTET FEATURES



CONTROLS

- 1** Master rate
frequency of the master LFO
- 2** Reset
phase reset of both LFOs
- 3** Slave rate
slave LFO freq. div. or mult. by the master freq.
- 4** Waveform
selector for each LFO: sine, tri, saw, square
- 5** X
With of the phase between each output

INPUTS

- A** Master rate
frequency of the master LFO CV modulation
- B** Slave rate
div/mult of the slave LFO CV modulation
- C** Reset
phase reset of both LFOs trig input
- D** X
Phase modulation input

OUTPUTS

- A** Outs
4 ouputs LFO
with X° of phase between each output

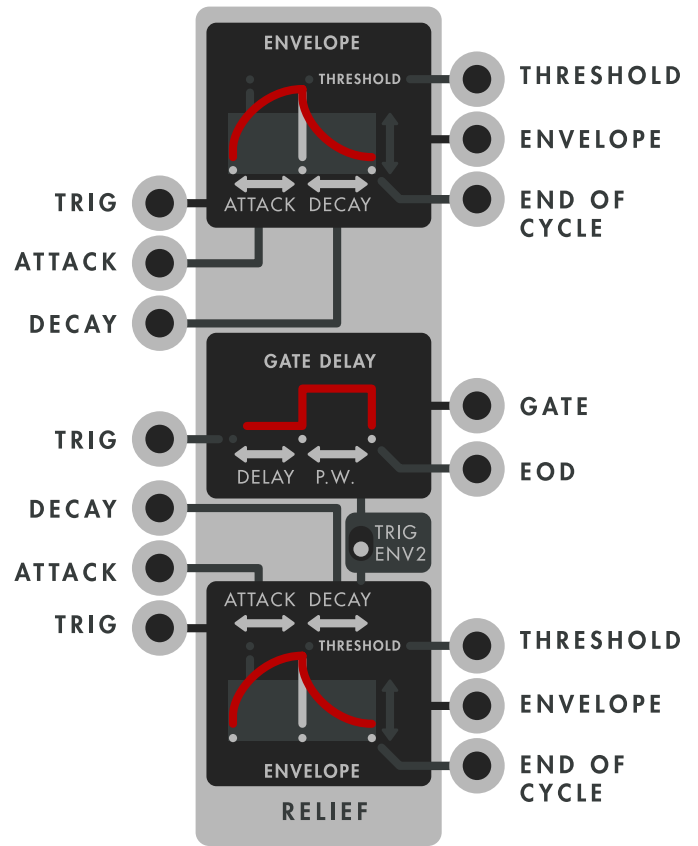
RELIEF STRUCTURE



Relief is a dual complex envelope generator with level detector and gate delay. It can be used for bouncy effect and complex triggering.

Each of the envelope generator has two classic stages: attack and decay, both CV controllible.

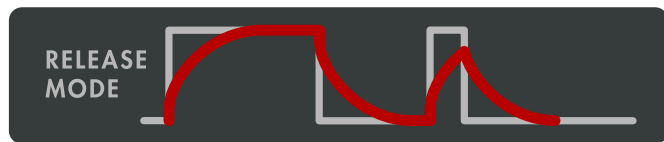
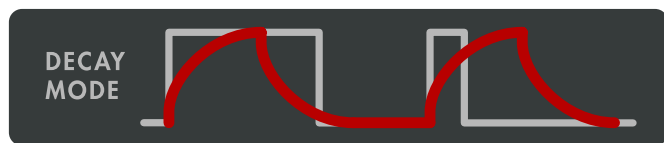
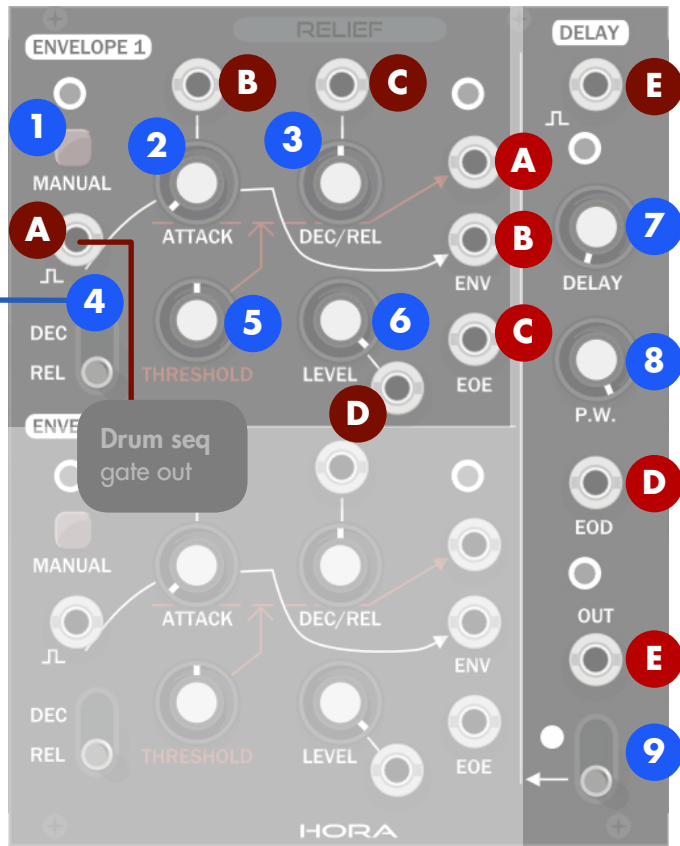
Once the cycle is completed, there will be a trigger emitted out of the end of cycle output. This signal can be used to trigger any other event. It can be used to trigger the next envelope for a complex 4 stages envelope. It can also be self-patched to the gate input to create a lfo.



