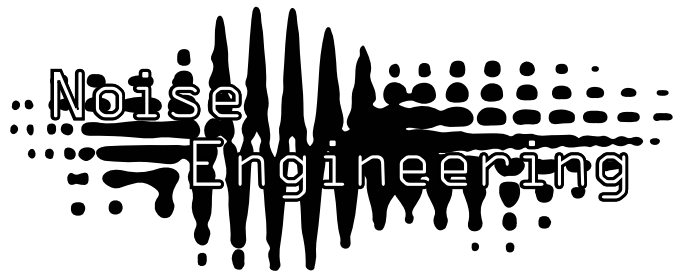


# Noise Engineering Mimetic Sequent

6HP CV randomizer, generator,  
and recorder



## Overview

Type	CV randomizer/recorder
Size	6HP Eurorack
Depth	.8 Inches
Power	2x5 Eurorack
+12 mA	50 mA
-12 mA	50 mA

Mimetic Sequent is a sixty-four step pitch-aware CV recorder, randomizer, and generator with the ability to save and modify three unique patterns. Switch between stored patterns or use the Mimetic Multium expander to output all three patterns simultaneously in addition to four separate randomized trigger patterns.

## Etymology

Mimetic -- from latin mimus "mime" with suffix -ic "pertaining to"  
"pertaining to mimes"

Sequent -- from Latin sequentia  
"sequence"

"Mime sequences"

## Design Notes

Mimetic Sequent was a problem child from the very start. The very first prototype was a 6HP ribbon controller/recorder that happened to have randomization built in. The randomization ended up being more fun than the ribbon controller and was dropped after the first build. We had a continual stream of last-second problems that caused us to punt on manufacturing many times. One module that the second prototype was often compared to was the Turing Machine and it pretty quickly became a goal to make a more musical, more jammable, and smaller turing machine. The crux to achieving this was the Musically Random algorithm documented in the Less Random selection. More so than any other module I have worked on the design was guided by our many testers. There were 20 hardware revisions (not all of which were built) and endless suggestions from our friends in the three years Mimetic Sequent has been in development.

# Power

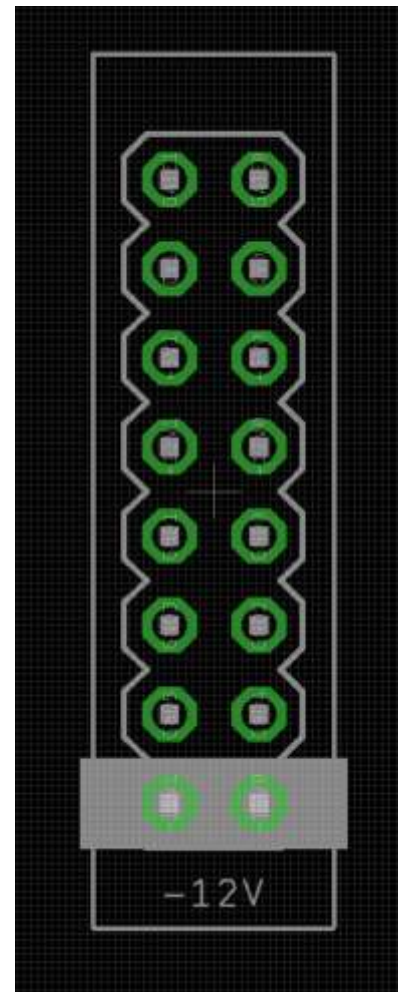
To power your Noise Engineering module, turn off your case. Plug one end of your ribbon cable into your power board so that the red stripe on the ribbon cable is aligned to the side that says -12v and each pin on the power header is plugged into the connector on the ribbon. Make sure no pins are overhanging the connector.

Line up the red stripe on the ribbon cable so that it matches the white stripe and/or -12v indication on the board and plug in the connector.

Screw your module into your case BEFORE powering on the module. You risk bumping the module's PCB against something metallic and damaging it if it's not properly secured when powered on.

You should be good to go if you followed these instructions. Now go make some noise!

A final note. Some modules have other headers -- they may have a different number of pins or may say NOT POWER. In general, unless a manual tells you otherwise, DO NOT CONNECT THOSE TO POWER.



# Warranty

Noise Engineering backs all our products with a product warranty: we guarantee our products to be free from manufacturing defects (materials or workmanship) for one year from the date of the original retail purchase (receipt or invoice required). The cost of shipping to Noise Engineering is paid by the user. Modules requiring warranty repair will either be repaired or replaced at Noise Engineering's discretion. If you believe you have a product that has a defect that is out of warranty, please contact us.

This warranty does not cover damage due to improper handling, storage, use, or abuse, modifications, or improper power or other voltage application.

# Connecting MM to MS

1. Power off your MS and remove it from its case.
2. Locate the 10 pin ribbon cable included with MM.
3. On the back of MS, plug the cable into the expander header with the red stripe matching the white line on the PCB. Make sure you plug it into the expander header, not the power header. The expander header has a "NOT POWER" label on it.
4. Plug the other end of the cable into the corresponding header on MM the same way, red stripe to white line.
5. Plug MS back into your power supply and screw both modules into your rack.
6. Done!

