

HAILSTORM

Percussion Sequencer
v1.3

Introduction

Hailstorm is a four voice percussion based sequencer that uses built in synthesized drum sounds as well as user samples. Hailstorm uses touch to control nearly all aspects of sound generation and manipulation. MIDI clock and analog clock connections allow playback sync across a wide variety of devices. USB connection offers MIDI as well as a class compliant audio interface for recording into a DAW. Automation of all parameters can be recorded into the sequencer and sequences can be chained together to create longer compositions.

Ins & Outs



1. 3.5mm TRS-A MIDI input
2. 3.5mm TRS-A MIDI output
3. Analog sync input
4. Analog sync output
5. USB - Power, MIDI in/out, Audio out
6. Line level output

Both USB MIDI and TRS MIDI will not output clock if using sync input to drive timing of sequencer.

Hailstorm can also be used as a simple MIDI controller. Trigger outputs only send “note on” messages. You will experience stuck notes if using Hailstorm to control a device that expects “note off” messages, like a synthesizer.

MIDI Output

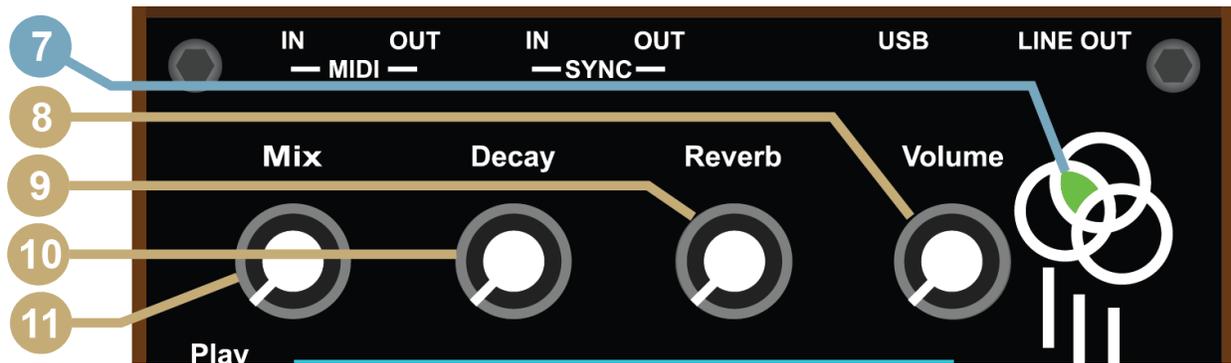
Trigger voices (Note on): 36 - 39

Knobs: cc 1-4

Pitch touch sliders: cc 5-8

Decay touch sliders: cc 9-12

Knobs / Run LED

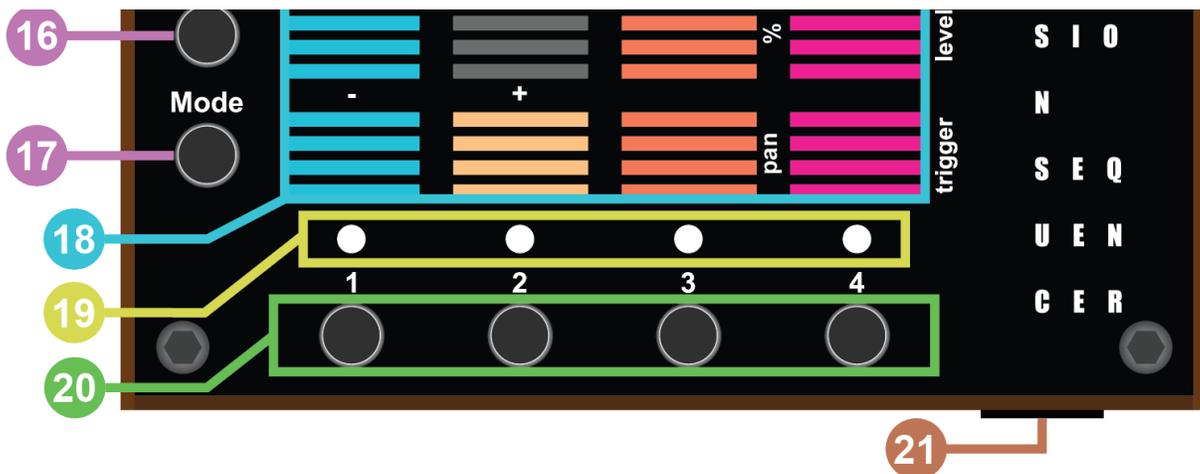
