RoboticBean CREATIVE

STEP NOTE RECORDER II

User Guide

Version 2.0.0

Contents

Introduction

Step Note Recorder adds step recording of MIDI notes to Reason. It was originally inspired by the classic step sequencers found in old analog synths like Sequential Circuits Pro One, Roland SH-101 and Roland TB-303: You simply enable Record and enter notes from your MIDI keyboard without worrying about the timing at all. After recording, you can program rests and ties, and edit the pitch and velocity of each step.

But Step is so much more than that! It provides you with some really powerful tools to get plenty of variation from your recorded sequence: You can change the length of the sequence, rotate it, transpose it and adjust it to one of 14 different scales in any key you want. You can also play it back in 7 different directions, add variations using conditions, program repeats and ratchets, and even send out 2 independent channels of CV parameter changes associated with each step in your sequence. Most of this can be automated, and all of it can be Remote™ controlled, of course.

What's New in Step Note Recorder II?

• Piano roll view, expandable to 2 octaves

• Curve lanes 1 & 2 with corresponding CV outputs (switchable between unipolar and bipolar)

• Conditions lane with support for probability, recurrence and linked conditions

• Ability to record notes, rests, ties, repeat counts and curve 1 simultaneously, just using your MIDI keyboard — No additional setup required, all monitored in real time

• Separate Velocity CV output that can be used as an additional modulation source for your instrument

• Support for modifier keys everywhere in the display to enable precision editing (Shift), octave transposition (Alt) or setting of default values (Ctrl/Cmd)

• New combinator demo patches

• Bigger display and other graphical enhancements

Getting Started

Getting started with Step is really easy! We have provided a set of starter Combinator patches that do all the necessary wiring for you.

1. In Reason's browser, select the folder called **Rack Extensions**, and look for the subfolder called **Step Note Recorder**.

2. The subfolder **Combinator Patches** contains all the combinators included with Step.

3. Under **Starters** we have created some template patches with Step prewired to a single instrument.

4. Choose one of them, for example **Thor Starter**, and double-click on it or drag it into the rack.

5. On the Combinator device that appears in the rack, click on **Show Devices** so you can see Step's front panel.

6. If you play notes on your MIDI keyboard (or on Reason's on-screen piano keys) you should hear the instrument play, and you should see Step's red Gate LED light up whenever you press a key.

7. When you have found some notes you'd like to record, click on the Record button in the lower left corner of Step's display. The button will turn bright red and start blinking.

8. Play the notes one by one using your MIDI keyboard. They will appear in Step's sequence display as you play them:
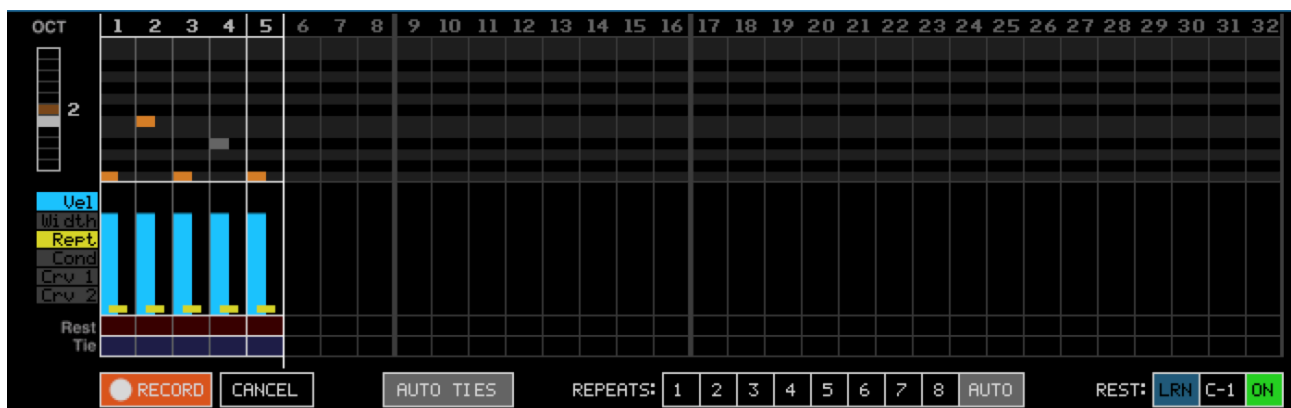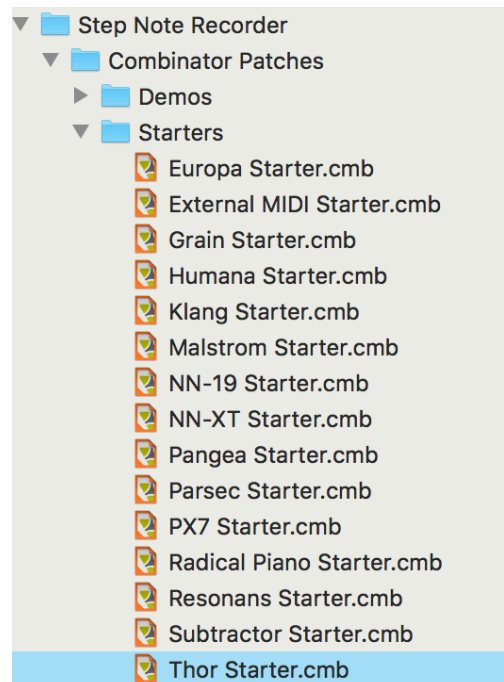
9. When you're done recording, click on the Record button again to save the sequence and return to playback mode.

10. Press the Play button in Reason's transport bar to play back your recorded sequence.

11. To change the speed of the sequence in relation to Reason's song clock, turn the Resolution knob.

12. Now play around with all the controls! Try adding some rests and ties by clicking on the red and blue buttons, or try out some different playback directions using the Direction control.

This is all you need to get started with Step! There's a lot more you can do, of course, like editing the sequence, transposing it, tuning it to different scales and so on. We will go through all this in detail in the following chapters of this user guide.