# Patch Tutorial

## **Nota Bene:**

Mimetic Sequent has no internal notion of measure. If you record a short sequence, include a Measure input to reset the buffer to the beginning of your recording. Without a Measure input, MS will play the entire stored buffer (64 steps) regardless of how many steps were recorded. To randomize the sequence you recorded, turn the Random knob CW.

## **Random Melodies**

Turn record mode off, set Mode to 2P, and, if desired, turn on the 12-tet quantizer. Connect a clock to the Beat input. Patch the Out to the pitch input of an oscillator like Ataraxic Iteritas. Turn the Random knob clockwise. MS will begin to randomly generate pitched CV within 2 octaves. When you find a pattern you like, turn the knob fully CCW to cease randomization and save the pattern. For a broader range of random pitches, switch MS to 5P (5 octave) mode. If you would like the pattern to be shorter send a trigger (for instance, the output of a clock divider) to the measure input.

## **Mimetic Sequent and Other Parameters**

Turn record mode off, set Mode to 5C. Connect a clock to the Beat input. Patch the Out to any parameter CV control of the module of your choice (Basimilus Iteritas Alter and Loquelic Iteritas are always good choices). Turn the Random knob clockwise and experiment. When you find a pattern you like, turn the knob fully CCW to save the pattern.

## **Multiple Outputs**

With the optional Mimetic Multium expander, each of MS's 3 patterns are output simultaneously. Patch the three Pattern outs to pitch or CV inputs. Patch the four Gate outs to trigger other modules.

## **Sample and Hold**

Mimetic Sequent can operate as a unipolar sample-and-hold by keeping it in record mode. Patch the signal you want to sample into the Record input. Send the sampling clock to the beat input. Flip the Record switch to the top position. The MS will sample the input CV when it receives a trigger at the Beat jack.

## **Recording**

To record a CV sequence into the MS, plug the CV out from a clocked CV source (like Clep Diaz or Mimetic Digitalis) into the MS record in. Connect the same clock used to advance the CV source to MS's Beat input. If you want to record only one measure (less than 64 steps) you will also need to patch a reset to the MS Measure input. Enable record mode and the MS will record the CVs into its internal memory. To enable short-term record mode, flip the Record switch to the middle position. MS will stop recording after 64 steps or when it receives a trigger input to Measure. To enable normal record mode, flip the Record switch all the way up. MS will record until you disable it.

# Interface

## Random:

When the knob is fully CCW, MS locks the current pattern. As it is turned clockwise, the pattern is increasingly modified. The angle affects both the likelihood that the current step will be randomized and the method used for the randomization. This is the heart of Mimetic Sequent and is documented in more detail in the section entitled **Less Random**. The jack allows CV control over the knob; the knob acts as an attenuator over CV input. No CV input is required: without an input, MS will generate its own sequences.

## Record:

A three-position switch that controls record mode.

- **Lower position:** Record mode is disabled and MS acts simply as a CV randomizer, generating randomized voltages or randomizing an input signal each time a trigger is received at the Beat input or the Adv button is pressed.
- **Middle position:** Same as the lower position but short-record mode is enabled which will record until either 64 Beats have been recorded or a trigger is received at the Measure input.
- **Upper position:** Same as the middle position but MS records infinitely until the switch is flipped to another position.

## CV In:

CV input for recording voltages.

## Mode:

Controls the method by which the Random knob modifies the current pattern:

- **2p:** Designed with randomized melodies in mind, CV is randomized across two octaves (volts) using a pitch and melody-aware algorithm.
- **5p:** Similar to 2p mode, but instead randomizes across 5 octaves (volts).
- **5c:** Randomizes CV across 5 volts with motion (instead of pitch) in mind. The amount the Random knob is turned controls the amount the CV can deviate from the original value. More useful for modulation instead of pitch sequencing.

The way each mode behaves is described in more detail below in the section titled **Less Random**.

## 12-tet:

In the upper position, the output voltages will be quantized chromatically (to semitones). Useful for creating melodies from unquantized sources like MS's own CV generation, LFOs, noise, and more. If the input CV is from an already quantized source, leaving 12-tet off will usually yield the best results (no need to quantize something twice).

## Pattern:

Switch and CV input that control which of the three patterns is selected for output at the Out jack.

## Duplicate:

Copies the current pattern to the other two patterns. Use this, for instance, to save a copy of your original pattern and randomize another copy.

## Measure:

A trigger reset input to indicate the start of a measure. When Measure receives a trigger, MS resets to the beginning of the pattern.

## Beat:

A clock input to advance the current step.

