CEN2RION

user guide

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Heckmann Audio GmbH • Berlin

What Is CEN2RION?

- CEN2RION is a scanning mixer suitable for audio as well as CV signals.
- Two layers **A** and **B** share the same six inputs but mix to individual mono outputs.
- Three main operating modes define how layers A and B interact.
- Each input has its own level control.
- CEN2RION is DC-coupled, allowing it to process CV signals.
- To avoid clicks while switching channels, a short release curve simulating 'Vactrol' behaviour ensures that the signal does not decay abruptly.

Basic Operation

The core concept: Each layer's output is controlled by two knobs: **SELECT** and **WIDTH**:

- **SELECT** determines the (nominal) input channel routed to the output.
- **WIDTH** determines the number of adjacent inputs mixed with the selected channel.

The 6–LED strip above each pair of knobs indicates the current selection, with multiple LEDs lighting up as the WIDTH is increased.

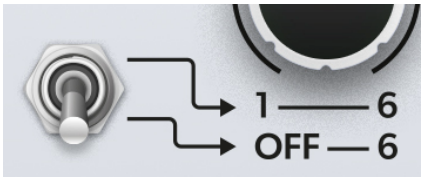
Main Operating Modes

CEN2RION has three main modes: **DUAL**, **LIN**K, and **SPLIT**:

- **DUAL** mode
  Layer A and Layer B are independent: Each layer's output is determined exclusively by its own controls and CV inputs.
- **LINK** mode
  Layer B adopts settings from Layer A. The **SELECT** and **WIDTH** knobs on Layer B adjust bipolar offsets, with zero at the central position. Use LINK mode e.g. to mix all six mono inputs to stereo.
- **SPLIT** mode
  Layer B adopts the Layer A settings like in LINK mode, but each layer is limited to three inputs. Layer A processes inputs 1 to 3 while Layer B handles inputs 4 to 6. SPLIT mode is intended for stereo mixing, giving you control over three stereo input pairs (1+4, 2+5, 3+6) using the Layer A settings.

Selection Range

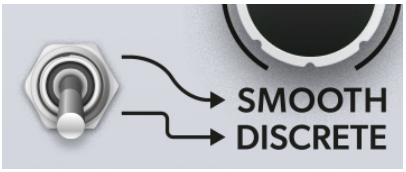
This switch determines which signal the **SELECT** knob will use when set to minimum. Note that Selection Range applies to **both layers**.



- **1—6** mode
  SELECT at zero means **input 1.** If WIDTH is also set to zero the output is input 1 only.
- **OFF—6** mode
  SELECT at zero means **no input.** If WIDTH is also set to zero the output is silent.

Blend Characteristics

This switch determines how adjacent inputs are mixed when only partially included in the window defined by SELECT and WIDTH. Like Selection Range, it applies to both layers.



- **SMOOTH** mode: Inputs are blended according to the WIDTH of the selection window. If SELECT falls exactly between two inputs and WIDTH is set to minimum, those inputs are mixed evenly (50% each).
- **DISCRETE m**ode: No blending. The input closest to the SELECT position is output at 100%. If SELECT falls exactly between two inputs, one of them is chosen at random.

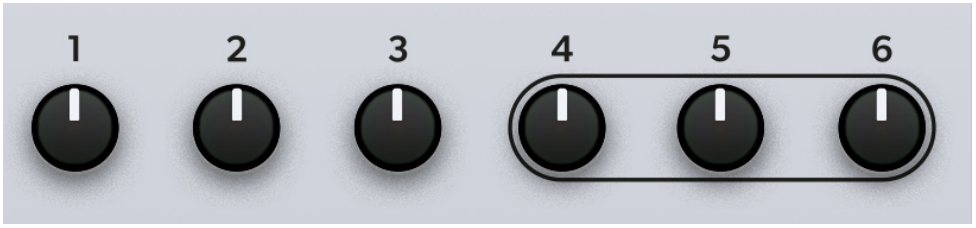
Invert B Select

This switch affects only Layer B.

- **NORM** mode: Layer B behaves as described in the previous sections.
- **INVERT** mode: Instead of determining which inputs are **included** in the mix, the selection window (as defined by SELECT & WIDTH) determines which inputs are **excluded**. All other inputs outside the window will be mixed into the output.

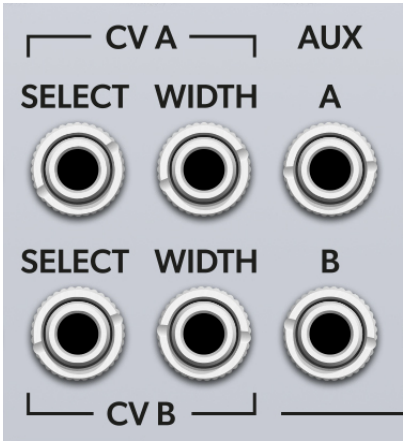
Input Attenuators

Each input has an **attenuator knob** which adjusts its pre-mix level.



Note: These knobs optimized for audio, with a non-linear (A-taper / logarithmic) response.

CV Features



Each parameter of the two layers has its own **bipolar CV input** and **attenuverter.**
Each **CV input** is paired with a centre-zero **attenuverter** (attenuate & invert) knob:

- **Turning the knob clockwise** increases the modulation amount.
- **Turning the knob counterclockwise** also **inverts** the CV signal.

Voltage Range

- Acceptable input range: ±**12V**
- Effective modulation range: ±**5V** so...
- A +**5V** CV will sweep a parameter across its full range, while a −**5V** CV will shift a parameter set to maximum down to its minimum.

AUX Jacks

The **AUX A** and **AUX B** jacks can function as either **inputs or outputs**, depending on the setting of a switch on the **rear** of the module.