The level detector will create a gate signal whenever the envelope signal is above a defined threshold.

Relief also features a gate delay that can be used to convert a trigger into a gate or to postpone it. The output of the gate delay can trigger the 2nd envelope by using the toggle switch.

RELIEF FEATURES



CONTROLS

- 1** **Manual**
push to trigger the envelope
- 2** **Attack**
length of the attack stage
- 3** **Decay**
length of the decay stage
- 4** **Dec/release**
select between AD and ASR mode
- 5** **Threshold**
set the value of the level detector
- 6** **level**
amp of the envelope
- 7** **Delay**
length that separates the trigger from the gate
- 8** **P.W.**
length of the gate
- 9** **Switch**
selects to trigger envelope 2

INPUTS

- A** **Gate in**
trigger the envelope
- B** **Attack**
modulation length of the attack stage
- C** **Decay**
modulation length of the decay stage
- D** **level**
modulation amp of the envelope
- E** **trig in**
trigger the gate delay

OUTPUTS

- A** **Threshold**
gate output when the envelope cross the threshold
- B** **Env**
envelope output
- C** **EOE**
trig output at the end of the envelope
- D** **EOD**
trigger output at the end of the delayed gate
- E** **Delay out**
delayed gate output

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PROCESSORS

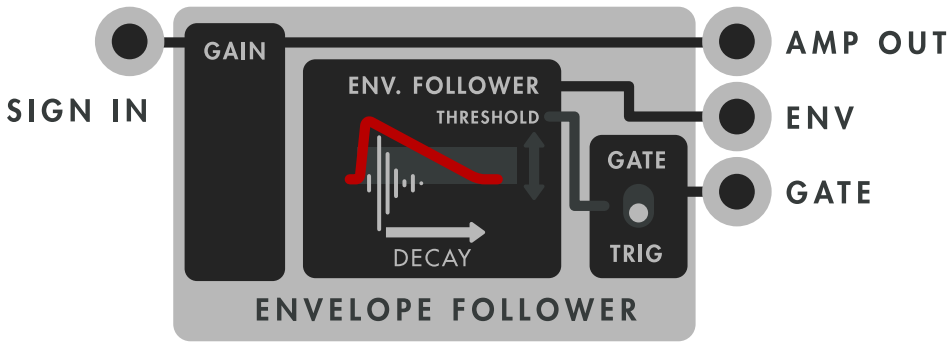
FOLLOWER STRUCTURE



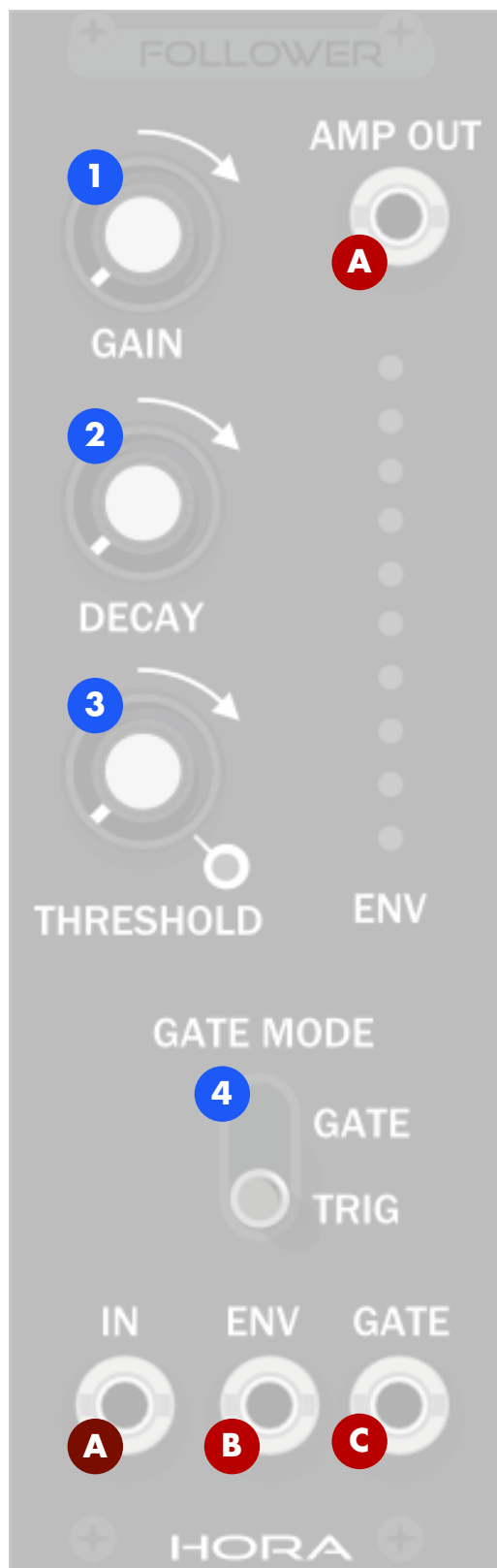
The Hora Follower creates an envelope signal that follows the general amplitude of an audio source.

The speed of the follower (decay) can be set by the user.

The module also offers a gate or trigger input that opens whenever the envelope passes over a defined threshold.



FOLLOWER FEATURES



CONTROLS

- 1** **Gain**
input level
- 2** **Decay**
Speed of the follower
- 3** **Threshold**
set the value of the level detector
- 4** **Gate mode**
select between gate and trig for the level detector

INPUTS

- A** **In**
audio signal to be followed

OUTPUTS

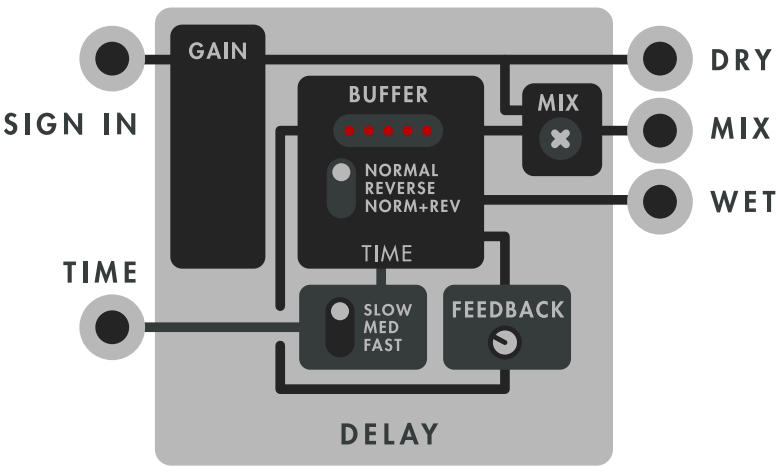
- A** **Amp out**
amplified audio signal
- B** **Env**
CV signal generated by following the amp of the audio signal
- C** **Gate**
emits a gate signal when the envelope crosses the defined level threshold.

