

MIDIMONOX2 For Voltage Modular

DUAL MIDI MONO SYNTH AND SEQUENCER

waverley-instruments.com



WHAT IS MIDIMONOX2?

MIDIMONOX2 is a total re-design of MIDIMONO, our flagship MIDI-controlled mono synth module for Voltage Modular. Times two! In addition to two totally independent synth engines with effects, we've also added a dedicated sequencer for each synth.

Why combine two synths into a single module?

There are a few reasons, and possibly a few more we haven't thought of, but essentially being able to treat two synths as a single instrument allows you to design sounds based on layers or splits. And when you're using the sequencer, you can lock both parts into a certain arrangement or even a specific progression, key and scale. We think that makes things easier. And when you're happy with how everything is sounding, you can save it all as a single instrument preset file - MIDIMONOX2 has its own custom preset file format.

We hope you find MIDIMONOX2 fun and inspiring to use!

TAKING A MIDIMONOX2 FOR A TEST DRIVE

If you want to get a good idea of what the instrument can do, especially if you're evaluating the free trial, we suggest you check out some of the presets after making some basic connections as follows:

1. In Voltage Modular standalone, add MIDIMONOX2 from you library into an empty cabinet
2. Connect Voltage Modular's MIDI FROM HOST to the MIDIMONOX2 MIDI IN jack
3. Connect the MIDIMONOX2 AUDIO OUT L/R jacks to Voltage Modular's MAIN OUTS to host.
4. If you don't have a MIDI keyboard connected, bring up Voltage Modular's QWERTY Keyboard

The main presets window is the larger LCD style display to the right of the module. You can access the preset browser menu via the down arrow, or scroll through using the next (right) and previous (left) arrow buttons.

For some presets, the sequences have been designed to be in a specific key or scale using MIDIMONOX2's scale quantise feature. The clue will either be in the name, e.g. "D Minor Mystery" or how the SCALE QUANTISE parameters are set. For example, for the preset "Am Altercation", scale quantise is set to A Minor Pentatonic. Pressing the A3 note (or any A) should play back the sequence "in tune".

MORE ABOUT PRESET FILES

MIDIMONOX2 has its own preset file format. To edit a preset name, double click the text in the LCD style window. By default, this name will be used when saving your own presets to files (saved to Users/Your Name/Documents/Voltage Modular/MIDIMONOX2/User Presets)

MIDIMONOX2 has two different types of preset files.

- **Instrument**, which is basically all parameters for both synths and sequencers, files ending with .MIDIMONOX2
- **Synth**, which are individual synth settings, files ending with .MIDIMONOX2-SYNTH

Instrument presets are managed via the menu accessible from the large display to the right of the module and synth presets are handled via the left hand display. If you like a certain sound in a sequence and want to use it elsewhere, simply save it as a synth preset and load it into a new instrument setup.

Presets are organised into categories in the menu, splits and layers for example for synth presets, and sequencer demos for instruments, etc. You can also initialise parameters via these menus.

Please note that the instrument preset file includes *everything* - it does not reference external synth preset files.

SYNTH & MIDI SECTIONS



Note that the header for each section is color-coded. A dark blue background means this section is global, i.e. applies generally to the whole instrument. Examples are SYNTH, MAIN OUT and SYNC. Other sections apply to the currently selected synth, i.e. 1 or 2. Synth 1 is light blue, Synth 2 is slightly darker.

You can change the current synth by clicking on the large number buttons. You can also mute either synth from here which is useful when working on new sounds.

The **MIDI IN** section is specific to each synth. Here you can set the MIDI channel it should receive on and its note range if you want to create splits.

The **SEQ OUT** section is also specific to each synth. Here you can set the MIDI channel the sequencer will send messages to for each sequencer.

We've also included a PANIC! button should need arise to unstick stuck notes!

