

Associative VCMX

User Manual

General Overview

User Interface Layout

The user interface is divided into several zones/sections.

1. Modulation inputs.
2. Envelope follower outputs.
3. Event outputs.
4. CV inputs.
5. Signal inputs.
6. Signal outputs.
7. Channel selection/association buttons.
8. Mode selection buttons (VCA/Mixer and BEOZ/Envelope Follower).
9. Monitor selection button.
10. LED bars and encoders.
11. Mute buttons.

LED bars:

- Each bar always corresponds to the same encoder.
- A bar displays the value of the parameter being modified alongside a monitor that may or may not be related to that parameter.

In the following example,  represents the monitor reading,  represents empty space, and  represents the parameter value.



How to mute a channel

Each channel has an independent, quick-access mute button. Pressing it silences that channel's output without modifying any other parameter of its configuration. Pressing it again re-enables the channel output.

How to associate or isolate channels

1. Select the channel to set as the group reference — a long press will enter grouping mode.
2. Select or deselect channels by pressing the button associated with each channel.
3. Press the group reference channel button to exit grouping mode.

How to select the active monitor

- In VCA mode: Using the monitor selection button, you can cycle through the available monitors. Using the last knob, it is possible to select the monitor more quickly and easily.
- In Mixer mode: Using the monitor selection button, you can cycle through the available monitors. Holding the monitor selection button while turning the last knob allows faster monitor selection.

Available monitors:

- Modulation inputs & Envelope follower outputs.
- Signal input.
- Signal output.
- CV input.
- Processed CV signal.

Monitor values are displayed on the LED bars at 50% of the brightness used for any parameter.

How to switch between modes

In the central section of the module there are two white buttons used to select the operating mode.

- The left button toggles between VCA and Mixer modes.
- The right button toggles between BEOZ and Envelope Follower modes.

VCA Mode

To enter VCA mode, press the left button until it lights up white.

This mode shows a detailed view of the active channel or group of channels.

In this view, each encoder corresponds to a different parameter of the active channel or group of channels.

- Encoder 1: CV-In Offset / Modulation input gain for CV-In Offset.
- Encoder 2: CV-In Gain / Modulation input gain for CV-In Gain.
- Encoder 3: CV-In response linearity / Modulation input gain for CV-In linearity.
- Encoder 4: Quick monitor change.

How to modulate the CV input offset for a given channel / group of channels

1. Select the channel or group of channels.
2. Select the detail view.
3. Press the button associated with the gain/offset modulation input of CV-In until the Offset parameter is selected. (Green LED)
4. Adjust the offset modulation input gain by pressing encoder 1.

Note: The modulation input is added to/subtracted from the configured offset. For 100% external control, set the offset parameter to 0.

How to modulate the CV input gain for a given channel / group of channels

1. Select the channel or group of channels.
2. Select the detail view.
3. Press the button associated with the gain/offset modulation input of CV-In until the Gain parameter is selected. (Yellow LED)
4. Adjust the gain modulation input gain by pressing encoder 2.

Note: The modulation input is added to/subtracted from the configured gain. For 100% external control, set the gain parameter to 0.

How to modulate the CV input linearity for a given channel / group of channels

1. Select the channel or group of channels.
2. Select the detail view.
3. Press the button associated with the CV-In linearity modulation input to enable it. (Red LED)
4. Adjust the linearity modulation input gain by pressing encoder 3.

Note: The modulation input is added to/subtracted from the configured linearity. For 100% external control, set the linearity parameter to 0. Positive signals make the response more exponential; negative signals make it more logarithmic.

Mixer Mode

To enter Mixer mode, press the left white button until it lights up blue.

This mode shows an overview of the attenuation level for each VCA channel, without affecting the VCA's own configuration regarding offset, gain, and linearity.

In this view, each bar-encoder pair corresponds to one of the channels. Each encoder allows adjustment of the Gain factor to apply, i.e. the mix volume.

Envelope Follower Mode

To enter EF (Envelope Follower) mode, press the right white button until it lights up Cyan.

Once in EF mode, the button associated with the envelope follower output allows you to select the envelope to edit — A or B — as well as enable or disable its output without modifying its configuration.

The output to configure is indicated by its associated button LED lit in cyan. If the output is active for the channel or group of channels, it will alternate between cyan and the colour of the associated source.

How to select the source signal for the envelope follower

1. Once in EF mode, select the output to configure (A or B).
2. Using the central button (Monitors & Sources) you can choose the source for the active channel or group of channels. The LED associated with the source lights up in the same colour as the EF mode LED.

An envelope can be associated with the following sources:

- Signal input.
- Signal output.
- CV input.
- Processed CV input.
- Modulation input.

How to adjust the behaviour of an envelope follower

Envelope followers have up to six parameters:

- Rise response speed — how quickly the envelope follows a rising signal. (Raise)
- Fall response speed — how quickly the envelope follows a falling signal. (Fall)
- Envelope offset from -5 to 10V.
- Envelope amplitude from 0 to x2 of the resulting envelope.
- Envelope inversion.
- Envelope delay from 0 to 1000 milliseconds.

To adjust the envelope follower output parameters, press the E.F. function button — the central right button with a teal blue LED — to access the envelope settings.

How to adjust the rise response speed of the envelope follower

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Adjust the rise value from 0 to 10ms by rotating the first encoder. (How much the current sample value affects the new sample)

How to modulate the rise response speed of the envelope follower

1. Select the envelope follower view.
2. Select channel A or B.
3. Press the button associated with the rise modulation input (1). (Teal blue LED)
4. Adjust the rise response modulation input gain by pressing encoder 1.

