

EUCLIDEAN RHYTHMS



User Guide

Version 1.1.0

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Introduction

Euclidean Rhythms is an algorithmic rhythm player for Reason. It means that instead of coming up with and playing your rhythm patterns yourself, a rhythm pattern is generated for you according to Euclid's ancient algorithm. By tweaking just a few knobs in real-time, or using automation or CV, you can get almost endless variations and inspiration for your tracks!

Euclidean also offers plenty of precise manual control if you want it. For instance you can mute individual steps or draw their velocities. With Slide and Shuffle you can fine-tune the groove of your rhythms.

We hope you will get lots of inspiration from working with Euclidean Rhythms!

Getting Started



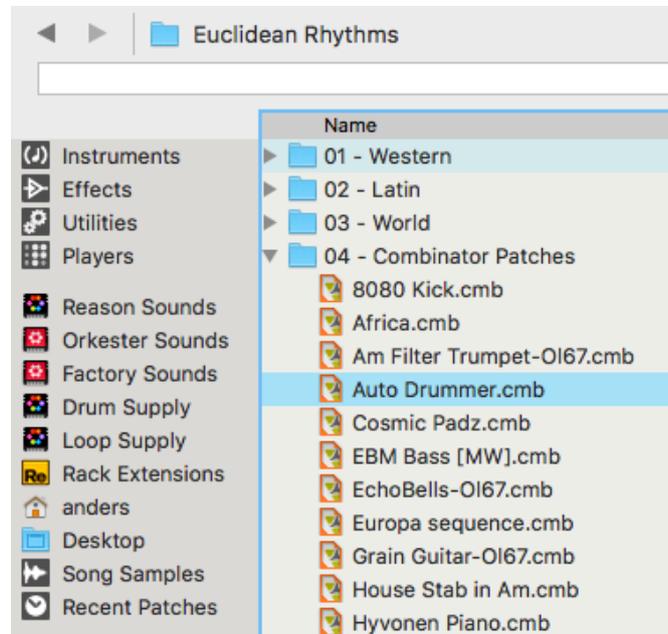
Creating your first rhythm pattern with Euclidean Rhythms is really easy!

1. First create the instrument you want to use. For this example we will select Europa, and choose one of the patches from the Plucks folder.
2. Then drop Euclidean above Europa, as you do with all Players. Euclidean will act as a MIDI filter between your MIDI keyboard and the instrument. As with any Player, you can combine Euclidean with other players.
3. Press some keys, and you will notice that Euclidean triggers the notes you play according to the rhythm showed in the display. If you hit Play in Reason's sequencer, Euclidean will automatically play along in sync with it.
4. If you want some inspiration for your piano, try tweaking Density (adding and removing hits in the pattern) and Offset (changing on which step the pattern starts). These simple controls can create almost endless variations and inspiration!

Loading a Combinator Patch

The included Combinator patches can be a great inspiration if you want to check out what it can be used for. To open a Combinator patch, do the following:

1. In Reason's browser, select the folder called Rack Extensions, and look for the subfolder called Euclidean Rhythms.
2. Under 04 - Combinator Patches you will find all the combinators that are included with Euclidean.
3. Double-click on the Combi patch you want, or drag it into the rack.



That's all you need to get started with Euclidean! But there's a lot more you can do, of course. Read on and we'll start going through all the front panel controls.

The Front Panel



On/Off



The On/Off button actually works more like a bypass switch. When set to Off, the display will be disabled and Euclidean will just bypass the incoming MIDI to the next player or instrument. The main purpose of this button is to automate it in order to turn patterns on and off in your arrangements.



The state of the On/Off button is not stored as part of device patches for Euclidean, but it is remembered in songs and Combinator patches.

The Display

Euclidean comes with an advanced interactive display that gives you a great view of what's going on at all times. The display is divided into three areas:



Steps - A list of the steps 1-32. You can modify the length of the pattern by dragging the Steps Handle to the left or right, or by just clicking the step number for the length you want.

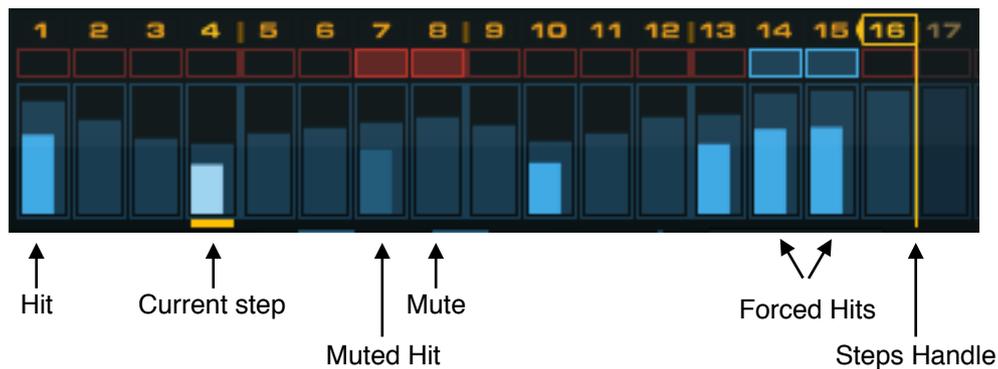


Whenever the Steps parameter is changed, Euclidean will recalculate its position in relation to the beginning of the song. So if you temporarily change it during playback and change it back again, the timing of the original pattern will be maintained.