- **AUX as Input**: Signals patched to an AUX jack are directly mixed into the corresponding output, bypassing the SELECT & WIDTH settings.

  AUX A is mixed into **OUT A**, and **AUX B** into **OUT B**.

- **AUX as Output**: The jacks output a mix of a specific set of inputs:

  AUX A outputs a mix of **inputs 1 to 3**.

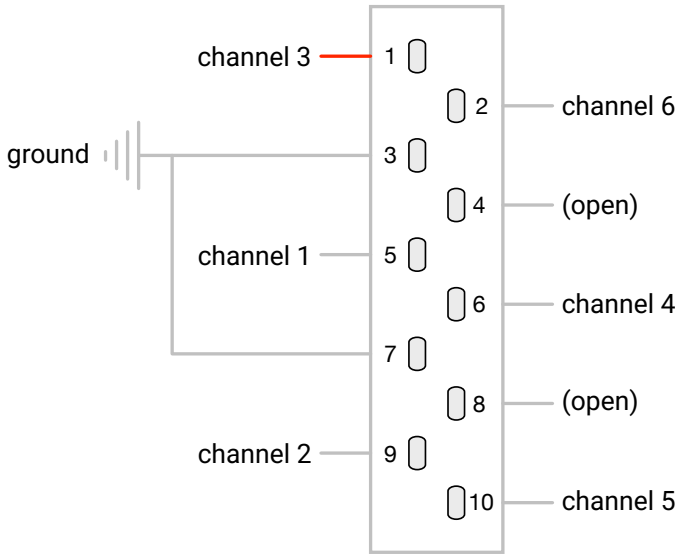
  AUX B outputs a mix of **inputs 4 to 6**.

The mixes are post-attenuator but are unaffected by the layer settings (SELECT & WIDTH).

NORMALS

A connector **at the rear** of the module allows for direct signal routing between modules with compatible connectors, eliminating the need for patch cables.

Note: Pin 1 is the one that is closest to the edge of the board.



Firmware Update

Firmware updates are provided as audio files (48 kHz sample rate).

Bootloader mode

Before attempting the procedure described below, CEN2RION must be in bootloader mode:

1. Set all switches to the down position
2. Set all four knobs of Layer A to their leftmost position.
3. Set all four knobs of Layer B to their rightmost position.
4. Power cycle the module...
5. If successful, LED 6 (only) of Layer A should pulse.

Update Procedure

1. Connect an audio cable between your computer and the module's **CV A SELECT** input. If possible, use a separate audio output from your OS to prevent interference.
2. Mute all other audio sources: OS notifications, browser sounds etc..
3. Ensure that your media player is **not** set to convert the sample rate or time stretch.
4. Turn your **monitoring system** (amp, speakers) **way down** or even off, then start playback at **maximum volume**...
5. As soon as CEN2RION detects an update signal, all six LEDs in Layer A will start to pulse. After the first successfully received packet, the first LED in Layer A will light up, then all six LEDs will indicate progress.
6. After a successful update, CEN2RION automatically restarts. If the updateprocedure is interrupted, CEN2RION remains in bootloader mode for a short while, after which it automatically returns to its normal state.

Enjoy!

your u-he team

Patch Examples

1. Crossfading Waveforms (DUAL or LINK mode)

A “waveform morph” that turns a single oscillator into a living, evolving sound source...

Feed multiple outputs of an oscillator (sine, saw, square, etc.) into CEN2RION’s inputs. Now scan smoothly through them, either by hand (turning the SELECT knob) or under CV control (patch into SELECT CV). Send the mixed output to a filter or effect.

2. Selective FX Send (DUAL or LINK mode)

Turn static effects into animated, performance-ready textures...

Patch several sources (e.g. drums, synth lines) into the six inputs and set levels with the input attenuators.

Layer A: Set WIDTH wide enough to include all inputs — this becomes your dry mix.

Layer B: Connect OUT B to an effect (delay, reverb, etc.). Use a sequencer or random CV into SELECT CV B or WIDTH CV B to dynamically choose inputs sent to the effect.

Mix dry and wet externally, or set the AUX jacks to INPUT and patch the effect return back into AUX A, so OUT A carries both dry and effected signals.

3. Stereo Signal Crossfader (SPLIT mode)

Seamlessly blend between different stereo mixes or effect returns...

Patch stereo pairs across inputs: 1+4, 2+5, 3+6. In SPLIT mode, OUT A becomes the left channel, OUT B the right. Set Layer B’s knobs to neutral (no offset, switch = NORM).

With WIDTH at minimum, the SELECT knob chooses which stereo pair passes through.

In DISCRETE mode, this acts like a 3-way switcher. In SMOOTH mode, it becomes a stereo crossfader between pairs.

4. Separate Mixes for Audio and CV (SPLIT mode)

A self-coordinated audio + CV ecosystem, perfect for evolving grooves...

Inputs 1–3: audio signals.

Inputs 4–6: CV sources (LFO, envelope, noise, etc.).

Layer A mixes the audio; Layer B follows A’s scan but processes only the CV set. Offset Layer B’s controls to taste.

Try sending OUT A to a filter audio input, and OUT B to the filter cutoff CV. With rhythmic CV driving the scan, the audio mix and modulation are locked together in constantly shifting patterns.

5. Cross-Patching CV Signals (DUAL or LINK mode)

Generate beautifully unpredictable modulation networks, from subtle chaos to wild self-modulating systems.

Feed a mix of CV sources into all six inputs.

Layer A: Use the output to modulate a bold target (oscillator pitch or filter cutoff).

Layer B: Create an alternate CV blend, then patch OUT B into Layer A's SELECT CV.

For extra spice, feed some of OUT A back into Layer B's SELECT CV or WIDTH CV — a feedback modulation loop!