

# Propulsion Sequencer

Operation Manual

Version 1.0.0



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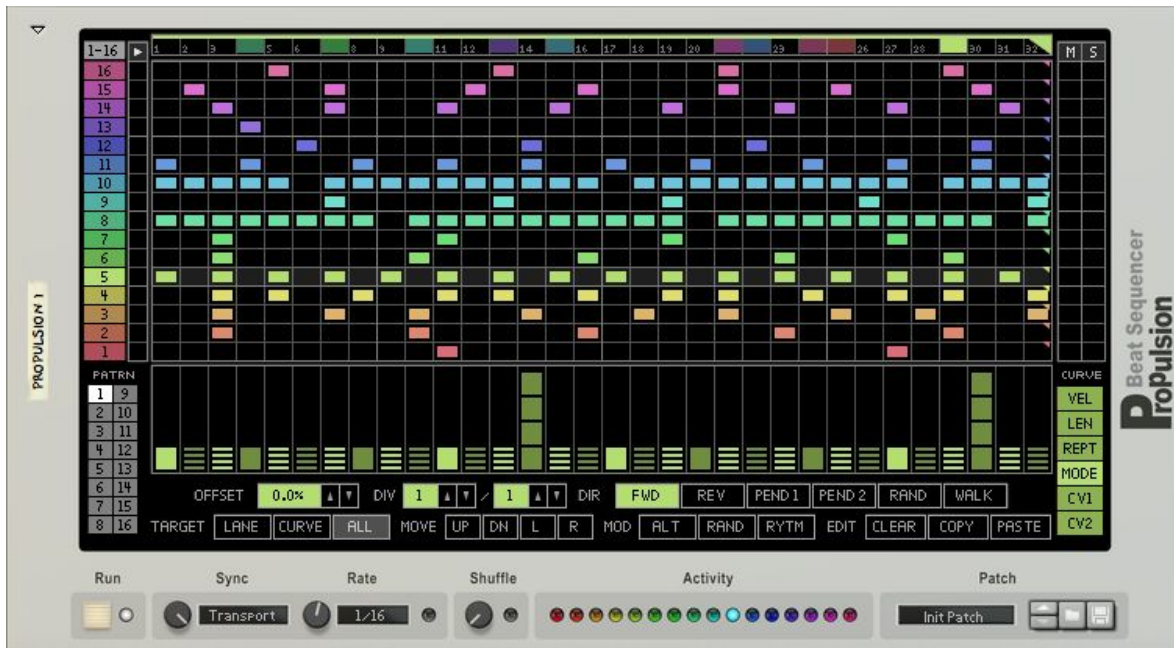
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# Introduction

Propulsion is a 16 track percussion sequencer. You get a classic matrix style editor where each lane has an associated loop length, rate divisor, play direction, and offset. Each lane step has a corresponding velocity, gate length, repeat mode, and two aux CV values.



Front Panel



Back Panel

# Quick Start

## Connections

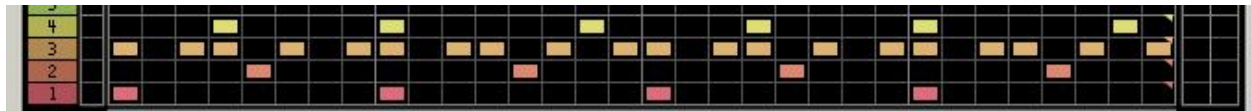
Create an instance of any device that accepts CV Gate input, percussion devices with multiple gate inputs work the best (ReDrum, Kong). Next create an instance of Propulsion. Then, via the back panel, connect Propulsion's gate outputs to the inputs of the first device.



*Propulsion connected to Kong's gate inputs.*

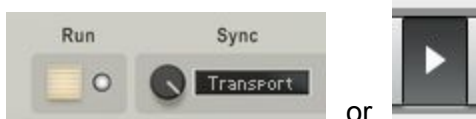
## Pattern

Now click and draw any pattern on Propulsion's grid.