SYNTH VOICE & NOISE



A MIDIMONOX2 synth has 3 virtual analog oscillators plus a noise source. The oscillator **SHAPE** is variable from saw, triangle, sine and pulse, plus mixes in-between. Clicking on the OSC buttons for each voice allow you to set the wave shape exactly, e.g. PULSE 50/50.

FOLD introduces triangular wave-shaping for a metallic type sound with extra harmonics.

TUNE adjusts the oscillator pitch in cents and **TRANSPOSE** adjusts the oscillator pitch in semitones. **OSC DRIFT** adds random de-tune.

MIX adjusts the level of the oscillator. Note that anything above half-way will start to “drive” the output into soft clipping like a classic analog synth.

NOISE COL varies the noise color from white to pink, or a mix of both.

NOISE MIX controls the overall noise level.

AMP ENV



The **AMP ENV** is applied to all oscillators and noise source. The underlying envelope is a traditional ADSR, with controls for attack time (**ATK**), sustain level (**SUS**) and release time (**REL**), which also sets the decay time.

VEL determines the effect of MIDI note velocity on the amplitude / loudness of the envelope.

OSC RESET when enabled, will reset the cycle of all oscillators when a new note starts. This can be useful when you want your notes to really “pop” or “snap”, especially when using the sequencer. Please note however, for some sounds, especially when using long release times, you may encounter undesirable clicks, in which case, it’s probably best to turn off **OSC RESET**.

KB LEGATO determines how MIDIMONOX2 handles multiple notes being held down and when the envelope resets. Remember the synth is monophonic and can only handle one note at a time. When legato mode is off, the envelope will reset with each new note. With legato mode on, the envelope will only reset when there are no notes being held down.

FILTER



Each synth has its own dedicated filter. This is a classic 4 pole lowpass design with an analog flavour.

CUTOFF sets the cutoff frequency and **RES** sets the resonance of the filter.

TRACK adjusts the cutoff frequency depending on the pitch of incoming notes. This prevents high notes being “lost” due to low cutoff frequencies.

VEL can be used to open-up the filter cutoff according to MIDI note velocity.

The filter has its own dedicated ASR envelope (**FILTER ENV**) with controls for attack time (**ATK**), sustain level (**SUS**) and release / decay time (**REL**). The envelope amount (**AMT**) can be applied positively (to the right) or negatively (to the left).

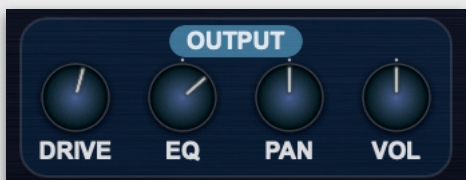
PITCH - BEND & GLIDE



The **PITCH** section sets the range of your pitch bend wheel in semitones. The range **UP** and **DN** (down) can be set independently.

GLIDE TIME sets an optional pitch glide, aka portamento effect between notes. With **LEGATO** glide enabled, the effect will only occur when there are more than one note being played on your keyboard controller allowing the glide effect to only happen when “overlapping” notes.

OUTPUT



The **OUTPUT** section is the final audio stage for the synth voice before being passed to the effects section.

DRIVE adds a combination of soft and hard clipping for an edgier distorted sound.

EQ is a tilt type tone control, that affects both high and low frequencies. Setting to the right will increase treble and attenuate bass frequencies, and setting to the left will boost bass and reduce treble. This can be especially useful if you have a bass and treble part in your sequences and need to make some space in the overall EQ space.

PAN sets the stereo position of the synth output, and **VOL** sets the output volume.

MOD / LFOS



MIDIMONOX2 has 4 identical modulation sources, each with its own LFO and over 20 possible modulation destinations.

The **SYNC** buttons above the **RATE** controls allow the frequency of the LFOs to be set to a tempo-sync note interval, 1/8D for example.

Note that setting the **RATE** to zero effectively disables the LFO. You might want to do that if you only want to modulate a target using your controller mod wheel or the sequencer (described later).