The Front Panel
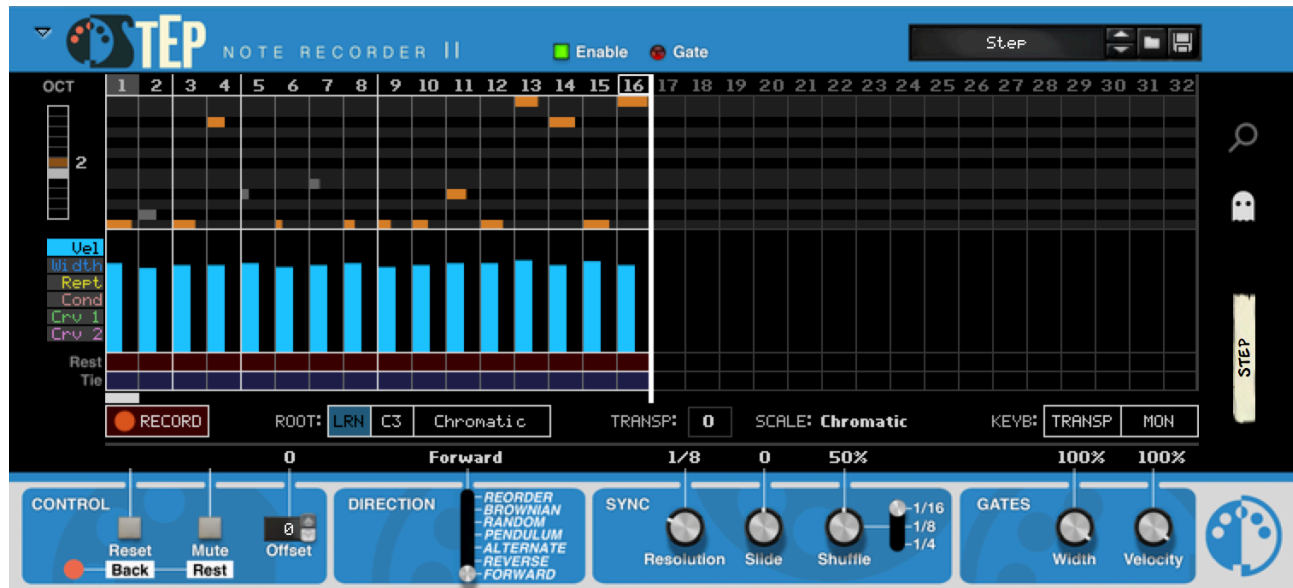
Most of Step's front panel is taken up by the big interactive display. Both the display and the hardware controls below it are used to control all aspects of Step.

The Sequence

The upper part of the display visualizes the sequence itself. You can divide the sequence grid into 6 lanes:
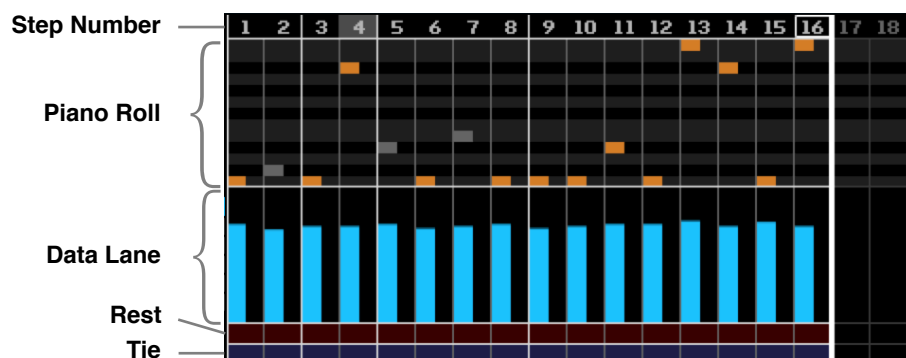
Step Number:	Shows the number of each step, highlighting the one currently being played back.
	Clicking on a step number will change the length of the sequence to that number.
Piano Roll:	Visualizes the notes in the sequence. See the Piano Roll section for more details.

|	
Data Lane:	The Data lane has six different views: **Velocity** (Vel), **Gate Width** (Width), **Repeats** (Rept), **Conditions** (Cond), **Curve 1** (Crv 1) and **Curve 2** (Crv 2). For more details, see the Data Lane section.
Rest:	When this button is lit, the step is a rest (silent). Click on the Rest button to toggle it on and off. You can also enable or disable several buttons at a time by dragging sideways.
Tie:	When this button is lit, the corresponding step will tie into the next step (Legato). Click on the Tie button to toggle it on and off. You can also enable or disable several buttons at a time by dragging sideways.

The Piano Roll

The piano roll is where you can view and edit the notes you just recorded.
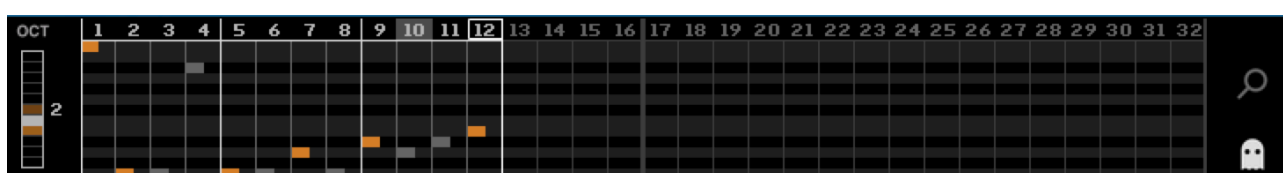
The default view is one octave (C to C), but you can expand the view to two octaves by clicking on the magnifying glass icon to the right:
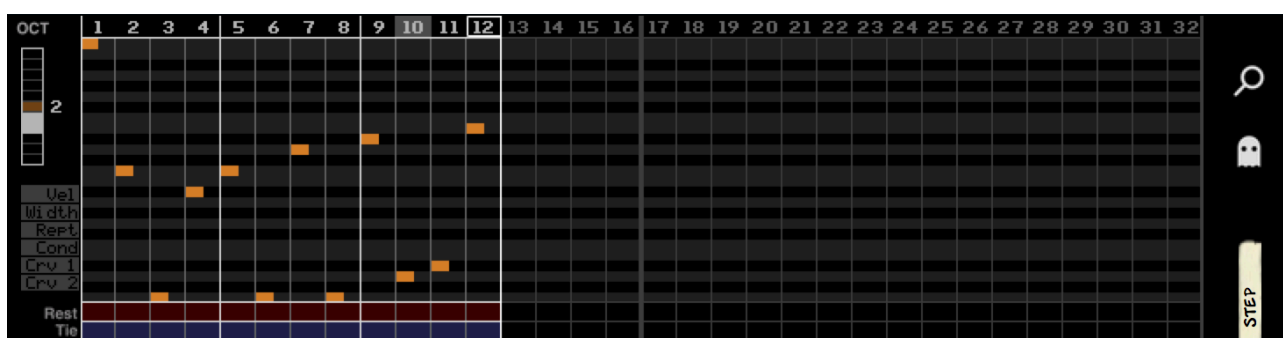
You can decide which octave(s) you want to see by moving the octave slider on the left side. Colours on the octave slider background indicates which octaves contain notes, with a higher intensity the more notes it has.