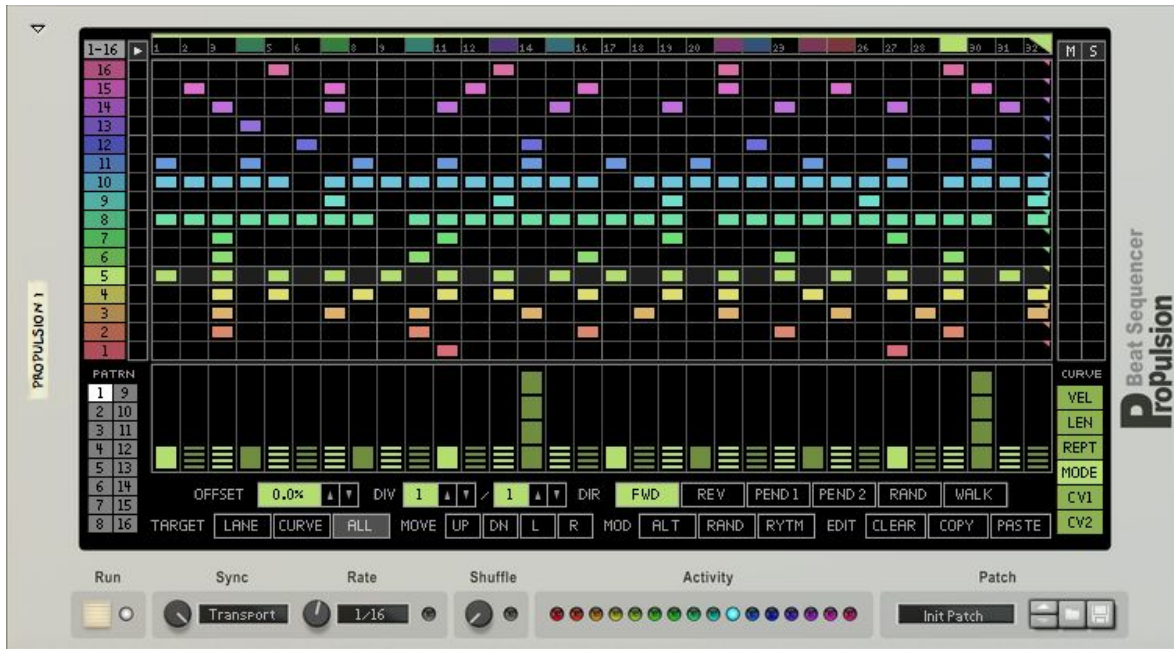
## Playing

Press the Run button or Start the Transport



You should hear Kong playing the pattern.

# Front Panel



## Run



Starts the sequencer. Led indicates current running state. If the **Sync** mode is **Transport**, then the **Run** button will be ignored when Reason's transport is running.

## Sync & Rate



The Sync and Rate parameters determine Propulsion's playback mode and step timing. The Sync parameter has three options:

- **Free** sets a specific rate in steps per second (Hertz).
- **Tempo** will synchronize Propulsion to the tempo of the song. The sequence will start when **Run** is pressed.
- **Transport** will hard lock to Reason's play position. This mode will override **Run** state when Reason is playing.

## Shuffle



The shuffle parameter will introduce a shuffle into the playback. The light indicates the shuffle is active. Shuffle can only be active in **Tempo** and **Transport** sync modes, with any of the rates from 1/16 to 1/128.

## Activity



The activity area shows outgoing CV gate events. The outgoing CV gate events on the right are colored to correspond to the voice.

## Lane Selection & Preview



This selects which of the 16 lanes and associated curves are being edited. Each Lane has its own output section on the back panel with a corresponding number and color. When the top button ( **1-16** ) is engaged, all lanes will be selected and edits will affect all lanes at once.

