

# stepStation

# trigStation

## user manual



# Introduction

Thank you for choosing to use sickozell plugin modules, designed and created specifically for the VCV Rack eurorack simulator platform.

trigStation and stepStation are two trig/step sequencer provided with 8 independent tracks each up to 16 steps, these are the main features:

- configurable User Inputs and User Knobs (U1 U2)
- different advance mode types (MOD)
- ability to delay step advance up to 5 samples each track (Steps Delay).

I wish you the best possible experience with the sickozell modules, and for that reason you will be able to contact me directly by email at [sickozell@sickozell.org](mailto:sickozell@sickozell.org) if you encounter any problems, bug reporting, or for any suggestions.

*Fabio Sickozell*

# Table of contents

- Introduction..... 2
- 1. GLOBAL CONTROLS..... 4
  - 1.1 CLOCK ..... 4
  - 1.2 GLOBAL RUN ..... 4
  - 1.3 GLOBAL RESET ..... 4
  - 1.4 PROGRAMS ..... 4
- 2. TRACKS..... 5
  - 2.1 Advance Modes (MOD) ..... 6
- 3. GENERAL CONTEXT MENU ..... 7
  - 3.1 GLOBAL SETTINGS..... 7
- 4. TRACK MENU ..... 8
  - 4.1 TURING MODE (trigStation only) ..... 8
- 5. STEPS DELAY ..... 9
- 6. CREDITS..... 10

# 1. GLOBAL CONTROLS

## 1.1 CLOCK

The steps advance by means of an internal main clock that can be activated with the ON button, or by receiving an external clock on CLK input that can be pulse or CV. With the right mouse button on the CLK port you can directly choose the type of clock.



Internal clock activation can be also CV controlled. It needs a HIGH gate to be on. It shares the global RUN setting to be Gate or Trig (see below).

The main clock is repeated on the CLK OUT port, which can also be configured as a pulse or CV clock

When the internal clock is active, the external clock is automatically disabled if present.

## 1.2 GLOBAL RUN

The RUN button, enables or disables all tracks to receive clock signals for step advancement.



A gate or trigger can also be used to control the RUN button depending on the global settings.

Each track can ignore the RUN button state with a specific "exclude from Run" track setting.

## 1.3 GLOBAL RESET

The RST button or a trigger on its input, resets the sequences of all tracks and the internal clock if enabled, sending a 1ms trig on the dedicated RST output.



The internal clock reset can be disabled from the global settings menu.

Each track can ignore global resets with a specific "exclude from Rst" track setting.

## 1.4 PROGRAMS

Up to 32 programs can be stored in which all the track and global settings are recorded.



To store the current configuration on the program previously selected with the PROG knob, simply double click on the STOR button, which remains lit for about 1 second to confirm storage.

Moving the PROG knob scrolls through the various programs and the SET button flashes.

The various programs can also be selected via CV (range 0-10v) or via a trigger on the input, which will advance to the next program up to the last one stored, after which it starts again from P0. A special option in the global settings allows you to choose whether the input port will receive CV or trigger.

The selected program is not effective until the SET button is pressed, unless the AUTO button has been turned on, which automatically sets the selected program.

The RECL button, or a trigger on its input, restores the selected program, erasing any unstored changes.

Furthermore, if the RECL button has not been set to AUTO, it allows you to cancel the program selection, returning the sequencer to the state prior to program selection..

## 2. TRACKS



Each track has an auxiliary clock input that is pulse-only and replaces the main clock.

You can divide or multiply the clock received on each track using the DIV/MULT knob or right-clicking on the DIV/MULT display.

The RST input resets the track sequence

The LEN knob sets the length of the sequence up to 16 steps

The U1/U2 inputs and knobs are configurable using the right-click on each of the User Controls, or via the track menu (see below) or from the general context menu.

The available INPUT types are:

- IN FLIP (trigStation only): if the gate is HIGH when the step is advanced, the step is inverted
- IN LENGTH: the length of the sequence is set from 1 to 16 steps using CV 0-10v
- IN MODE: the advance mode is set using CV 0-10v (>>, <<, PingPong, |PingPong|, Rev, RAND, RNDr)
- IN OUTSCALE: this is the attenuator at the output. The attenuation percentage is set using CV 0-10v.
- IN PULSE WIDTH (trigStation only): the pulse width is set using a CV 0-10v from 0-99%
- IN RESET STEP#: a CV 0-10v sets the initial step after a reset
- IN RETRIG: when the sequencer advances, if the gate is HIGH the track remains only the same step. In the case of trigStation, the trigger will also be played
- IN REVERSE: when the sequencer advances, if the gate is HIGH the direction of the advance is reversed. Active only for the modes >>, <<, PINGPONG, |PINGPONG|
- IN RUN: when a cable is connected, the sequencer advances only if the gate is HIGH
- IN SWING: a 0-10v CV sets the amount of swing. This feature is enabled only on clock multiplications.