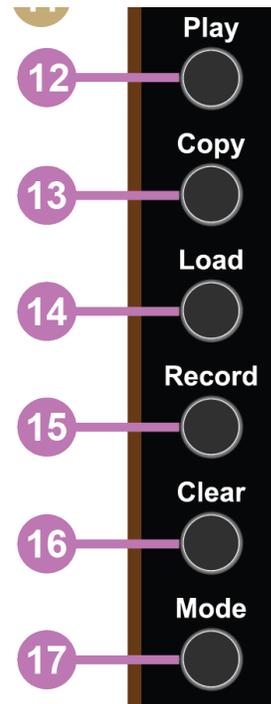


7. Sequencer running LED - Green when at first beat, yellow on half the phrase, white on all others
8. Global volume
9. Reverb size and mix
10. Global decay
11. Mix between synthesized drums and sample drum kits

All knob movements can be recorded into sequencer.

Buttons, LEDs, Touch Strips

- 12. Toggle sequencer playing - Only works with internal clock
- 13. Copy pattern to new bank (pg. 11)
- 14. Load sequence or drum kit (pg. 10)
- 15. Toggle record mode (pg. 7)
- 16. Toggle clear mode (pg. 7)
- 17. Display mode selection when held (pg. 8)



- 18. Touch / LED strips
- 19. Mute indicator LEDs for voices
- 20. Mute buttons for voices
- 21. SD card

- Basic Operation -

Press play button to start sequencer playback. The touch strips will illuminate, showing the recorded pattern for each voice. Touch the strips to hear the patterns change. As you slide your finger up the strip, the voice will trigger in greater frequency. Use the mute button below each strip to toggle mute.

Recording

Press the Record button. The mute LED's will blink red. Now play the touch strip however you wish. When you are done recording press the record toggle again to return to playback mode. You may also record knob movements while record mode is active.