DELAY STRUCTURE

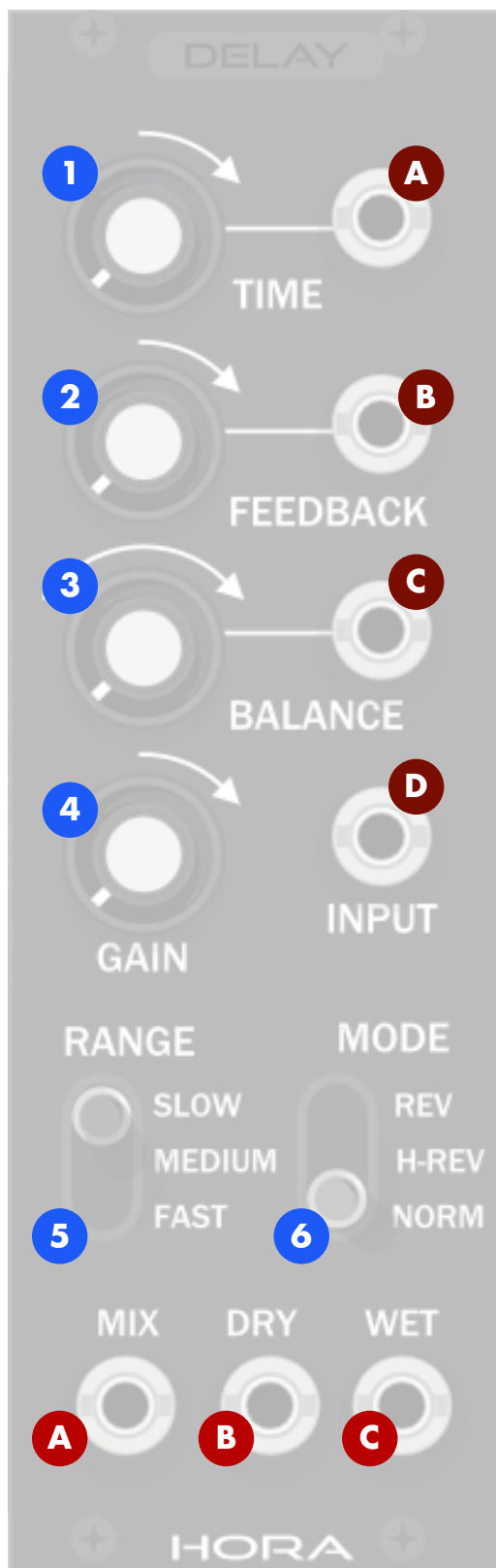


The Hora delay is a voltage-controlled audio delay effect.

The buffer of the delay can be read in 3 different ways: normal, reverse and half reverse (forward and then backward).



DELAY FEATURES



CONTROLS

- 1** Time
length of the delay
- 2** Feedback
amount of repetition
- 3** Balance
mix between wet and dry signal
- 4** Gain
input level
- 5** Range
general length of the delay
- 6** Mode
reading mode of the buffer