Clicking on the **MOD1** etc., buttons sets the LFO waveform shape, e.g. triangle, sine etc. Note all the waveforms also have a “RESET” version - this will reset the LFO cycle on a new note.

FADE adds a delay before the LFO reaches the modulation **DEPTH**.

To set a modulation target click on the buttons above the **DEPTH** controls. This will bring up a menu of all the available modulation destinations, e.g. OSC1 SHAPE (SHP1) or NOISE MIX (NMIX) etc.

MOD WHEEL



The **MOD WHEEL** section can be used to add a realtime performance element to your sound design.

The mod wheel can be set to vary the **FILTER** cutoff frequency, the **DRIVE** amount and each of the four **MOD** sources.

EFFECTS & MAIN OUT



The **EFFECTS** section contains a stereo chorus and analog-flavoured stereo ping-pong delay.

The **CHORUS** effect is based on a classic vintage synth with a two button design. With button **I** engaged, a fairly subtle chorus is applied. Button **II** is a much deeper effect and for a ver thick modulation sound, turn both buttons on. Note the both buttons setting does not attempt to emulate the vibrato effect produced on the chorus on the hardware synth, if “Juno” what we’re talking about.

The **DELAY** effect has an ever so slightly gritty sound that we feel suits the character of the synth engine. It includes simple and traditional controls for delay **TIME**, **REGEN** (feedback) and **MIX** level, as well as a button to enable / disable the effect.

The button above the **TIME** control can be used to set the delay time to a musical note interval, e.g. 1/8D (dotted eighth note). When using the sequencer with both synths, a nice effect can be produced by setting each synth’s delay time to a different note length - 1/4 and 1/8D for example.

The **MAIN OUT** section is global - note the darker header color. In this section we have a master compressor (**COMP**) control which can be useful for “glueing” together sounds and sequences from both synths. There’s also the **MASTER VOL** (volume) control, metering for synth and output levels, and the main **AUDIO OUT L/R** jacks for the instrument.

SEQUENCER - PATTERNS, STEPS & CHAINING

Each synth has its own dedicated step sequencer which can have up to 16 patterns, each with 16 steps. By using pattern “chaining” (described later) you can also think of each synth having a 256 step sequencer!



Select a pattern using the **PATTERN** arrow buttons or clicking on the pattern number display to access the pattern menu. The pattern menu includes options to change the current pattern, copy, paste and initialise patterns.

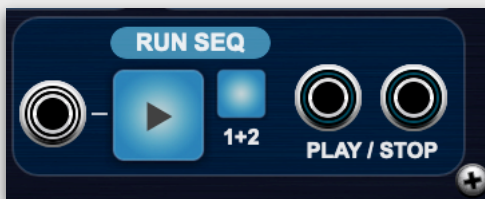
Clicking on the **STEPS** display will display a menu to set the number of steps in the current pattern up to 16 steps.

The **REV • FWD** switch can be used to set the pattern play direction, i.e. forwards or reverse. The centre position will play the pattern forwards, then reverse, back and forth.

When enabled, via the **CHAIN** button, pattern chaining allows the creation of simple arrangements from the patterns enabled with the numbered buttons. For example, turning on **CHAIN** and pattern numbers **01**, **02**, **03** and **04** will instruct the sequencer to play those 4 patterns once each, in numerical order, in a cycle when in **CYCLE** mode - 1, 2, 3, 4, 1, 2, 3, 4 etc. Alternatively, in **RAND** (random) mode, one of those 4 patterns will be picked at random when a pattern has been played once.

The CV input jack can be used as a trigger for next or previous pattern selection. Send +1V or more for next, and -1V or less for previous.

SEQUENCER - RUN VS. PLAY MODE



The large arrow button controls whether each sequencer is running or not. This button can also control *both* sequencers if the **1+2** button is switched on. If you're using both sequencers, then generally, you probably want to have **1+2** enabled. The run button can also be controlled with a CV trigger sent to the adjacent jack.