Expand note view
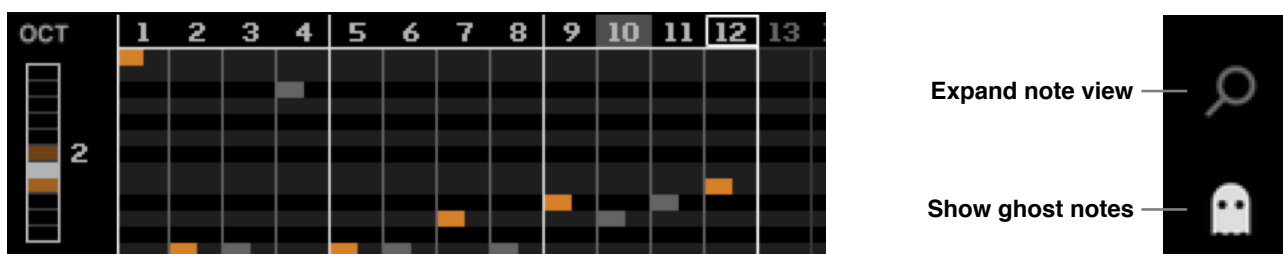
Show ghost notes

The notes that are outside of the current octave will be viewed as gray shadows, or **ghost notes**, in the note grid. This gives you an idea of which pitches are present in the sequence, even when you have the notes spread out over several octaves. Ghost notes are visible by default, but you can hide them by clicking on the ghost icon to the right.

You can change the pitches of the notes by simply clicking in the grid where you want them. Since Step is monophonic, there can only be one note per step.

If you hold **Shift** and click inside a step column in the note grid, the view will jump to the octave that note is in, and you will see the note value displayed just below the note grid while you hold the mouse button. You can now drag up and down to transpose the note with higher precision. The octave view will follow automatically if you drag the note outside the currently viewable range.

If you hold **Alt** instead, the view will also jump to the note's octave, but dragging upwards and downwards will transpose the note in octave increments instead. The octave view will follow along automatically.

The Data Lane

The Data lane can show six different aspects of the sequence, depending on which view you have selected in the menu to the left. You can always edit the contents of the Data lane by clicking and dragging in it, and you can almost always drag across several steps to change multiple values with a single gesture.

You can hold the **Shift** key to draw with higher precision as well as see the exact value you're drawing. If you hold **Cmd/Ctrl** you will set the default value for each step you draw across.

Velocity

Shows the velocity of each step in the sequence as a vertical bar. If the global Velocity knob is below 100%, the bars will be scaled down accordingly, leaving the "potential velocity" visible as a grey shadow behind the velocity bar.
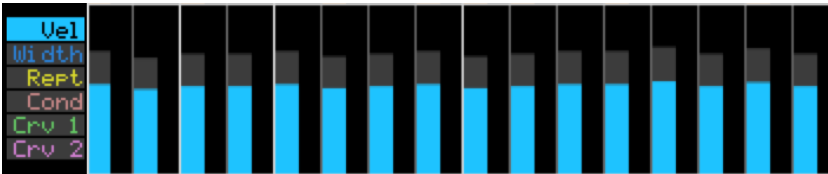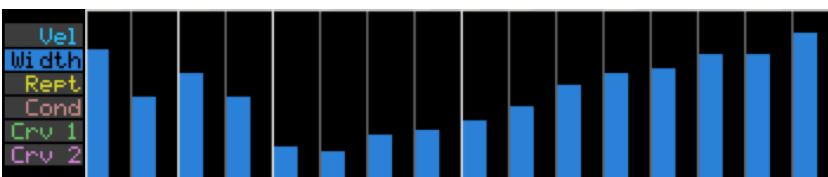
Gate Width

Shows the gate width of each step in the sequence as a vertical bar. If the global Width knob is below 100%, the bars will be scaled down accordingly, leaving the "potential gate width" as a grey shadow behind the gate width bar.

⚠️ *The gate width settings have no effect when syncing Step via the Clock CV input.*

Repeats   `Rept`

The repeat lane consists of two "sub lanes": The repeat mode in the upper part, and the repeat count in the lower part.
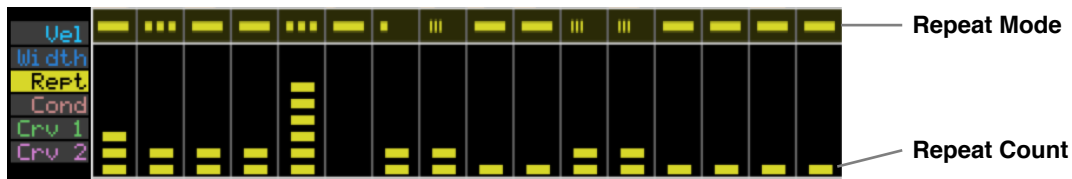
The repeat count and the repeat mode determine the duration of each step, and the way that it's played back. There are four different repeat modes that you can select from a popup menu by clicking on the repeat mode you want to change.

In **Single** mode, the step will only play on its first repeat, and be silent for the rest of the repeat count. The gate width of the note will be determined by the per-step and global Width controls.

If the step is tied, it will hold the note through the entire repeat count and then tie into the next step.

In **Repeat** mode, the step will repeat itself for every pulse in the repeat count. Each repeat will have its gate width determined by the per-step and global Width controls.

If the step is tied, the last note in the repeat count will tie into the next step.

In **Hold** mode, the step will hold for the duration of the repeat count. The per-step and global Width controls will affect the duration of the last part of the note (that plays during the last repeat).