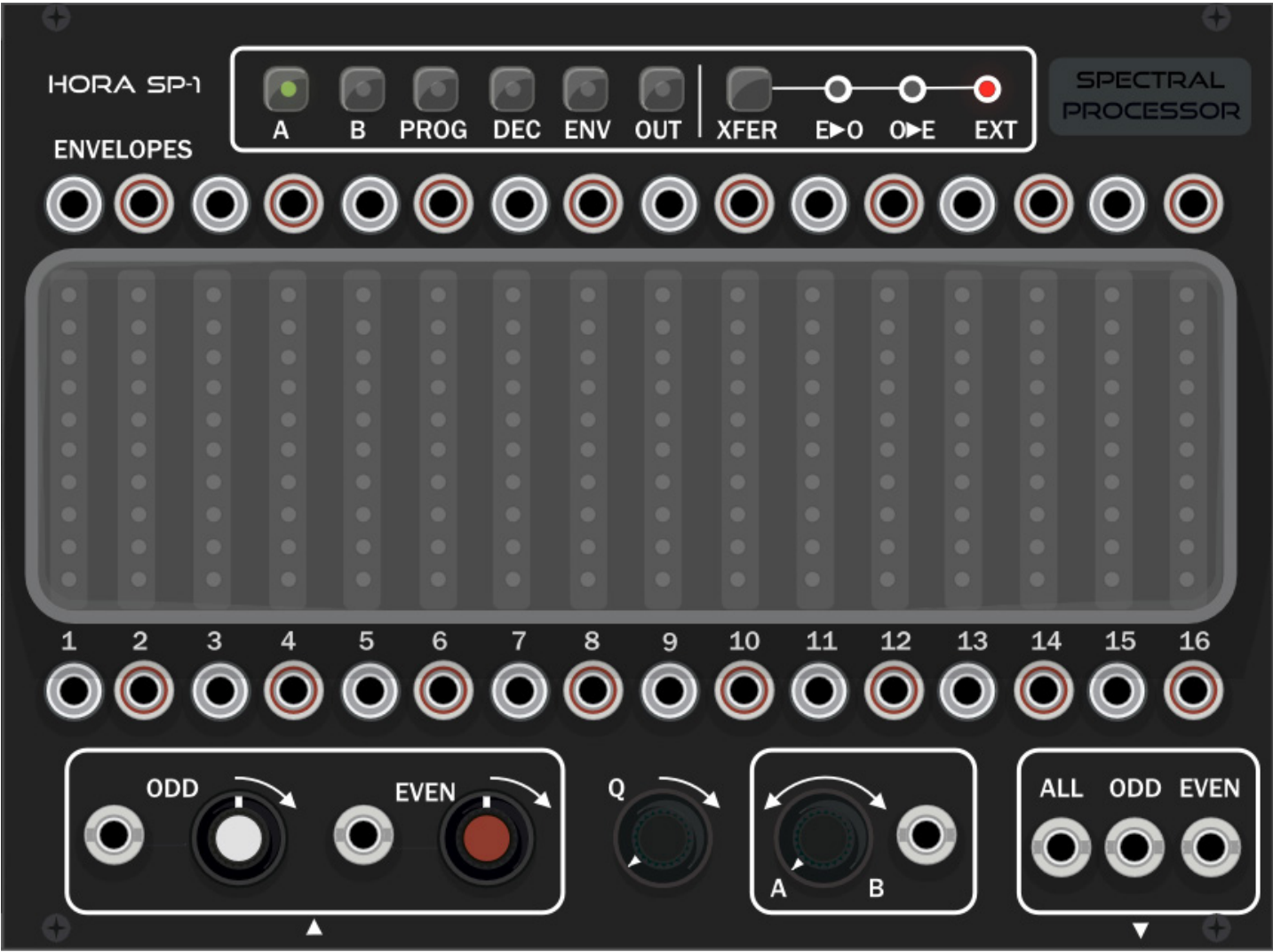
INPUTS

- A** Time
length of the delay CV mod input
- B** Feedback
amount of repetition CV mod input
- C** Balance
mix CV mod input
- C** Reset
phase reset of both LFOs trig input
- D** In
audio signal to be repeated

OUTPUTS

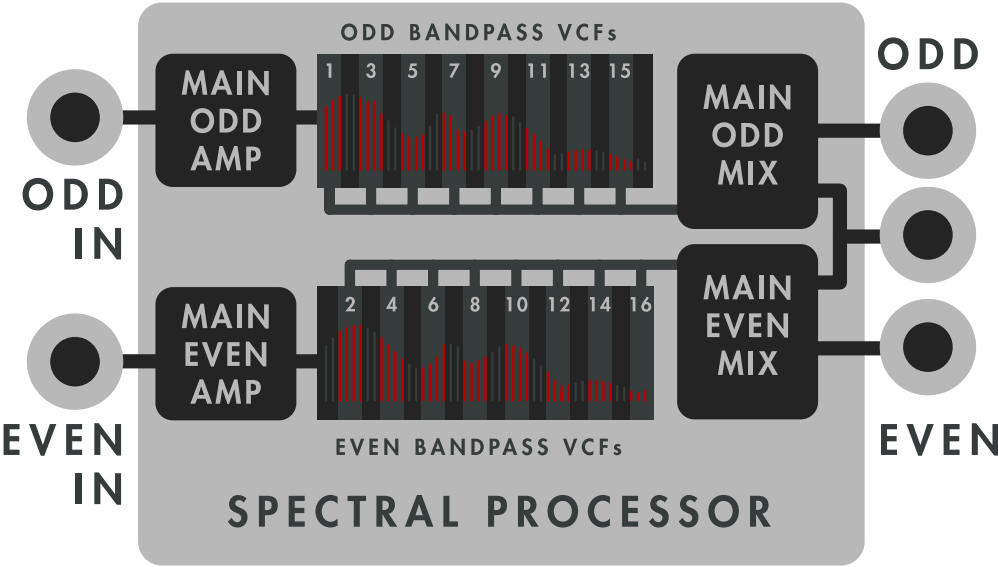
- A** Mix
Balance dependent audio output
- B** Dry
unaltered signal audio output
- C** Wet
repetitions only audio output

SPECTRAL CONCEPT



The spectral processor is a 16-channel bandpass filter, it can work as a real-time performance filter, a programmable compound equaliser and even as a spectrum transferring vocoder.

It shares the same interface as the Buchla 296e and offers the same features such as Xfer or voltage-controlled A-B morphing.