Mutes - Consists of a row of red Mute buttons that can be used to force the corresponding steps in the pattern to be silent. This comes in handy if you want to leave certain steps free for other elements in your song, for example. If you click and drag across several mute buttons, you can enable/ disable them all in a single gesture. In the picture, steps 7 and 8 are muted.

Forced Hits - Alt-clicking a Mute sets the Step to Forced Hit, which means that it will always trigger notes. Think of it like the opposite of a Mute. Clicking the Forced Hit reverts it back to normal

again. If a Step is automated to both Mute and Forced Hit, Forced Hit has higher priority. In the picture, steps 14 and 15 are Forced Hits.



Pattern - Each active hit in the pattern is represented by a brightly coloured bar. The width and height of each bar represents the gate width and velocity of each hit. Muted steps appear in a darker color. You can set velocity for each step by drawing directly in the display.

Reset

Pushing this button will immediately force Euclidean’s playhead to return to the beginning of the pattern. The exact timing of the reset is quantized to the selected Rate to make sure you don’t lose the beat when using it in a live situation. The button can of course be automated and remote controlled.

Keys



This section controls how the incoming MIDI is handled.

Retrig	When this is active, each incoming MIDI note retriggers the pattern. This only makes a difference when Reason’s sequencer is running or if Hold is active.
Hold	When this is active, the pattern keeps playing after you release the keys on your keyboard. It will continue playing until you press Stop in the Reason sequencer, or deactivate Hold.
Input Range	<p>This feature let’s you define a key range where the notes inside the range will be triggered by Euclidean’s pattern. Outside the range, the notes will just be passed on to the next player or instrument in the chain.</p> <p>To set the lower or higher range limit you can either drag the note value in the display, or click and hold the LRN (Learn) button and play the desired note on your MIDI keyboard. You can also Alt-click or double-click on LRN to latch it, then tap it again to save the learned note.</p> <p>The Input Range setting is stored in the song and Combi patch, but not in the Euclidean patch format. This is so that you should be able to browse Euclidean rhythms without being restricted to what keys you are using.</p>

Pattern



This section controls how many steps in the pattern that are hits, and where the pattern starts.

Density	Decides the density of hits, in percent of the available steps. 0% means that no steps will be hits, and 100% means that all steps will be hits.
Hits	<p>Displays the actual number of hits that are being distributed by the algorithm within the current pattern length. You can also set the number of hits by dragging the value or using the up/down arrows. This will update the Density setting accordingly.</p> <p>Please note that changing the pattern length will change the number of hits, so that the Density (in %) is still the same.</p>
Offset	<p>Rotates the pattern to the left or right. The range is -16 to 16 steps. If the offset amount exceeds the number of steps, the pattern will “wrap around itself”.</p> <p> <i>The algorithm is implemented in such a way that if there is at least one hit, you’re guaranteed to get a hit on the first step of your pattern. This changes when Offset is applied, so if Offset is set to +4, there will always be a hit on the 5th step of the pattern, and so on.</i></p> <p> <i>You can also offset the pattern by alt-clicking anywhere in the pattern area in the main display and dragging right and left.</i></p>

Sync



This section controls the timing of the pattern playback.

Rate	<p>Determines the speed of the pattern in relation to the song clock. Possible values are 1/4, 1/8, 1/8T, 1/16, 1/16T, 1/32, and 1/64.</p> <p> <i>Whenever the Rate changes, Euclidean will recalculate its position in relation to the song. This means that you can temporarily “glitch out” your pattern by dramatically increasing the rate, and when you turn it back to the original resolution, the timing of the original pattern will be maintained.</i></p>
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<p>Shuffle</p>	<p>The Shuffle parameter will move every even 16th in the pattern forwards in time, giving it more of a swing feel. The range of the knob is 50% to 75%. At 50%, no shuffle is applied, as the 16th is 50% between its surrounding 16ths.</p> <p> <i>Euclidean's Shuffle parameter corresponds exactly to the Shuffle parameters (individual and global) found in Reason's own ReGroove mixer. For example, if you set Euclidean's Shuffle value to the same value as Global Shuffle in the ReGroove mixer, Euclid will shuffle perfectly together with Redrum, Matrix and RPG-8.</i></p>
<p>Slide</p>	<p>Allows you to smoothly slide the entire pattern forwards or backwards in time. The range is +/-120 ticks, which means +/- one 32nd note. Negative slide will give the pattern a more hurried feel in relation to the song, while positive slide will give the pattern a more relaxed feel in relation to the song. When slide is 0, the pattern will be exactly on the beats of the song. The knob will snap to this value.</p> <p> This parameter corresponds exactly to the Slide parameter found in Reason's own ReGroove mixer.</p> <p> Slide also comes in handy when you're controlling external MIDI instruments live, since you can use small negative slide values for latency compensation.</p>

Notes



This section lets you control the note length and velocity for all steps in the pattern.