Clicking in the area to the right of the Lane Selection will trigger the gate for that lane to preview the sound wired to that gate.


## Pattern Selection



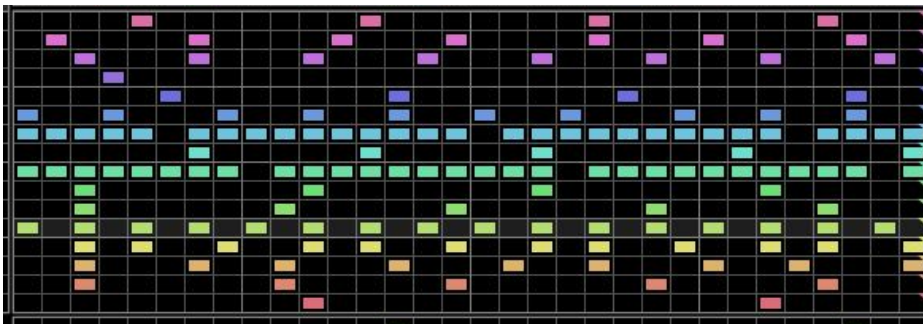
This selects which of the 16 patterns is being edited and currently played.

## Length and Play Position



The lane loop length is designated by the step with the triangle. The currently selected lane will be highlighted with a brighter color. Clicking the bar will move the triangle set the lane length. The moving square indicator is the current play position of the lane. If all lanes are selected (  ), the marker will turn white, and all lengths can be set at once.

## Grid View



This is a the main drawable grid for a pattern. Each row corresponds to a gate CV output. Click to draw on the grid. When the play position is on a given column, the gate will be emitted from the lanes gate CV. Clicking anywhere on the grid with also select that lane.

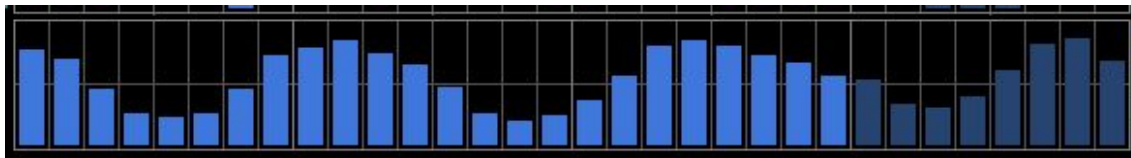
## Curve Selection



This selects the curve to be editing. The following curves are available:

- **VEL** (Step Velocity) the level of the Gate CV output.
- **LEN** (Gate Length) the duration of the Gate CV output.
- **REPT** (Repeat) the steps from 1-8 times.
- **MODE** (Repeat Mode) selects how to repeat.
- **CV1** A general purpose CV curve to modulate other devices.
- **CV2** A second general CV curve to modulate other devices.

## Curve Editor



Clicking and drawing on the curve editor will modify the values for the curve that is selected. The **VEL** (Step Velocity) curve CV range is 0.0 to 1.0. The **LEN** (Gate Length) curve's range is 0% to 100% of the step duration. A **LEN** value of 100% will cause the gate CV to stay on and cause legato sliding. **CV1** and **CV2** has a range of both 0.0 to 1.0 (unipolar) and -1.0 to 1.0 (bipolar), depending on which output on the back panel is chosen. For the bipolar output, the middle horizontal line equals a CV value of 0.0.





The **REPT** curve selects a stepped number of times to repeat / multiply the base step duration from 1-8. The behavior of the repeats is selected with **MODE** curve.



*REPT curve with 1,4,2,8,1,1,1 step repeats.*

The Repeat **MODE** curve will select how the **REPT** curve is interpreted. There are currently 4 modes supported.