SPECTRAL FILTERS

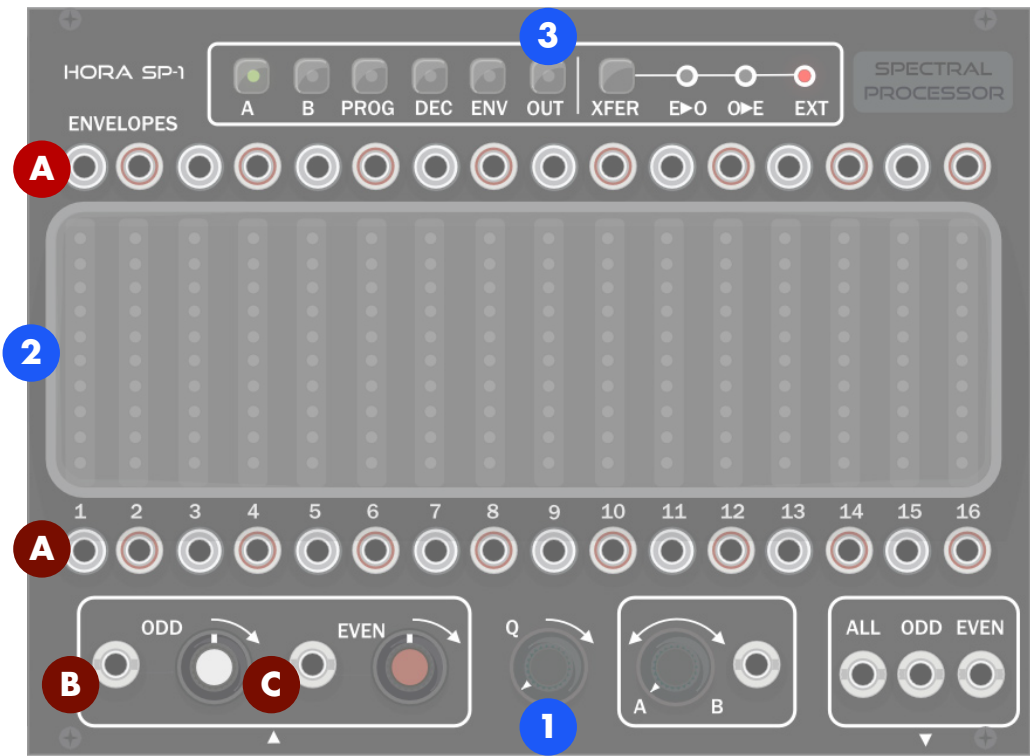
MULTI BAND FILTERS

The spectral processor splits the incoming signal in 16 separated fixed bandpass filter with general Q control. **1**

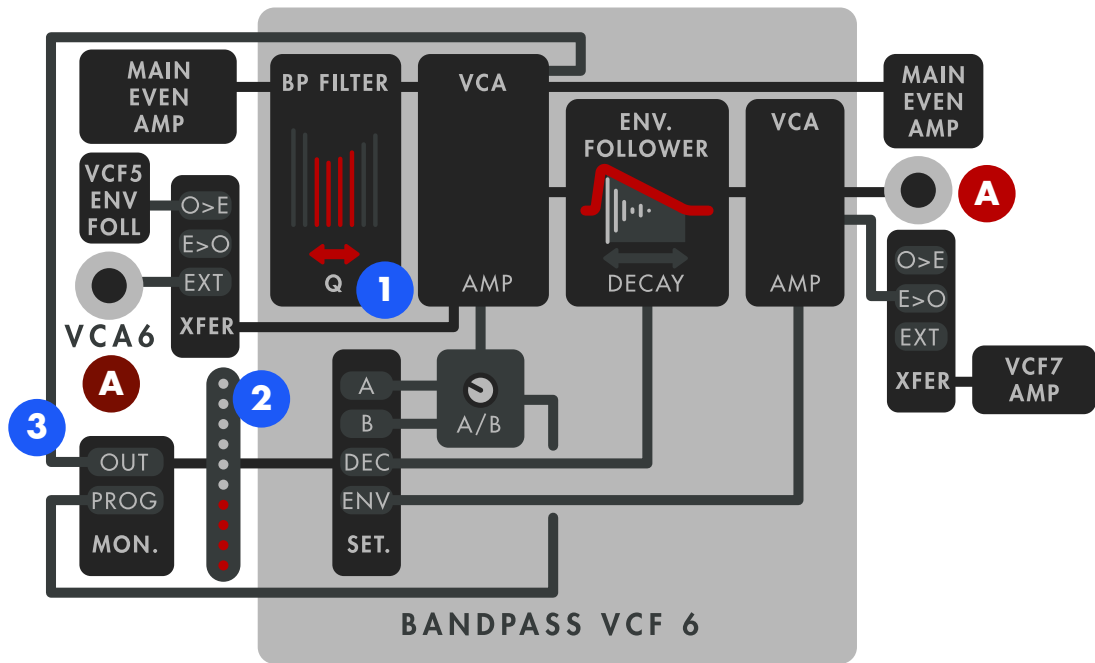
Each band can be attenuated by its touch pad **2** or by its CV input. **A** Each of them can generate a CV signal **A** thanks to its envelope follower with editable decay.

When one input is connected, the module will process the sound through the 16 filter bands, when both inputs are connected, the odd input **B** will be sent to the odd bands and the even input **C** will feed the even bands as two parallel sound paths.