## Advance:

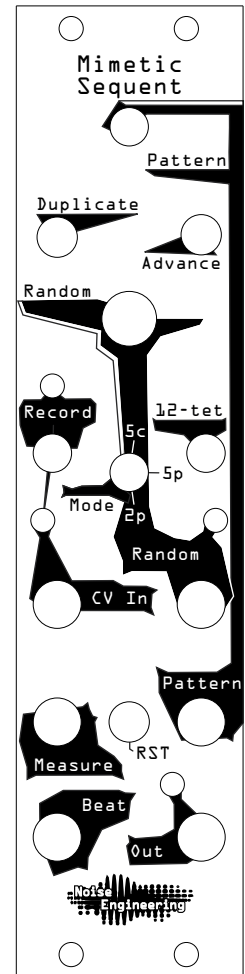
Advances to the next step in the pattern. Equivalent to a trigger into Beat.

## RST:

Reset button. While depressed, MS ignores any clock input. On release, MS resets the current step the beginning of the pattern.

## Out:

CV output.



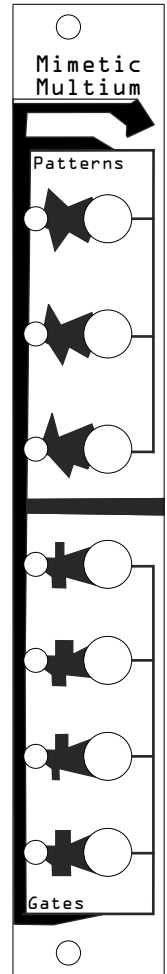
# Mimetic Multium interface

## Patterns:

Each of MS's 3 patterns has its own dedicated output jack. No limits!

## Gates:

Outputs four separate triggers. Triggers are randomly generated based on the patterns currently recorded in MS. Turning the Random knob on MS randomizes the trigger patterns here; turning Random fully down saves the trigger pattern.



## Technical Details

### Saving to Flash

Mimetic Sequent's patterns are saved to flash. To reduce wear and tear on flash—as it has a finite number of uses—this only occurs when:

- randomization is turned off (the random knob is turned fully CCW)
- recording is completed, either when short mode completes 64 steps or when the record switch is manually disabled

Because patterns are saved to flash memory, power cycling will not erase them; take your patterns wherever you want.

### Less Random

Randomization is a tricky subject—particularly when human perception is involved. In designing MS, I wanted to build in different options for people who might want to incorporate different ideas of “random” for synthesis. The result is a three-mode module that gives the user the ability to define the amount and type of randomization they want. In all modes the randomization knob controls both the probability the current step will be randomized as well as how extreme the randomization will be. Turning clockwise both increases both the chance the step will be randomized and the amount of randomization. Randomization occurs only to the current step in the current pattern on the beat. The mode switch on Mimetic Sequent allows three different ways of randomizing. The simplest mode is 5C. This mode treats the voltages as values. When it chooses to randomize a step, it uses the random knob to control the maximum movement from the current value so when the knob is mostly CCW it will only make small changes to the current pattern. This mode is not pitch cognizant but is great for modulation. Mode 2P was designed specifically for pitch. Mode 2P only randomizes across 2 octaves of pitches, but when it randomizes, it modifies the voltage in ways that make sense for the values being pitches. For example, in this mode, MS may offset by a fifth or copy another note from a different part of the pattern. As the knob is turned more clockwise the actions that it chooses between become less consonant and at the maximum becomes entirely random. By careful playing of the random knob musical variations can easily be produced on the fly. Mode 5P is similar to Mode 2P but instead randomizes over 5 octaves for a much broader range of sounds. Although these modes were designed with pitch in mind, their utility is definitely not limited to pitch CV.

### Input and output voltages

MS's trigger inputs trigger at around 2.5v. Its CV inputs are around 0-5v, and its output maxes out around 5.2v. Its trigger outputs are around 6v.

# Calibration

Mimetic Sequent comes pre-calibrated and should be set for life. If the trim pots are bumped and the module drifts, the device can be calibrated. Calibration of Mimetic Sequent requires a Mimetic Multium and an accurate voltage meter.

1. Connect a MM to MS via 10 pin ribbon
2. Connect MS to euro power
3. Put panel into initial position: randomize fully CCW, record down, quantize up, mode down, pattern left.
4. Depress the RST switch from before power on until the record LED stops blinking. \* RST held down during bootup enters calibration mode. \* calibration mode has two submodes determined by the quantize and record switch. - submode 1 (quantize up) is for calibrating the outputs and sets all outputs to 3v. - submode 2 (quantize down) is for calibrating the input and sets the MS output to equal the input voltage. - submode 3 (record up, either quantize) primary adjustment mode.
5. Set calibration submode 1 (quantize up).
6. Connect MS output to voltmeter.
7. Adjust output trimmer until output equals 3v.
8. If calibrating the connected MM, adjust the MM trimmers until the MM outputs are 3v.
9. Set calibration submode to 3 (record up), connect CV out to CV record in via cable.
10. Adjust input trimmer until both of the top gate outs on MM are blinking at approximately the same frequency.
11. Press duplicate to save current configuration to flash.

# Special Thanks

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