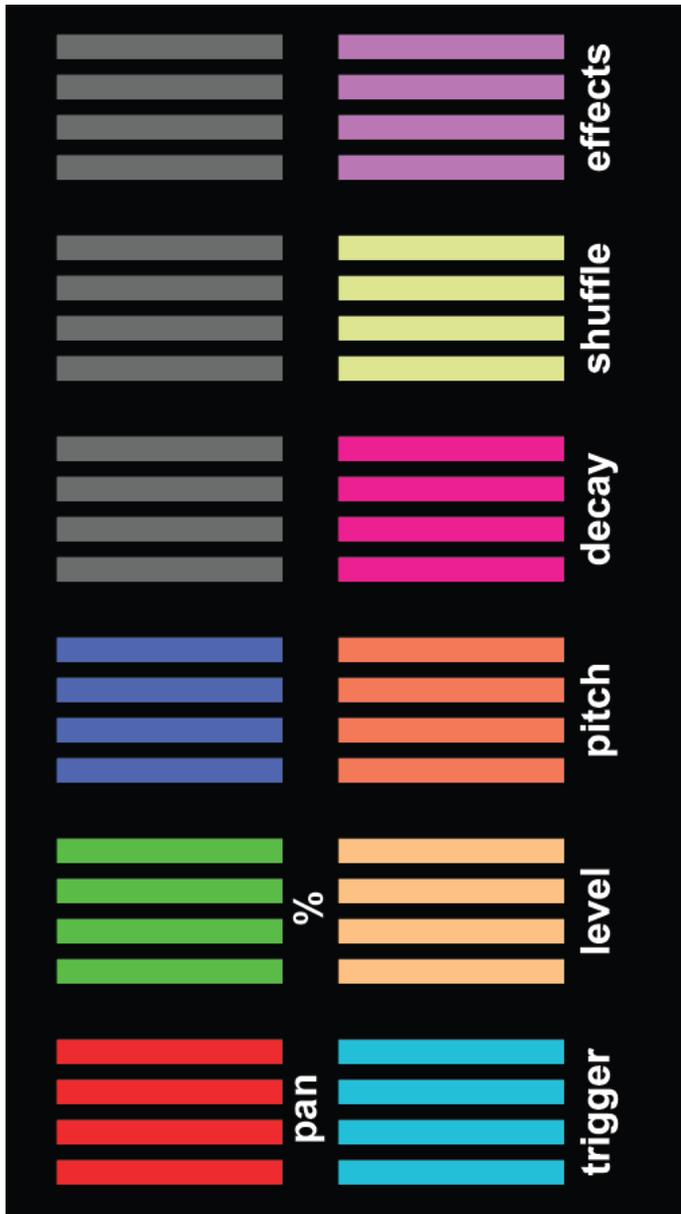
Clearing

Each voice can be cleared independently. Press the Clear button. The mute LED's will blink blue. Press any touch strip to clear that voice. Turn any knob while in clear mode to clear that knob automation from the sequence. The clear button also has a momentary when held behavior. This is useful to quickly clear tracks then return to previous state when released. Hold the clear button down for 5 seconds to clear all parameters from a sequence.

Recording and clearing of touch strips is the same across all modes (trigger, level, pitch, decay, shuffle, effects).

Modes

To switch modes, hold Mode button and press one of the modes indicated by the LED's on the two right columns.



TRIGGER MODE

This mode allows you to input trigger patterns for all 4 voices.

LEVEL MODE

Adjust volume of all four voices.

PITCH MODE

Adjust pitch of all four voices. Below middle position will shift pitch down, above middle position will shift pitch up. See global settings (pg. 13) to adjust glide time of pitch changes. See custom scales (pg. 9).

DECAY MODE

Adjust decay envelope of all four voices.

SHUFFLE MODE

Adjust shuffle pattern of all four voices. Shuffle is not swing, it changes the pattern of a sequence resulting in some steps removed and some added. The bottom position is no shuffle.

EFFECTS MODE

All effects are momentary, they only engage when strip is touched.

- First touch strip is a beat repeat. Move up to increase frequency.
- Second strip is pitch. Move up to increase pitch of all voices. The bottom position will reverse the playback of samples. See global settings (pg. 13) to adjust glide time of pitch changes.
- Strip three is a lowpass filter. Move up to increase frequency of filter cutoff point.
- The fourth strip is a short delay line that produces Karplus-Strong like sounds.

PAN MODE

Adjust pan for all four voices. The bottom position is hard left, top is hard right.

PROBABILITY (%)

The probability sliders set the likelihood of a trigger occurring. If the slider is set to the top position, it will occur 100% of the time, if it's at the bottom the probability is 10%.

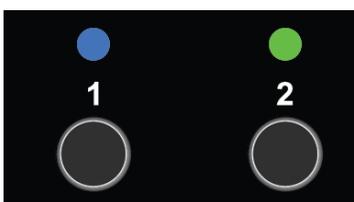
EFFECTS PROBABILITY (BLUE - UNLABELED)

The probability sliders set the likelihood of an effect occurring. If the slider is set to the top position, it will occur 100% of the time, if it's at the bottom the probability is 10%.