The audio level of each band can be monitored with the OUT button. **3**



EXAMPLE WITH BAND 6



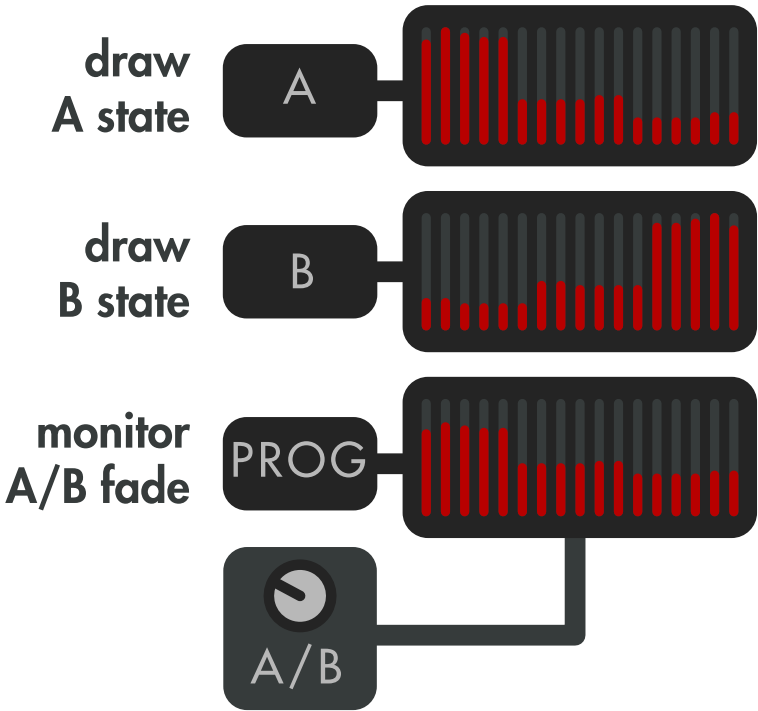
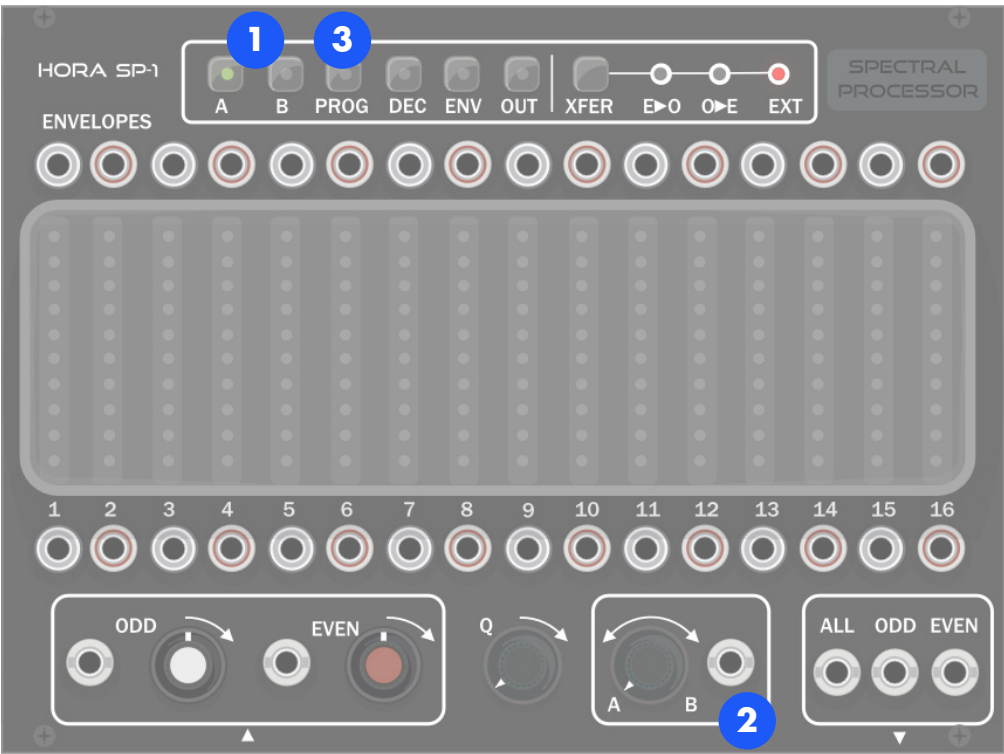
PROGRAMMING A B

The band level can be set by the touch pads and then saved in two different states A and B.