	<p><b>First Step</b> Sends on the first repeated step, the remaining steps are off.</p>		<p><b>Repeat</b> Sends on each repeated step.</p>
	<p><b>Whole</b> Multiplies a single step duration by the number of repeats.</p>		<p><b>Ratchet</b> Subdivides a single step by the number of repeats creating a rapid pulsing effect.</p>

## Offset



Adjusts the offset of the lane in time. Values range from -50% to +50%. -50% will shift the lane ahead of the other lanes by 50% of the lanes step duration. +50% will shift the lane behind the other lanes by 50% of the lanes step duration.

## Rate Division



A modifier to the rate that is per lane. Sets the fraction of step off the global rate. Numerator and Divisor can be set from 1 to 128.

Global Rate	DIV	Pattern Rate
1/1	1/16	1/16
1/1	1/4	1/4
1/16	1/2	1/32
1/16	4/1	1/4
1/16	2/3	1/16T
1/16	2/6	1/32T
1/16	7/3	7/48

*Pattern Rate Division Examples*

## Direction



Sets the direction of the lane. The following direction options are available:

- **FWD** (Forward) Loops the pattern from first step to last step
- **REV** (Reverse) Loops the pattern from last step to first step
- **PEND1** (Pendulum 1) Loops the pattern from first step to last step, then last step to first step. The first and last steps will play twice.
- **PEND2** (Pendulum 2) Loops the pattern from first step to last step, then 2nd last step to 2nd to first step. The first and last steps will play once.
- **RAND** (Random) Steps played in a random order.
- **WALK** (Random Walk) will randomly chose to step backward, stay and retrigger, or step forward with a bias for forward movement.

Note: CV Step modulation via the back panel will override the direction setting and set the position directly.

## Tools

### Tool Target



Sets the target that the rest of the tools will operate on:

- **LANE**, tools will affect only the steps in the lane
- **CURVE**, tools will affect only the selected curve
- **ALL**, tools will affect lane steps, curves, loop length, rate divisor, play direction, and offset.

### Move Tools



Movement tools will allow the lanes to be shifted **Up**, **Down**, **Left**, or **Right**. Steps will wrap around when moving up or down. Curves will not wrap around when moving up or down. Operates on the steps and the selected curve depending on the target selection.

### Modification Tools



Modification tools will only affect the area that is currently within the lanes length. Items outside the lane length will not be modified. **Random** will set all the values to a random number. **Alter** will shuffle the values that are already contained in the lane. **Rhythm** will generate a random rhythmic pattern.

Operates on the steps and the selected curve depending on the target selection.

## Edit Tools



The **Clear**, **Copy**, **Paste** tools behave differently based on what **Tool Target** is selected.

### *Clear*

With **LANE** selected, clears out the steps from the grid. With **CURVE** selected, clears out the currently selected curve. With **ALL** selected, resets the entire lane pattern including length, rate, offset, direction, steps, and all curves.

### *Copy*

With **LANE** selected, copies the steps from the grid. With **CURVE** selected, copies the currently selected curve. With **ALL** selected, copies the entire lane pattern including length, rate, direction, steps, and all curves.

### *Paste*

With **LANE** selected, pastes the steps to grid. With **CURVE** selected, pastes to the currently selected curve. With **ALL** selected, pastes the entire lane pattern including length, rate, direction, steps, and all curves.

## Edit Tools Examples

### **Copy a single Curve to another Curve**

Select the curve you want to copy, Set Target to [Curve], Press Edit [Copy], Select the curve you want to paste to, Press Edit [Paste]

### **Copy a single Lanes Steps to another Lane**

Select the lane you want to copy, Set Target to [Lane], Press Edit [Copy], Select the lane you want to paste to, Press Edit [Paste]

### **Copy everything in a Lane to another Lane**

Select the lane you want to copy, Set Target to [All], Press Edit [Copy], Select the lane you want to paste to, Press Edit [Paste]