Ratchet mode is different from the other modes in that it won't increase the duration of the step. Instead, it will divide the step by the repeat count, causing a stutter-like effect. The gate width of each repeat is affected by the per-step and global Width settings.

You can copy a repeat mode setting by **Shift**-clicking on the repeat mode button of the step you want to copy, and then dragging sideways to "paint" the setting to the other steps.
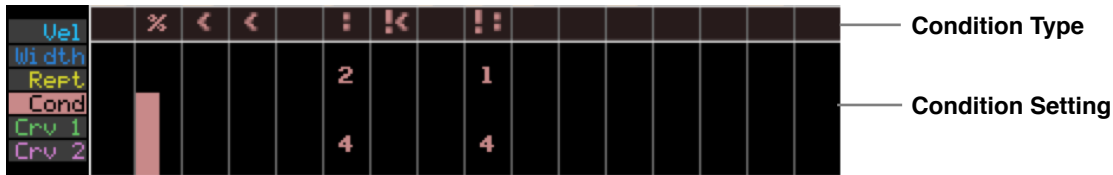
If you **Cmd/Ctrl**-click on the repeat mode button instead, you reset it to its default value (Hold). You can drag sideways to reset several steps in a single gesture.

The repeat count for each step can be set between 0 and 8 pulses by drawing in the lane. The default repeat count is 1.

💡 *A Repeat Count of 0 means that the step will be skipped altogether.*

Conditions `Cond`

In this lane, you can set up per-step conditions that determine whether the step will play or be silent. This way you can make a short sequence seem longer by adding subtle (or not-so-subtle) variations to it.

The condition lane consists of two sub lanes: The condition type is in the upper part, and its associated setting (if it has one) is in the lower part.

Condition Type

Condition Setting

There are six different condition types to choose from:

	None	The step will always play (unless muted in another way, of course). This is the default.
%	**Probability**	Controls the likelihood of the step being played, from 0 — 100%.
:	**Recurrence**	In **Recurrence** mode (A over B), you can configure the step to play on the A'th cycle out of every B cycles. The cycle counter is calculated relative to the start of the song, or you can reset it manually using the Reset button or corresponding CV input.
! :	**Inverse Recurrence**	Works like Recurrence, but configures the step to play on every cycle **except** the A'th cycle out of B.
<	**Previous Condition**	The step will only play if the last evaluated probability or recurrence condition was **positive**.
! <	**Not Previous Condition**	The step will only play if the last evaluated probability or recurrence condition was **negative**.

If you **Shift**-click on a Condition Type button, you can copy it along with its associated setting to adjacent steps by dragging sideways.

If you **Cmd/Ctrl**-click instead, you can reset one or several Condition Types to **None**.

Curve Lanes 1 & 2   `Crv 1` `Crv 2`

There are also two Curve Lanes, each one with a corresponding CV output on the back panel. The outputs can be independently set to either Bipolar (+/- 1.0V) or Unipolar (0.0 - 1.0V) using the buttons located next to the CV connections.

You can use the curves to modulate different parameters in the synths that Step is controlling, such as Filter Cutoff or Decay.

All the included Starter combinator patches have Step's curve outputs connected to suitable inputs on the instrument, whenever possible.

> 💡 *Curve 1 can be recorded using the mod wheel or pitch wheel on your MIDI controller. (See the section about Recording for details.)*
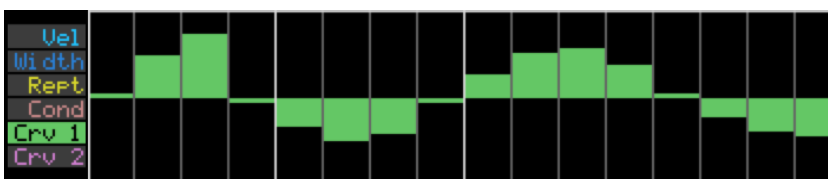
Curve 1, here in Bipolar mode
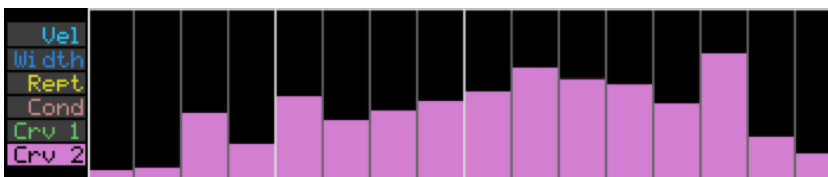
Curve 2, here in Unipolar mode

Length Marker and Guides

Guide   **Length Marker**
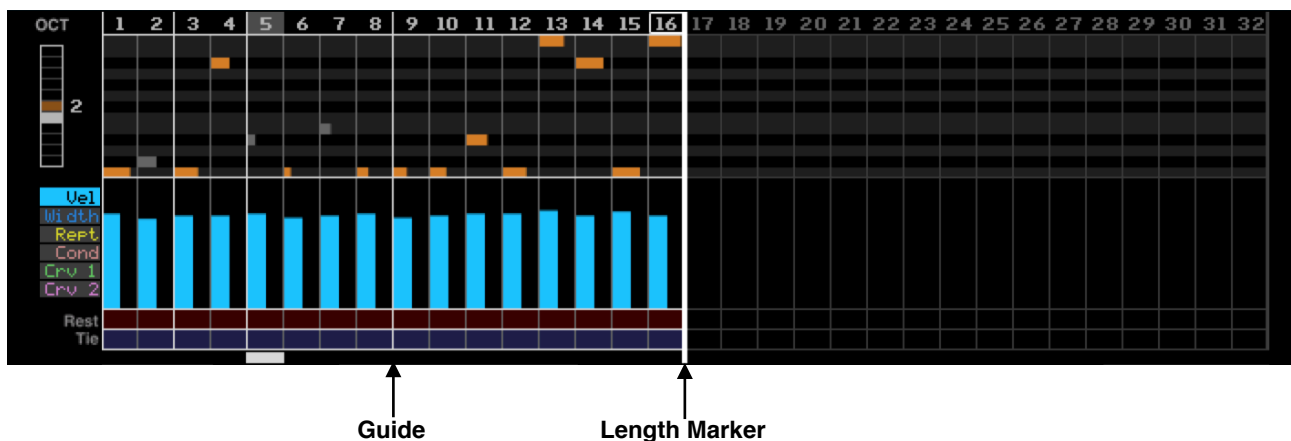
At the end of the sequence there's a length marker with a rectangular handle at the top that frames the last step number in the sequence. You can drag this handle to the left or right to change the length of the sequence, or just click on any step number to make it jump there directly.