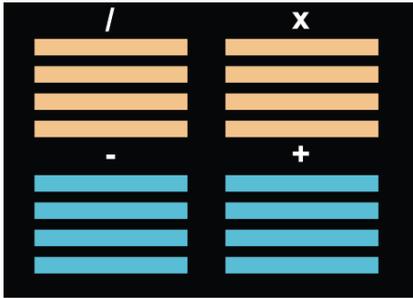
Changes in all modes can be recorded and cleared.

Custom Pitch Scales

It is possible to create custom pitch scales for each voice. Enter pitch mode and hold the position of the slider you wish to change. While held, a green and blue led will illuminate above the 1 and 2 mute buttons. Press these buttons to ascend or descend one semitone for that particular position on the slider. You may also press and hold the button to ascend or descend faster. Custom pitch scales are saved per sequence. They will be deleted when deleting a sequence (pg. 12).



Changing Tempo



To change internal tempo, hold down the Mode button.

The bottom left 4 touch LED blocks become buttons.

Yellow-left is divide, yellow-right is multiply.

Teal-left is minus, teal-right is plus.

These do not affect tempo if the sequencer is being clocked externally.

External Sync

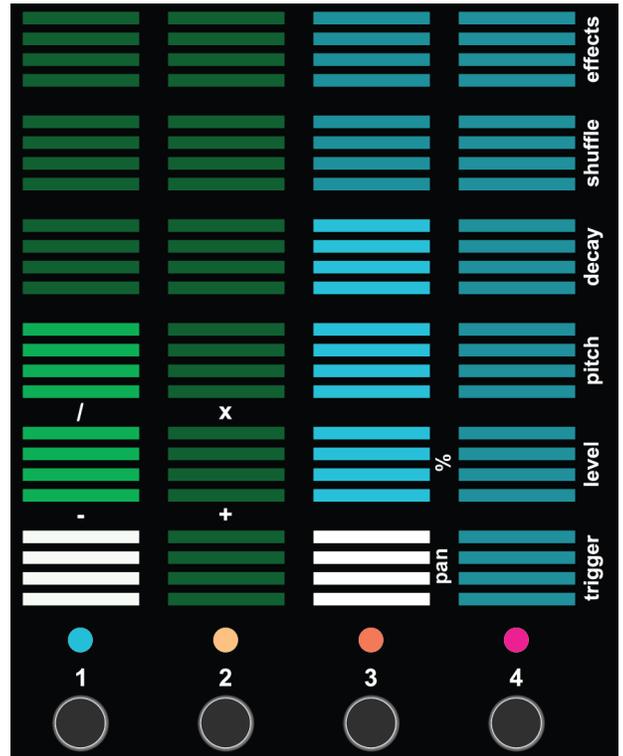
Hailstorm can be clocked by MIDI through the MIDI In jack or USB. Hailstorm can also be clocked using the Sync input with devices like Pocket Operators, Volcas or even Eurorack level signals.

Analog clock sync input works best with a mono cable and a 2ppqn clock. Ppqn input can be divided, see global settings (pg. 13) . Hailstorm will always output a 3.3v sync pulse signal while sequencer is running. MIDI output clock will not output if using sync input.

Loading

Hailstorm has 4 sets of 12 sequencer slots and 12 sample kit slots. The left two green columns represent sequences. The right two teal columns are drum kits. Brightly lit squares contain a sequence / kit to load. Dimly lit squares are blank. White squares indicate the currently loaded sequence / kit. Blue squares represent chained sequences / kits (see chaining below).

Press Load button to enter load mode. Touch any square to load a sequence or a kit. This can be done while the sequencer is running for an immediate change of pattern or sample selection. Blank sequences and kits can also be selected as a quick way to mute all output.



To change a set of sequences/sample kits hold mute button 1, 2, 3 or 4 for two seconds. The sequence will stop (if playing) and a quick animation of the touch strips will indicate the set you have loaded. The sequence running led color will also indicate the set that is loaded. Sets are defined by folders on the SD card. See File Management (pg. 14).