Note that when the sequencer is running, you won't hear anything until MIDIMONOX2 receives a MIDI note, whereupon it will enter *play* mode. Entering play mode will also reset all internal clock / step counters to ensure the sequencer is in time with your playing. Depending on the **KEYBOARD** setup (described later) the sequence will continue to play until you release a note or play a new note.

When playing, switching the run button off will stop the sequencer running and stop any sequencer notes playing.

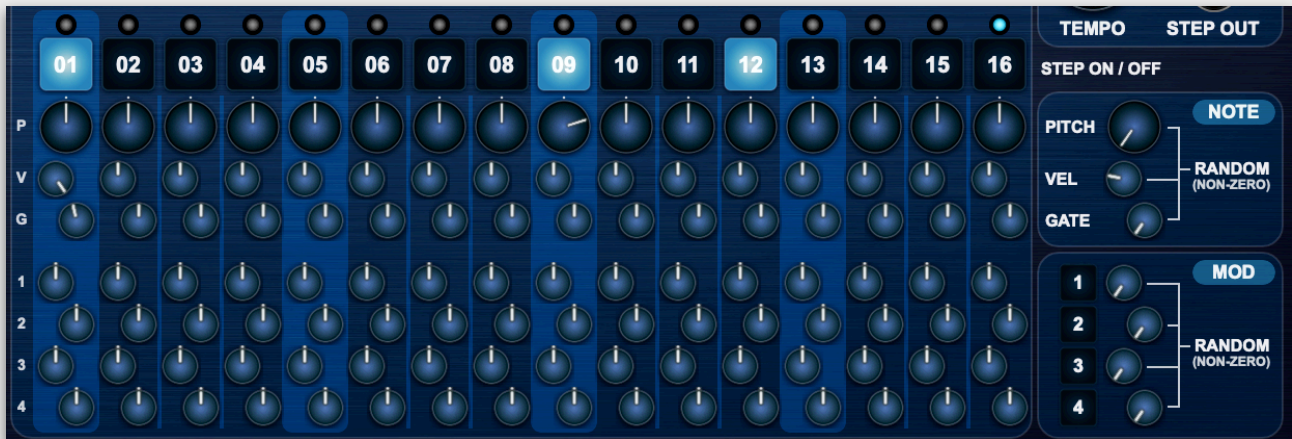
CV triggers will be sent to the **PLAY / STOP** output jacks when entering *play* mode (i.e. when a note is received) and when the sequencer stops running. This allows you to sync other sequencer-enabled instruments such as **PERCSTATION**, our drum machine module.

SEQUENCER - KEYBOARD



The **KEYBOARD** switches control how sequencer playback is handled when new notes are received. With **LATCH** mode on, the sequencer will keep playing when a note is released. When **TRANPOSE** mode is on, new notes will result in sequencer notes being transposed.

SEQUENCER - PATTERN GRID



The pattern grid is where you build your sequencer pattern by setting notes and optional step-based modulation.

Enable or disable steps in the pattern with the numbered buttons. In the example above, patterns 01, 09 and 12 are switched on.

SEQUENCER - PITCH

The top row of controls (labelled **P**) set the relative pitch of the step. Please note that this is not a specific note - it's a pitch relative to the incoming MIDI note. The pitch controls cover the range of +/- 24 semitones, i.e. up or down two octaves.

For example, say your first enabled step pitch is set to zero, and your second enabled step is set to +2. If you were to play C3 on your controller, when the pattern runs, you will hear a C3 note for the first enabled step and a D3 note for the second, as D3 is +2 semitones relative to C3.

This means that when you play notes on your controller, the whole sequencer will effectively be transposed relative to your new notes. If you want to lock these transpositions to a specific key, use the **SCALE QUANTISE** options described in a later section.