Some of the vertical lines in the grid are more distinct than the others. They are called Guides, and you can use them to align the sequence with your song. If you line up the length marker with a Guide, your sequence will repeat itself evenly in relation to the bars in the song.

The placement of the Guides depends on the sequence length (including repeat counts and modes), resolution, playback direction and the current time signature of Reason's main sequencer.

⚠ *When Step is clocked via CV or when certain random-based playback directions are used, no Guides will be shown.*

Buttons

Right below the sequence there's a row of "soft" buttons and readouts that relate to the current mode of Step.


The Record Button

Arguably the most important button on the entire device, the Record button enables and disables Record mode. When inactive, it has a dark red background:

When you click on it, it turns bright red and the border starts blinking:

This means that Step is in Record Mode, and will start recording all the MIDI notes it receives. The notes you play will also be sent to the Gate and CV outputs so you can hear what you're playing.

When you click on the Record button again, the sequence will be saved in Step's memory (overwriting any previous data), and the sequence can be played back.

> 💡 *If you put Step in a combinator, you can connect the Gate/CV outputs from another device to the corresponding inputs on the combinator and record them into Step.*

Buttons in Record Mode

When Record mode is active, the other soft buttons are replaced with controls specific to that mode:

`● RECORD  CANCEL     AUTO TIES     REPEATS: 1 2 3 4 5 6 7 8 AUTO     REST: LRN C-1 ON`

CANCEL will take you out of Record mode without replacing any previously recorded data. Any settings you changed on the recording page will be preserved, though.

AUTO TIES lets you record Ties on the fly by playing overlapping notes on your keyboard (legato).

REPEATS lets you specify how many repeats you want the next step you record to have. You can either set it manually between each step by clicking on the desired repeat count 1 — 8, or you can use the AUTO mode. In AUTO mode, the repeat counter will be incremented automatically while you hold down the key. The note will be retriggered every time the repeat counter increases so you can record repeats "by ear", and you will also see a graphic that represents the number of repeats.

REST lets you configure a specific MIDI key that will record a Rest when you press it. You can either configure the key by clicking and dragging the note value up and down (holding **Shift** for more precision, **Alt** to change it in octave increments), or by using the MIDI Learn function.

There are two ways to use the Learn function:

- The first is to click and hold the **LRN** button, play the desired key on your MIDI keyboard, and then release the **LRN** button again.

- The other way is to double-click or **Alt**-click on the **LRN** button to latch it. Then play the desired key on the keyboard, and finally click on the **LRN** button or key value again to save it.

The **ON** button enables/disables the Rest key.

Any repeats, rests or ties you record can of course be edited afterwards.

Recording Curve 1 Using Your MIDI Controller
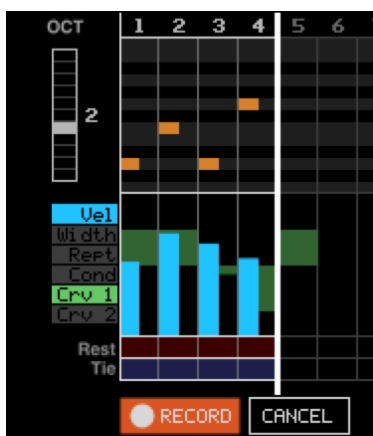
While you're recording notes, you can also record values to the Curve 1 lane by moving your mod wheel or pitch wheel!

The Curve values will be drawn behind the velocity bars, and they will of course also be propagated to the Curve 1 CV output in realtime. So you can for example connect that CV output to a Filter Cutoff input on your synth, and hear the modulation as you record it!

If you use the pitch wheel, Bipolar mode will be activated automatically for Curve 1. If you use the mod wheel, the Unipolar mode will be activated instead.

Once you have started recording Curve data using one of these controls, Step will only respond to that same control for the rest of that recording operation.

Root Key and Scale

To the right of the Record button in playback mode, you have the controls for setting the default root key and scale of your sequence.

```
ROOT: LRN  A2      Minor       TRANSP:  0    SCALE: A Minor
```

The Root Key is used for two things:

1. As "reference key" to determine the relative transpose amount when receiving notes via MIDI (in Keyboard Transpose Mode) or via the Transpose CV input

2. To determine the root key of the chosen scale

The **Root Key** can be changed in two different ways: You can click on the value and drag it upwards or downwards, holding **Shift** for more precision or **Alt** to change it in octave increments. Or you can use the LRN button to learn the key via your MIDI controller. (Either hold the LRN button while you enter the key, or Alt-click or double-click on LRN to latch it.)

Next to the Root Key there's the **Root Scale**. You can change the scale by clicking on the Root Scale value and then selecting the desired scale from the popup menu that appears. There are 14 scales (including Chromatic) to choose from:

• Chromatic	• Harmonic Minor
• Major	• Major Pentatonic
• Minor (Natural)	• Minor Pentatonic
• Dominant 7	• Dorian
• Blues Major	• Phrygian
• Blues Minor	• Lydian
• Diminished	• Locrian

To the right of the Root Key and Scale buttons there are two readouts, **Transp** and **Scale**:

Transp shows the current transposition amount (in semitones), which can be changed in three different ways:

1. By incoming MIDI notes that are compared to the configured Root Key (if Keyboard Transpose is enabled, see the next section)

2. By incoming pitch CV signals on the Transpose CV input that are also compared to the configured Root Key

3. By clicking and dragging on the value itself (holding **Shift** for higher precision, **Alt** for octave increments), or by automating the Manual Transpose parameter. Clicking on it while holding down **Cmd/Ctrl** will reset the amount to 0.

Scale shows the currently active scale. If it says "Chromatic" it means that all note intervals in the recorded sequence will be preserved (since all notes belong to the Chromatic scale), even when transposing it. If it's set to any of the other scales, Step will adjust pitches during playback to ensure that they belong to the selected scale.