Chaining

It is possible to chain sequences as well as kit changes. Sequence and kit chains are both independent and can be up to 16 increments long. To chain kits or sequences first enter load mode as discussed above. While in load mode, press the Record button. The mute LED's should begin blinking blue in a sequence. This indicates you are now in chain mode. Now select the sequences or kits in the order in which you would like to have them play. Selecting the same sequence or kit multiple times is also possible if you would like that kit or sequence to play more than once before moving on. You can also select blank slots of kits and sequences to insert blank sections into the chain. Press the Record button again to exit chain mode. If you would like to clear the chains, enter chain mode and press the Clear button. This will clear both the pattern and kit chains. Sequence and kit chains are not saved and will be lost when powering off.

Copying

You can copy sequences into other slots in copy mode. Press the Copy button to enter copy mode. Only the left two columns will be illuminated, displaying sequence slots similar to the load mode. Press the sequence slot you would like to copy. It will begin blinking pink. Now press the destination slot. The sequence is now copied to a new slot. Copying is an easy way to build up many sequences and then record subtle changes into each. Try copying a simple pattern into a couple new slots. Now chain the slots together as shown in the chaining section. Now you can let the sequences play and record live adjustments to all sequences as they play.

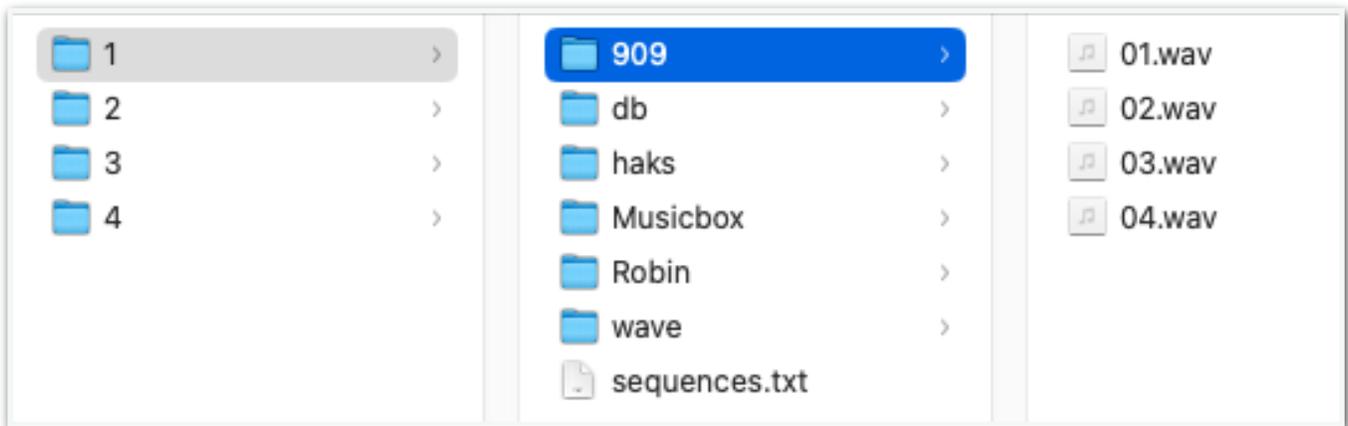
Saving / Deleting Sequences

Sequences have no save function. Sequences are automatically saved to a sequence text file on the SD card whenever the clock stops, be it internal or external. To delete a sequence. Load it first, then hold the Clear button for 5 seconds. You can also quickly delete sequences by using the copy function. Enter copy mode, select a blank sequence slot, then copy that over the sequence you would like to delete.

SD Card

The SD card can be tricky to remove and re-insert. The SD card does not have a push spring function to remove, you must pull it out manually. Take extra caution by looking into SD card slot before inserting SD in order to line up card with slot. Only remove and re insert SD card while powered off. It will not hurt the unit to remove or re-insert while power is on, but may result in Hailstorm crashing.

File Management



Files on the SD Card must not exceed 8MB. All samples are loaded into RAM at startup and the max capacity is 8MB.