Note: The modulation input is added to/subtracted from the configured rise response. For 100% external control, set the rise response parameter to 0.

How to adjust the fall response speed of the envelope follower

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Adjust the fall value from 0 to 100ms by rotating the second encoder. (How much the current sample value affects the new sample)

How to modulate the fall response speed of the envelope follower

1. Select the envelope follower view.
2. Select channel A or B.
3. Press the button associated with the fall modulation input (2). (Teal blue LED)
4. Adjust the fall response modulation input gain by pressing encoder 1.

Note: The modulation input is added to/subtracted from the configured fall response. For 100% external control, set the fall response parameter to 0.

How to adjust the output offset of the envelope follower

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Adjust the offset value from -5V to +10V by rotating the third encoder.

How to adjust the output amplitude of the envelope follower

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Adjust the amplitude value — using the offset as the centre point — by rotating the third encoder while pressing it.

Note: A double press of the offset/amplitude encoder resets the offset to 0 and the amplitude to 100% in one action.

How to invert the envelope follower output

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Press the third encoder to invert the segment that defines the amplitude and offset.

How to adjust the output delay of the envelope follower

1. Press the function button (central right button) until the LED turns teal blue.
2. Select the envelope output whose parameter you want to adjust.
3. Adjust the delay value from 0 to 1 second by rotating the fourth encoder.

How to modulate the output delay of the envelope follower

1. Select the envelope follower view.
2. Select channel A or B.
3. Press the button associated with the output delay modulation input (2). (White LED)
4. Adjust the output delay response modulation input gain by pressing encoder 4.

Note: The modulation input is added to/subtracted from the configured output delay. For 100% external control, set the output delay parameter to 0.

How to enable the envelope followers

A-VCA has two envelope follower outputs, A and B, which can be associated with the signal input, the signal output, the CV input, and the internal processed CV output.

Using the button associated with the envelope follower output, you can select the envelope to edit, as well as enable or disable its output without modifying its configuration.

BEOZ Mode

BEOZ -> Begin and End Of Zone.

How to define the signal source

1. Press the function button (central right button) until the LED turns orange (BEOZ).
2. Using the central button and the blinking LED, select the source signal.

A BEOZ output can be associated with any of the following sources:

- Signal input.
- Signal output.
- CV input.
- Processed CV input.

Note: Pressing the central button (Monitors & Sources) while moving the fourth knob at the same time allows faster source selection.

How to define an activation zone

An activation zone is defined by two parameters: the range and the position (offset) in volts.

The offset and range of a zone can go from -5 Volts to 10 Volts.

Steps:

1. Press the function button (central right button) until the LED turns orange (BEOZ). Once the BEOZ button is active, each encoder is associated with one of the channels.
2. Rotate the encoder to modify the position (offset), or press and rotate simultaneously to configure the range.

Modifying the zone position and range.



How to define when an activation zone event is triggered

Once the range and its position are configured, you must specify when and how the BEOZ output should activate.

Using the knob button associated with each BEOZ channel, you can cycle through four possible options, resulting from combining two aspects:

- Activation zone definition. The zone is shown in orange.
 - Direct. The activation zone is defined: 
 - Inverse. The activation zones are defined as the areas from the extremes to the limits of the defined segment. 

- Selection between pulse and gate
 - Pulse: A 2ms pulse is generated upon entering the activation zone. Visually, active zones are shown blinking.
 - Gate: The gate activates upon entering the activation zone and remains active as long as the source signal stays within it. Visually, active zones are shown steadily lit (no blinking).

Specifications

Inputs

VCA modulation inputs

The modulation inputs accept voltages from -10 to 10 volts with a passband from DC up to 96kHz. Higher frequencies may be input, but the modulation could cause unexpected modulation effects.

The built-in gain controls can amplify/attenuate the input signal to suit each use case.

VCA CV inputs

The different parameters and modulations are related as follows:

Parameters:

- Offset: Offset parameter that shifts the input control voltage. -10V - 10V.
- Gain: Control voltage multiplication parameter. 0 - 100%
- Lin: Parameter that defines the linearity of the attenuator behaviour. 100% Exponential - Linear - 100% Logarithmic.

Voltage control inputs:

- CVi:
 - OffsetM: Modulation input for the offset parameter.
 - OffsetMAV: Attenuverter for the offset parameter modulation input.
 - GainM: Modulation input for the gain parameter.
 - GainMAV: Attenuverter for the gain parameter modulation input.
- Lin:
 - LinM: Modulation of the linearity parameter.
 - LinMAV: Attenuverter for the linearity parameter modulation input.

$$CV_{final} = MixAttenuation * ((Offset * (OffsetM * OffsetMAV)) + (CVi * (Gain * (GainM * GainMAV)))) \text{ or } (Lin * (LinM * LinMAV))$$

VCA signal inputs

The signal inputs accept voltages from -10 to 10 volts with a passband from DC up to 96kHz.

Outputs

VCA signal outputs

The signal outputs emit voltages from -10 to 10 volts with a passband from DC up to 96kHz.

Envelope follower outputs

The envelope follower outputs emit voltages from -10 to 10 volts with a passband from DC up to 96kHz.

BEOZ outputs

The BEOZ outputs (Begin-End Of Zone) have a voltage of 0 volts when inactive and 10 volts when active.

These outputs can operate as triggers or gates. When operating as triggers, the trigger pulse duration is 2ms.