SEQUENCER - VELOCITY

The smaller controls underneath pitch determine the MIDI velocity (**V**) and gate length (**G**) for the generated notes.

Velocity corresponds to the MIDI value in the range 1-127.

SEQUENCER - GATE

Gate time is set as a percentage of the step length, i.e. a 1/16th note, from 10% to 110%. For a gate time more than 100% the note off message for the previous step will be received *after* the note on for the current step. This is useful when you have legato glide enabled (described in the PITCH section earlier) and you want to emulate that classic "TB" glide effect on certain steps in your pattern.

SEQUENCER - NOTE RANDOMISATION

Randomisation can be applied to pitch velocity and gate values. The randomisation only applies to non-zero values. This really only applies to pitch, so if the pitch of a step is set to zero, it will not be randomised. This can be useful if you don't want your "root" note in the sequence to be changed. Randomising gate can push gate times in and out of "overlap", thereby randomising legato slides.

SEQUENCER - MOD

The sequencer also has step-based modulation adjustments. Yes, you can modulate your modulations! This can result in some very interesting rhythmic effects that will be perfectly in time with your sequence pattern.

The four rows of controls correspond to the four modulation sources set up in the MOD / LFOs section and changes are applied positively or negatively to the modulation depth +/-100%.

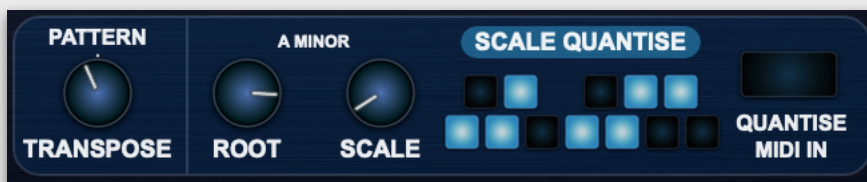
Any non-zero values for the MOD controls will also be applied “on top” of existing modulations, LFOs, etc. Alternatively, you can modulate your target using the sequencer only, by disabling the LFO by settings its RATE or DEPTH to zero.

Please note that any non-zero MOD value is applied, regardless of whether the step is enabled. This allows you to “carry over” modulation effects between the notes - useful for panning or filter sweeps etc.

SEQUENCER - MOD RANDOMISATION

MOD step modulation can also be randomised and as per note pitch, randomisation will only be applied to non-zero MOD step values for each of the four mod sources.

SCALE QUANTISE / PATTERN TRANSPOSE



The **SCALE QUANTISE / PATTERN TRANSPOSE** section contains several pitch-related utilities to help create interesting and musical pattern sequences.

PATTERN TRANSPOSE applies an optional transpose to the pattern. This can be very useful if you want to create a pattern chain based around copies of the same pattern being transposed up or down without having to manually transpose it by playing new notes.

SCALE QUANTISE will adjust the pitch of sequencer-generated notes according to a **ROOT** note and **SCALE**. Setting **SCALE** to CHROMATIC (lowest value) effectively means no scale quantising takes place. There are currently 27 scales available to chose from.

Once a **SCALE** has been selected, you can also customise it by adding or removing notes using the buttons representing the scale. For reference these are laid out as if the root not was C on a piano keyboard. In the example above, the A MINOR scale has been selected, and the scale note buttons show that it will use the 1st, 2nd, minor 3rd, 4th, 5th, and so on, of the notes of that scale.

QUANTISE MIDI IN when enabled will also scale-quantise any incoming MIDI notes regardless of whether the sequencer is running.