You can change the active scale by changing the Root Scale as described above, or by sending Step certain combinations of MIDI notes while the Keyboard Transpose Mode is active (see the next section).

Keyboard Modes

To the far right in the display we have the buttons that control the keyboard settings. They determine how Step should behave when receiving MIDI notes.

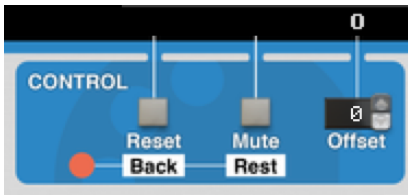There are two independent buttons marked **TRANSP** and **MON**.

KEYB: TRANSP   MON

MON toggles the **Keyboard Monitoring Mode**. When active, all received MIDI notes will be passed on to the Gate/CV outputs. It's enabled by default, but is disabled automatically after recording a non-empty sequence.

TRANSP toggles the **Keyboard Transpose Mode**. When this mode is enabled, Step will use incoming MIDI notes to determine the scale and/or transposition amount according to the following rules:

Type of MIDI input	Behaviour
A single key is played	• The key is compared to the Root Key, and the Transposition amount is determined accordingly
	• The active Scale is set according to the Root Key/Scale settings
	Example:
	Let's say the Root Key/Scale are set to C3 Minor. If the received MIDI note is G3, then the Transposition amount changes to 7. This means that the sequence is transposed up by 7 semitones. The active scale is still C Minor.
A recognized chord is played	• The active scale is set to the scale matching the chord
	• The transposition amount is set relative to the the root key of the chord
	Example:
	The Root Key/Scale is C3 and Minor. Step receives an F Minor chord (with the root note being F3) via the MIDI input. Then the Scale is changed to F Minor, and the transposition amount is changed to 5.
A recognized chord is played, and a single key is played at least one octave below the chord	• The active scale is set to the scale matching the chord
	• The transposition amount is set relative to the single note below the chord
	This means that you can transpose and scale the sequence independently using this technique.
An unrecognized key combination is played	• The active scale is set according to the Root Key/Scale
	• The lowest key will be used to determine the transposition amount

You will find the full list of recognized chords on the last two pages of this user guide.

Control

Reset/Back	**In Playback Mode**, the button functions as **Reset**, and will cause Step to immediately go to the "first" step in the sequence. (Which step that is may vary with the Playback Direction, we'll get to that later.) ⚠️ *If a cable is connected to the Position CV Input, the Reset button will have no effect.* **In Record Mode**, the button functions as a **Back** button that erases the last note you recorded.
Mute/Rest	**In Playback Mode**, this button works as a temporary **Mute** button. While the button is pressed, new notes will be suppressed. **In Record Mode**, you can use this button to add a **Rest** to the sequence while recording.
Offset	Rotates the sequence up to 16 steps to the left or right. This includes all step data: Pitches, rests, ties and lane data. This it extremely handy when you've recorded a sequence that you really like, but you just wish that it would start on the 5th step instead…

Direction

The Direction control determines the direction of playback. There are 7 different directions to choose from:
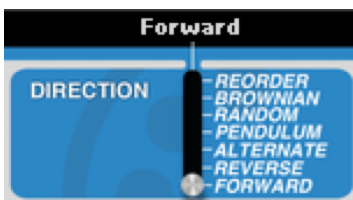
Direction	Behaviour
Forward	The sequence plays from left to right. Returns to the first step when reset.
Reverse	The sequence plays from right to left. Returns to the last step when reset.
Alternate	Plays the sequence from left to right, then from right to left, effectively doubling the length of the sequence. Returns to the first step when reset.
Pendulum	Like Alternate, but avoids repeating the first and last step (which means that the sequence length will be N*2 - 2). Returns to the first step when reset.

Direction	Behaviour
Random	Selects steps randomly, without considering which steps have been played earlier. Randomizes a new step when reset.
Brownian	Generates a Brownian motion, like a random "walk" where there's a 50% chance that it will go to the right, a 25% chance that it will go to the left, and a 25% chance that it will repeat the same step. Returns to the first step when reset.
Reorder	Plays all the steps in the sequence in a random order, then "shuffles" the sequence again. Reshuffles when reset.

> ⚠️ *If you have a cable connected to the Position Input, the Direction control will be disabled. Instead, the position of the playhead will be controlled entirely by the incoming CV signal.*

Sync

The Sync parameters control the speed and groove of the pattern in relation to the song.
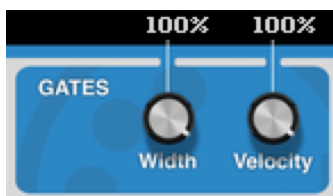

Resolution	Sets the speed of the sequence playback in relation to the song, expressed as note divisions per step. Available resolutions are: **1/2**, **1/4**, **1/8**, **1/8T**, **1/16**, **1/16T**, **1/32**, **1/64**, **1/128**
	💡 *Whenever the Resolution changes, Step will recalculate its position in relation to the song. This means that you can temporarily "glitch out" your pattern by dramatically increasing the resolution, and when you turn it back to the original resolution, the timing of the original pattern will be maintained.*
Slide	Moves the entire sequence slightly backwards and forwards in time, measured in MIDI ticks (1/960th notes). Negative values will make the sequence feel "rushed" in relation to the song, and positive values will make the sequence feel more "relaxed" in relation to the song. At 0 the sequence is played back exactly on time, and the knob will snap to this value.
	💡 *This parameter corresponds exactly to the Slide setting in Reason's ReGroove mixer.*
Shuffle	The Shuffle parameter will move some of the notes in the pattern forwards or backwards in time, giving it more of a swing feel. The range of the knob is 25% to 75%. At 50%, no shuffle is applied. The knob will snap to this value.
	Step always calculates Shuffle relative to the song start.

Shuffle Mode	The Shuffle Mode switch located just to the right of the Shuffle knob determines the resolution and maximum effect of Shuffle. When Shuffle Mode is 1/16, Shuffle will affect every other 16th note in your pattern and move them up to a 32nd note in each direction. At 1/8, Shuffle will affect every other 8th note and move them up to a 16th note in each direction, and so on.
	💡 *When Shuffle Mode is 1/16, Step's Shuffle parameter corresponds exactly to the Shuffle parameters (individual and global) found in Reason's ReGroove mixer.*
	⚠️ *When Shuffle Mode is 1/16 and Resolution is 1/8 or lower, the Shuffle parameter will have no effect. (This is the exact same behavior that Reason's own shuffle functionality exhibits.) If you want shuffle at lower resolutions, choose a lower Shuffle Mode setting.*

⚠️ *If you have a cable connected to the Clock Input, the Sync section will be disabled altogether, and its parameter values will be dimmed in the display.*

Gates

The knobs in the Gates section control the overall velocities and gate widths of the sequence.