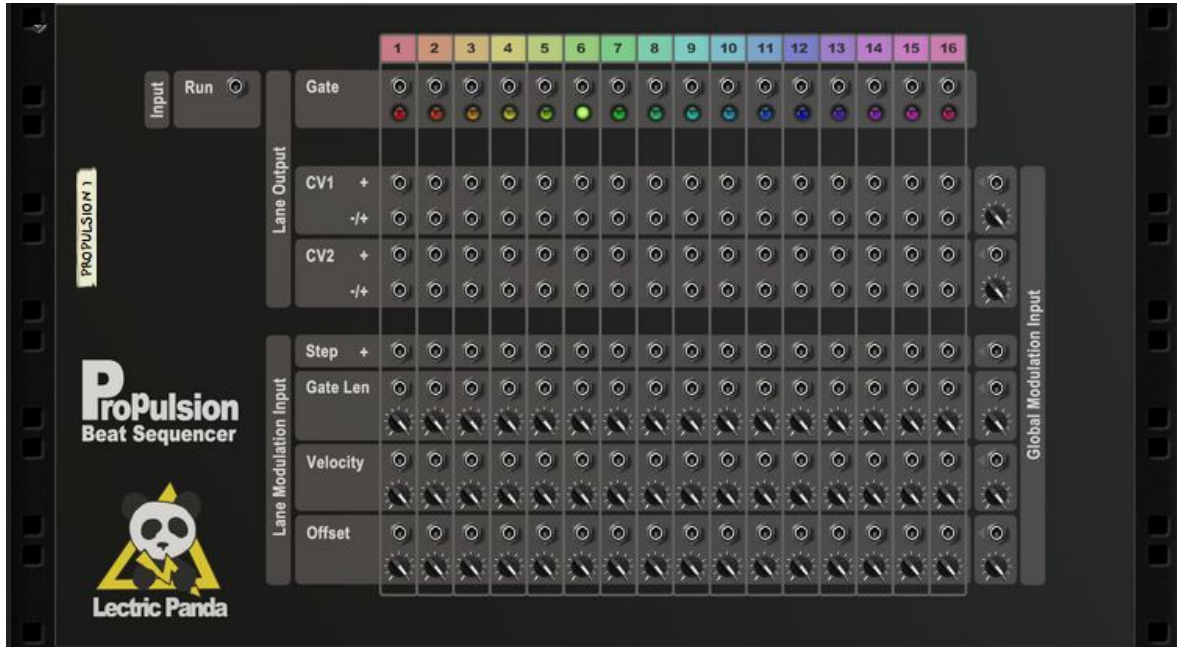
### **Copy an entire Pattern to another Pattern**

Select the pattern you want to copy, Press [1-16] for all lanes, Set Target to [All], Press Edit [Copy], Select the pattern you want to paste to, Press Edit [Paste]

### **Copy everything in a Lane to All Lanes**

Select the lane you want to copy, Set Target to [All], Press Edit [Copy], Press [1-16] for all lanes, Press Edit [Paste]

# Back Panel



Each of the 16 lanes has its own section that is numbered and color coded to match the Voice Selection on the front panel.

## Input Gate & Note



Overrides the front Run Button. Runs the sequencer when high.

## Output Gate



Each lane has a gate out. The Gate is the on/off/level signal.

## Output CV1 & CV2



Each lane also has two general purpose CV curves for modulating other devices. Both CV1 and CV2 have unipolar (Marked with a +) and bipolar (Marked with an -/+) outputs.

## Modulation

### Step



The Step input is a unipolar CV control. This controls the playing step for the voice. The CV range of 0.0-1.0 is mapped to the steps inside the length of the pattern. So if you have a lane of length 4, a CV value in the range of 0.50 to 0.75 would correspond to step 3.

### Gate Len



The Gate Length Modulation is a bipolar CV input that sums with the pattern gate length of every step. The range is -100% to 100%.

### Velocity



The Velocity Modulation is a bipolar CV input that sums with the velocity of every step in the pattern. The range is -1.0 to 1.0.

## Offset



The Offset Modulation is a bipolar CV input that sums with the offset of every step in the pattern. The range is -50% to 50%.