<p>Length</p>	<p>Sets the duration of the notes, in percent of the step length. At 0%, very short notes are generated.</p> <p> If you control Length with CV, the display will show the sum of the Length knob setting, and the CV signal.</p>
<p>Velocity</p>	<p>Sets the overall velocity of the notes, in percent of their potential velocities. The darker bars behind the hits represent the potential velocity of each step. 0% corresponds to a MIDI velocity value of 0, which means that no notes will be played.</p> <p> Patch Tip: Modulate Velocity with a curve pattern from Matrix with a different pattern length to get accents that shift over time.</p> <p> If you control Velocity with CV, the display will show the sum of the Velocity knob setting, and the CV signal.</p>
<p>Velocity Mode</p>	<p>This switch let's you decide if Euclidean should use the velocities in the incoming MIDI (As Played) or a fixed value of 127 (Fixed) as the base for the velocity scaling and output. So if you want all chords you play to be exactly the same, set this to Fixed!</p>

The Back Panel



CV inputs

These are your options if you want to control Euclidean using CV:

<p>Reset</p>	<p>Whenever the incoming signal on the Reset input rises above 0, Euclid will return to the first step. It's exactly the same thing as if the Manual Reset button on the front panel would have been pushed.</p>
<p>Density, Offset, Note Length and Velocity</p>	<p>There are CV modulation inputs for the four most commonly used controls on the front panel. All modulation CV inputs have corresponding trim knobs that attenuate the incoming signal. The trimmed CV value is then added to the value set on the front panel.</p>

Tips & Tricks

Euclidean works really well in combination with two of Propellerhead's built-in players to produce chords from one key press, namely Scales & Chords and Note Echo!

Scales & Chords

Scales & Chords tweaks or filters your MIDI so that it always conforms to a musical scale. It can also generate chords from a single note press, by adding notes in the selected scale. Just insert Scales & Chords after Euclidean and make sure the Chords feature is active. Actually, you can insert it before Euclidean as well, the result will be exactly the same.



Learn more about Scales & Chords here: <https://www.youtube.com/watch?v=aMqfUXILznA>

Create chords with Note Echo

In early house music, a popular trick was to sample a single piano chord, and then play a riff on different keys using only that sample. As opposed to using Scales & Chords, this will often generate notes that are not in the scale, which in this case is desirable. To create such “stiff” chords, you can use the Note Repeat player:



1. Insert Note Echo above your instrument.
2. Set Step Length to 0. This means that all repeats will come at the same time as the first note, i.e. a chord!
3. Set Repeats to max, as you want many notes to choose from.
4. Set Pitch to +1. This means that every repeat will be one note higher than the previous repeat, and gives us a palette of notes to choose from.
5. Disable the unwanted notes in the chord. For the typical house piano sound, a minor 7th chord will be a good start. It consists of the root (1), minor third (4), fifth (8) and minor seven (11), so mute repeats 2, 3, 5, 6, 7, 9, 10 and 12-17.
6. Insert Euclidean before (or after) Note Echo.
7. Play some notes on your MIDI keyboard. Instant house feeling!



Actually, step 2-5 can be replaced by simply loading the Chords/Minor 7.repatch patch in the Note Echo browser. But hey, this is a manual and you probably like to know how it works in detail.

Learn more about Note Echo here: <https://www.youtube.com/watch?v=PDaGOoNFNvE>

MIDI Implementation Chart

MIDI CC #	Parameter
12	Rate
13	Steps (sequence length)
14	Density
15	Offset
16	Note Length
17	Velocity
18	Reset
19	On
20	Slide
21	Shuffle
27	Hold
28	Retrig
29	Velocity Mode
30	Low Key
31	High Key
66–95, 102, 103	Step Velocity 1–32
104–119, 128–143	Step Mute 1–32
144–175	Forced Hit 1–32

Remote Implementation Chart

To export your own Remote Implementation Chart from Reason, follow these steps:

1. Make sure you've selected an instance of Euclidean Rhythms in the rack
2. In Reason's menu, choose **File**→**Export Device Remote Info...**
3. Choose a folder to save the Remote info file in