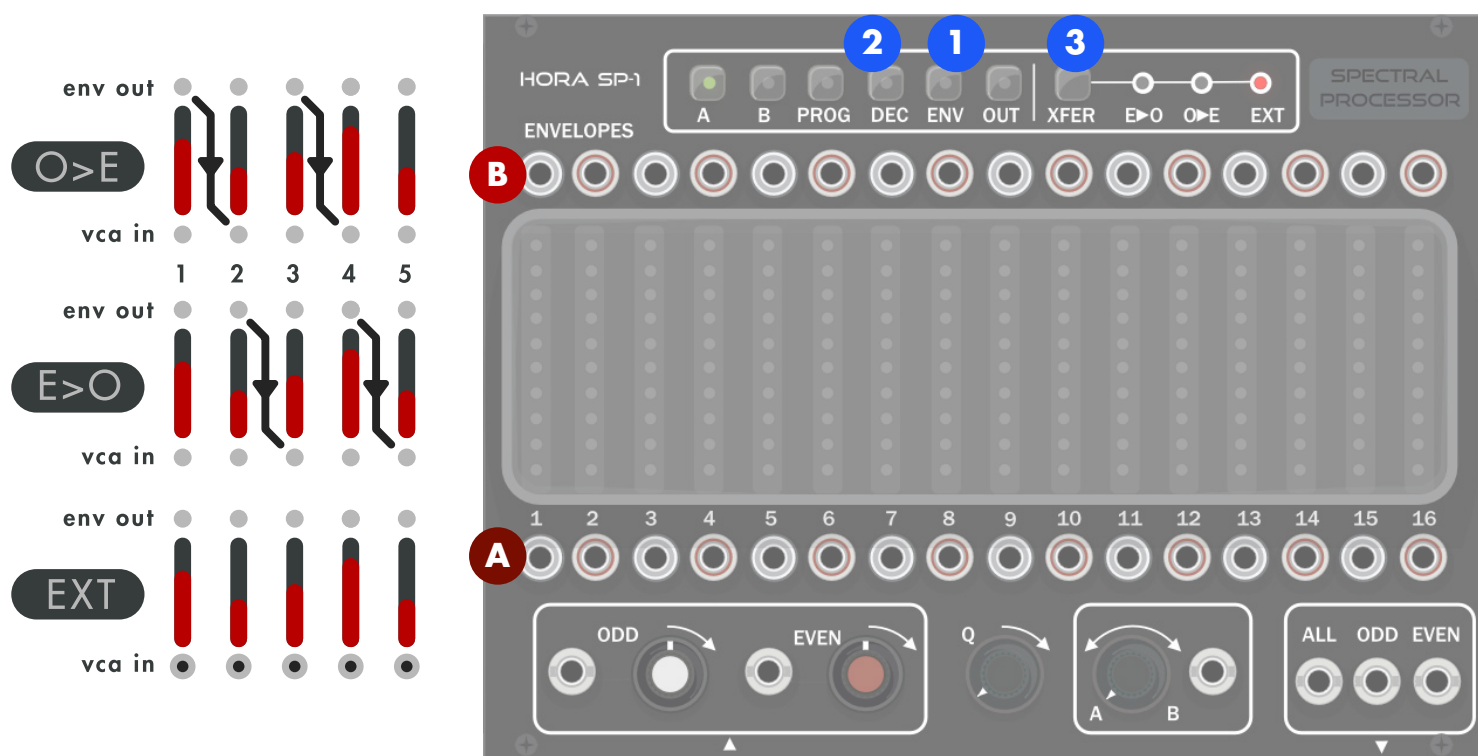
The two states can be accessed and edited with the A and B button. 1

A continuous fading between the two states can be programmed with the A/B knob or CV control. 2

This morphing can be monitored with the PROG button. 3



SPECTRAL BAND CONTROL



BAND VCA CV INPUT

In addition to the touch pad control and the program feature, the level of each band can be controlled by a voltage signal with the input under each touch pad. **A**

BAND ENVELOPE FOLLOWER CV OUTPUT

Each band has its own envelope follower and will output a CV signal depending on the audio level received in the filter (jack output above each touch pad). **A**

The amplitude of the CV can be edited with the touchpad using the ENV button. **1** The decay of the CV can be edited with the touchpad using the DEC button. **2**

XFER **3**

The XFER sends the envelope out of a band to the next band's VCA CV input. It allows two internal routing options:

- E>O: sending every even band env output to the next odd band vca input
- O>E: sending every odd band env output to the next even band vca input
- EXT: no internal routing.

This is especially useful when two different sources are fed to the odd and even bands to create cross modulation amplitude, vocoder effects, applying the amplitude of a signal to another sound source,