Width	Sets the overall duration of the gates, in percent of the step length. At 0%, extremely short triggers are generated. At 100%, the gates will last for the duration of the step. There will, however, always be at least a very short gap between the steps. In order to tie two steps together, you have to toggle the Tie button for the first step.
	⚠️ *If you have a cable connected to the Clock input, the Width parameter will be ignored. Instead, the gate widths will be determined by the width of the incoming clock pulses.*
Velocity	Sets the overall velocity of the gates, in percent of their potential velocities (that are drawn in the display). 0% corresponds to a MIDI velocity value of 0, which means that no gates will be played.
	💡 ***Patch Tip:*** *Modulate Velocity with a curve pattern from a Matrix with a different pattern length to get accents that shift over time.*

Connections
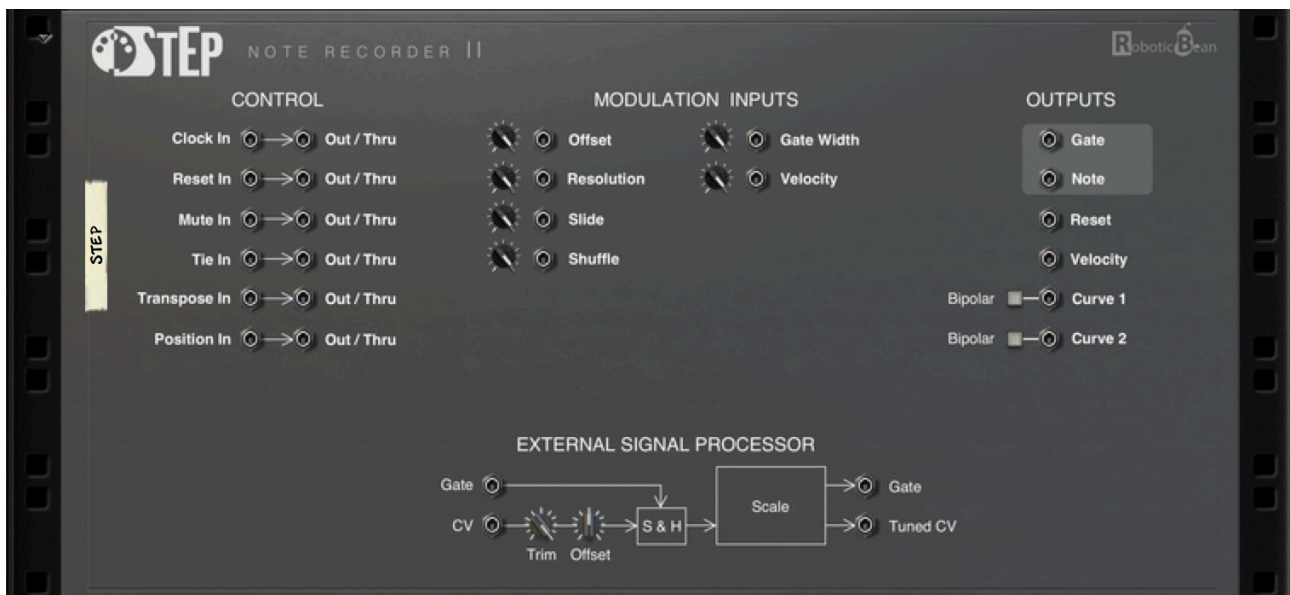
Outputs

Gate	Connect this to the Gate input of the instrument you want Step to control.
Note	Connect this to the Note CV input of the instrument you want Step to control.
Reset	Sends out a gate whenever Step completes a cycle, or when it's reset using the Reset button or CV input. Connect this to another Step (or a Euclid) to force periodic synchronization of the devices.
Velocity	Sends out the last non-zero velocity value that was generated by Step, for use as a modulation source for an instrument.
Curve 1	Sends out the values programmed in the Curve 1 lane. If the Bipolar switch is engaged, the range of values goes between +/- 1.0V, if not it's between 0.0 and 1.0V.
Curve 2	Sends out the values programmed in the Curve 2 lane, also this with a Bipolar switch.

Modulation

The six modulation inputs all have trim knobs to attenuate the signal. The nominal range for the inputs is -1 to +1 V. The CV value is added to the front panel setting for each modulated parameter.

Control

The Control CV inputs can be used to control various aspects of Step's playback. They all have Out/Thru outputs that each have two different modes:

- If something is connected to the corresponding input, Out/Thru is in **Thru Mode**, sending an exact copy of the input signal. This makes it easy to chain several devices together.

- If the input is disconnected, Out/Thru will be in **Out Mode**, generating appropriate signals to be sent to other devices.
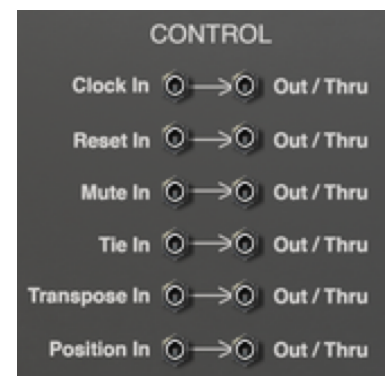
The table below goes through all the Control inputs and what their corresponding outputs do in Out mode:

Clock	Connecting a cable to Clock In will automatically disable Step's internal Sync. Whenever the input signal goes from 0 to a positive value, the next step is triggered. The Gate will remain open until the input signal goes back to 0. Clock Out will generate a clock pulse based on the current Resolution, Gate Width and Shuffle settings. Ties and rests are completely ignored.
Reset	Whenever the input signal on Reset In goes from 0 to a positive value, a reset is triggered. This has exactly the same effect as clicking the Reset button on the front panel during playback. Reset Out will behave exactly like the Reset output in the Output section.
Mute	As long as the input signal on Mute In is above 0, no new steps will be triggered. This is the exactly the same as clicking the Mute button on the front panel during playback. This input is useful for "ducking" the sequence by feeding it a gate signal from Kong's kick drum pad, for example. Mute Out will be "high" (1.0V) for the duration of each step that is a rest, or has a Condition evaluates to "false". Otherwise it will be "low" (0V).
Tie	If the signal on Tie In goes above 0 while a step is being played, that step will be tied to the next step. Tie Out will be "high" (1.0V) for the duration of each tied step in the sequence. Otherwise it will be "low" (0V).
Transpose	Expects a signal between 0 - 1V, which will be interpreted as a pitch according to Reason's Note CV standard. This will work with any device that outputs a pitch CV, for example Matrix, RPG-8 or another Step. The pitch will be compared with the configured Root Key and affect the transposition amount accordingly. Transpose Out will send a pitch CV signal that corresponds to the configured Root Key + the current transposition amount. For example: If the current root key is C3 and the transposition amount is -3, the Transpose output will send out the CV value corresponding to A2.
Position	Position In takes complete control over Step's playhead and forces it to align itself to the incoming voltage, overriding the Direction control altogether. The voltage range 0 - 1V corresponds to steps 1 - 32. For shorter sequences, or for voltages outside the range, the playhead will wrap around the edges of the sequence. Position Out sends a signal between 0 - 1V according to the current position of the playhead. By connecting it to the Position input of another instance of Step you can achieve "hard sync" between the two devices, regardless of their Resolution settings and/or Clock modes!

External Signal Processor

The External Signal Processor (or ESP) is a neat little bonus feature of Step. It allows an external CV signal to be tuned to the same scale as Step's sequence.
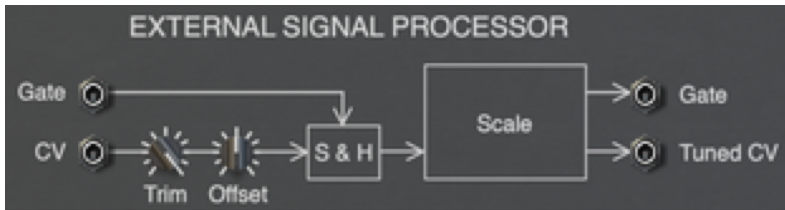
You can feed the ESP the Gate and CV signal from another sequence or arpeggiator (or from two entirely different devices!), or just a CV signal if you want.

If a cable is connected to the Gate input, the pitch of the Tuned CV output will only change whenever a new gate is detected (the signal rises from 0). The Gate output of the ESP will send an exact copy of the signal on the Gate input

If only the CV cable is connected, the Tuned CV output will change as soon as the CV signal falls within range of another pitch. The Gate output will send out a trigger whenever this happens.

The CV input signal can be attenuated using the trim knob (0 - 100%), and then offset by ±1V. This is useful when you want to tune an arbitrary CV source such as an LFO or random generator since you can easy narrow down the signal to the range you want.

> 💡 *Patch Tip: If you're tuning an arbitrary CV signal you often get really good results if you feed the Gate input with an interesting rhythm from a Redrum, another Step or a Euclid.*

MIDI Implementation Chart

MIDI CC#	Parameter
10	Step 01 Pitch
12	Resolution
13	Sequence Length
15	Offset
16	Gate Width
17	Velocity
18	Manual Reset
19	Enable Outputs
21	Shuffle
24	Shuffle Mode
27	Playback Direction
28	Default Scale
29	Manual Mute
30	Default Root Key
31	Manual Transpose
33 – 37	Step 02 Pitch – Step 06 Pitch
39 – 63	Step 07 Pitch – Step 31 Pitch
65	Step 32 Pitch
66 – 95	Step 01 Velocity – Step 30 Velocity
102, 103	Step 31 Velocity, Step 32 Velocity
104 – 119	Step 01 Repeat Count – Step 16 Repeat Count
128 – 143	Step 17 Repeat Count – Step 32 Repeat Count
144 – 175	Step 01 Repeat Mode – Step 32 Repeat Mode
176 – 207	Step 01 Rest – Step 32 Rest
208 – 239	Step 01 Tie – Step 32 Tie

Remote Implementation Chart

Globals	Per-step
Enable Outputs	Step 01 Pitch — Step 32 Pitch
Sequence Length	Step 01 Velocity — Step 32 Velocity
Manual Reset	Step 01 Gate Width — Step 32 Gate Width
Manual Mute/Rest	Step 01 Repeat Count — Step 32 Repeat Count
Offset	Step 01 Repeat Mode — Step 32 Repeat Mode
Playback Direction	Step 01 Condition Type — Step 32 Condition Type
Resolution	Step 01 Probability — Step 32 Probability
Slide	Step 01 Recurrence — Step 32 Recurrence
Shuffle Amount	Step 01 Curve 1 — Step 32 Curve 1
Shuffle Mode	Step 01 Curve 2 — Step 32 Curve 2
Gate Width	Step 01 Rest — Step 32 Rest
Velocity	Step 01 Tie — Step 32 Tie
Root Key	
Root Scale	
Manual Transpose	
Curve 1 Mode	
Curve 2 Mode	
Octave View	
Repeat Recording Mode	
Rest Key	
Expand Note View	
Show Ghost Notes	
Gate Lamp *(Read-only)*	
Current Step *(Read-only)*	

For more details, you can export the Remote information by selecting an instance of Step Note Recorder in your rack and choosing **File→Export Device Remote Info…** from Reason's menu.

Scales

To the right is the complete list of scales supported by Step, and how to select them using a MIDI keyboard or a sequencer track.

The diagram shows all the scales in the key of C, but you can of course play them in any key you want. Step will analyse the interval you play to determine the scale.

● ○   Mandatory keys

●   Optional key

■ ■   Included in the scale

> ⚠️ *Note that the lowest key in the chord has to be the root note of the chord, or it won't be properly recognized by Step.*
>
> *The root note of the chord will also be used to determine how much to transpose the sequence.*

Major

Minor (Natural)

Dominant 7

Blues Major

Blues Minor

Diminished

Harmonic Minor

Major Pentatonic

Minor Pentatonic

Dorian

Phrygian

Lydian

Locrian