Above is an example of how files are stored on the SD card. Note: firmware before 1.2 had a different file structure. Sample kits must be stored as directories (folders) inside set folders labeled 1, 2, 3, and 4. A sequence.txt file is also stored in the same folder and contains all 12 sequences for that set. Up to 12 sample kits can be added per set. Only 44.1kHz, 16bit wav files are supported. Samples can be stereo or mono. Only 4 samples can be stored in each kit, corresponding to the 4 voices. Samples will load alphabetically from 1-4 into touch strips. Naming the wav files as 1-4.wav as shown in the above image is recommended. Samples cannot contain any metadata. If a sample is not playing correctly and it is 44.1kHz/16bit, try opening it in a wav file editor such as Audacity and re-exporting it without any metadata.

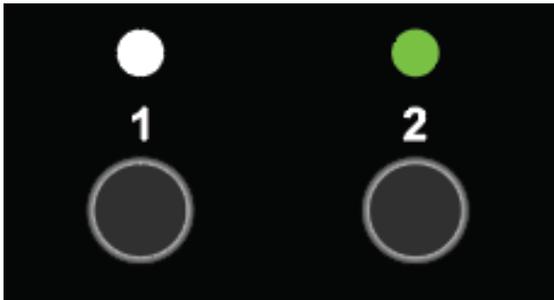
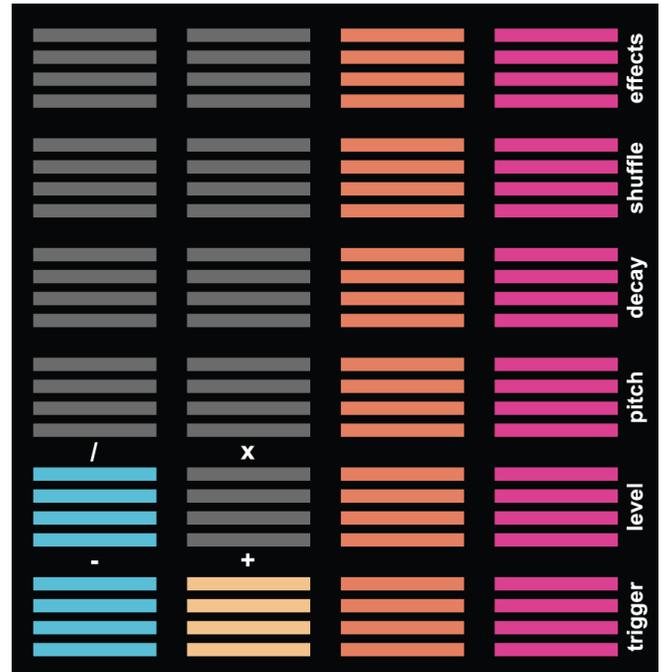
If an SD card issue is found during startup, the LED touch strips will sequentially illuminate yellow. If this happens, check to make sure the SD card has been inserted properly and that the file structure is correct.

Global Settings

Enter Global Settings mode by holding the Mode button and pressing the Record button. LED's should look similar to the image on the right.

These global settings are adjusted with knobs:

1. Mix knob sets threshold for touch. Set to lower value if touch strips are not reacting well to touch. Set higher if strips are triggering too often.
2. Decay knob sets MIDI channel for output. Bottom square is channel 1 and top is channel 6.
3. Reverb knob sets glide time for pitch. This setting is for pitch mode as well as the pitch effect on the effects page. Lower settings reduce glide time, higher settings increase glide time.
4. Volume knob sets LED brightness.



PPQN

The first two mute button adjust the clock division behavior when using an external clock for timing. This works for MIDI input and analog sync input. Select 1 to double length of the sequences by dividing incoming clock. Select 2 to half the length of sequences and increase the speed

Global settings are stored internally and will remain the same through power cycles.

Support

Please use contact form on RainyDayei.com/contact. Thank you for purchasing Hailstorm!