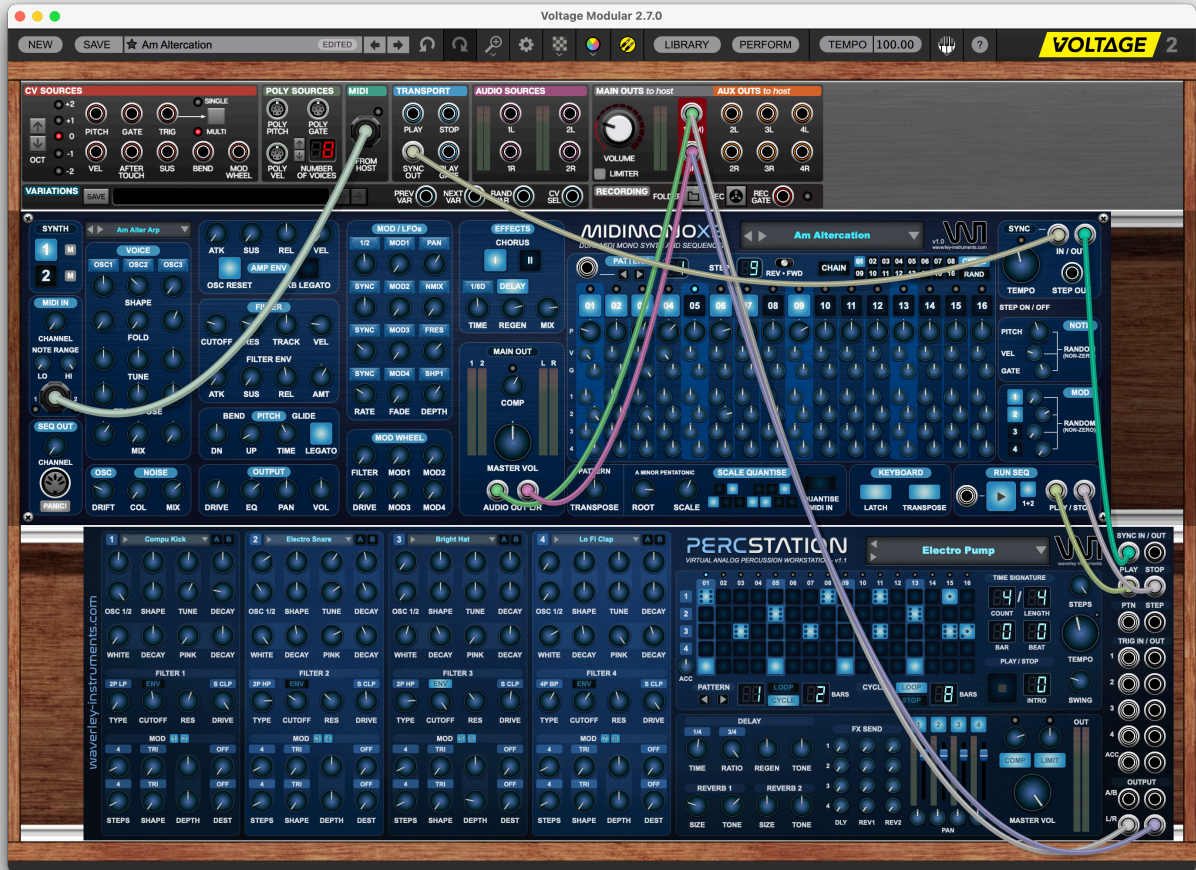
SEQUENCER - SYNC



The **SYNC** section is global, and includes a BPM **TEMPO** setting applied to both sequencers. The sequencers run using either an internal (blue flash LED) or external (red flash LED) clock. If a connection is made to **SYNC IN**, then this will be used as a 96 PPQ clock source and the **TEMPO** control will be ignored. A 96 PPQ trigger is sent to **SYNC OUT** when using either internal or external clock and a 1/16th note trigger will be sent to **STEP OUT**.

TYPICAL CONNECTIONS

Here are the connections you'd typically make when using MIDIMONOX2 in Voltage Modular, either standalone or in a DAW. We've also added PERCSTATION connections for reference for owners of that module - running both together is a *lot of fun* and you can hear some examples on the product page and our YouTube channel.



ACKNOWLEDGEMENTS

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<https://www.facebook.com/JDsoundsets>