The available KNOB types are:

- KNOB FLIP PROBABILITY (trigStation only): Sets the probability that the step will be reversed when the sequencer advances. If used in conjunction with the FLIP input. The probability that the step will be reversed is only considered if the gate on the FLIP input is HIGH
- KNOB MODE: Selects the sequencer advance mode ( >>, <<, PingPong, |PingPong|, Rev, RAND, RNDr )
- KNOB OUTSCALE: Sets the attenuation percentage on the track output
- KNOB PULSE WIDTH (trigStation only): Sets the pulse width percentage from 0 to 99%
- KNOB RESET STEP#: Sets the initial step after a reset
- KNOB RETRIG PROBABILITY: Sets the probability of remaining on the same step when the sequencer advances. If used together with IN RETRIG the probability is calculated only if IN RETRIG is HIGH
- KNOB SWING: sets the swing percentage. This feature is enabled only on clock multiplications.
- KNOB ATTENUATOR, KNOB ATTENUVERTER: perform the attenuation/inversion of the input signal on the relative port. It is active only on the LENGTH, MODE, OUTSCALE, PULSE WIDTH, RESET STEP#, SWING inputs,

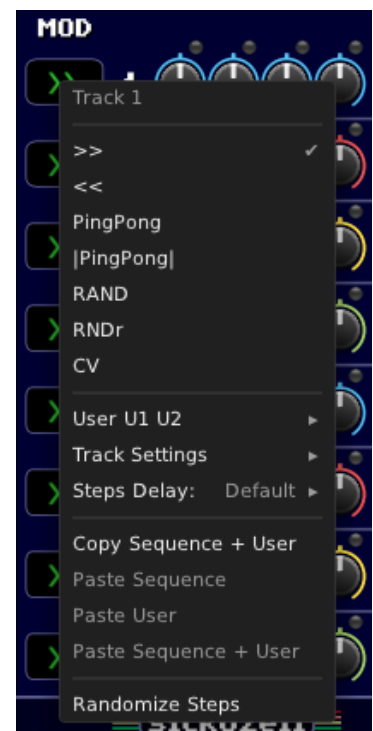
The Pulse Width control is incompatible with Swing, so if both are present, Pulse Width will be ignored. In this case an asterisk (PW\*) is added to the PW label of the user control.

## 2.1 Advance Modes (MOD)

Advance modes can be controlled via the KNOB MODE and/or IN MODE, or by clicking directly on the mode display, or by using the right button of the track controls.

These are the possible modes:

- “ >> ” : forward
- “ << ” : backward
- “ PP ” : ping pong
- “ |PP| ” : like ping pong, but the first and last step are repeated.
- “ RAND ” : when the sequencer advances, the step is random. If the IN REV input is HIGH, the step is the next one
- “ RNDr ” : the sequencer normally advances forward, the stepnumber is only randomized if the IN REV input is HIGH
- “ CV ” : the step number is always calculated on the voltage (range 0-10v) present on the CLK input of the track

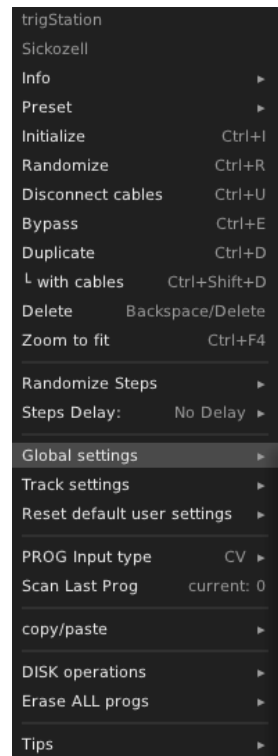




### 3. GENERAL CONTEXT MENU

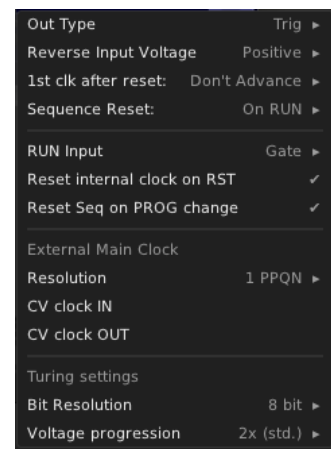
The general context menu has the following items:

- Randomize Steps: randomizes all steps or only those of a specific track
- Default Steps Delays (see below)
- Global Settings: set global and default settings (see below)
- Track Settings: settings of each individual track and any exceptions to the global defaults
- Reset default user settings: recalls the default settings for all U1/U2
- PROG Input Type:
  - a) CV: a voltage in the range 0-10v selects the desired program,
  - b) TRIG: a trigger on PROG INPUT selects the next program up to the last recorded, after which it restarts from P0
- Scan Last Prog: searches for the last stored program
- Copy/Paste: allows you to copy and paste an entire panel, the U1/U2 User settings, all sequences, the sequences of each individual track
- DISK operations: saves and loads various types of presets, even from other sequencer modules
- ERASE ALL PROGS: erases all programs, restoring them to factory settings



#### 3.1 GLOBAL SETTINGS

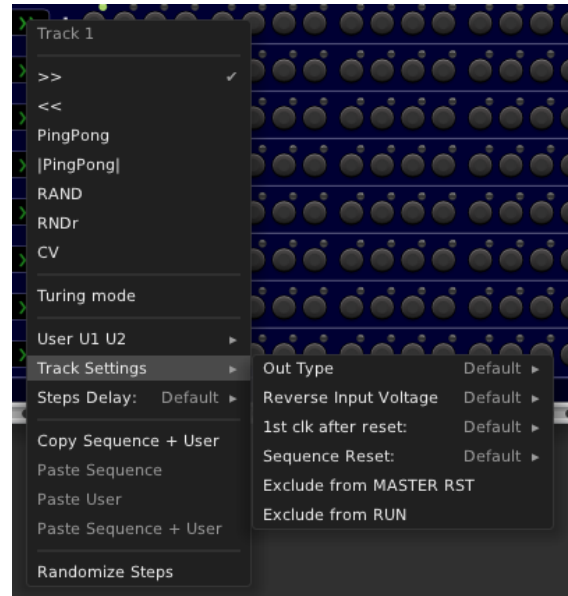
- Reverse Input Voltage: Positive (default), Negative (to get reverse direction the gate on IN REV must be less than -1v)
- 1st clk after Reset: Don't Advance (default), Advance
- Sequence Reset: No Reset, On RUN(default), on STOP. Resets the sequences when RUN button changes to on, off, or no reset.
- RUN input: Gate (default), Trig
- Reset internal clock on RST: it resets the internal clock when a global reset is detected
- Reset Seq on PROG change: it resets the sequences when a program is changed
- External Main Clock
  - a) Bit Resolution: this sets the PPQN resolution on the main external clock
  - b) CV clock IN: this sets the main external clock input to CV
  - c) CV clock OUT: this sets the external clock output to CV
- Knobs Range (stepStation only): this sets the range of every single step knob
- Turing settings (trigStation only, see below)



## 4. TRACK MENU

The track menus are available by right-clicking in the number track area of each track.

You can directly set the advance mode, TURING mode (trigStation only), set the User Input and User Knob, custom track settings, track Steps Delay, copy and paste the sequence and randomize the steps.



### 4.1 TURING MODE (trigStation only)

When a track is set to TURING MODE, the track number turns yellow and the output voltage (in the range 0-10v) is calculated on the quantity and position of the various steps, working like a “fixed” Turing Machine.

It is therefore possible to set an OUTSCALE U1/U2 to attenuate its value, or even set a FLIP to randomize the individual steps as they advance, just like a real Turing Machine.

The voltage is calculated by assigning a fixed and progressive voltage to each of the 8 steps preceding the current one. The sum of the voltages assigned to each step, if turned on, determines the output voltage, so 8 steps turned on will give 10v, all 8 steps turned off will give 0 volts.

In the Global Settings menu you can change the bit resolution (8 or 16bit) or the progression type (2x standard, 1.3x, Fibonacci)



## 5. STEPS DELAY

This feature allows you to delay the clock received by each individual track by up to 5 samples. In this way, you can easily modulate the inputs of a track with the output of another track, maintaining correct synchronization.

In practice, it involves setting a step delay on the track to be modulated that is one sample greater than the steps delay of the modulating track.



In this example, a Global Steps Delay of “1 sample” has been set, and track 2 has been individually set to “No Delay”. This way, each individual step on track 2 sets the attenuation of the output of track 1.

## 6. CREDITS

SickoCV è il nome del progetto dei plugin per la piattaforma VCV Rack che raggruppa tutti i moduli creati da Sickozell, inclusi stepStation e trigStation

SickoCV è open source e distribuito con licenza GPL-3.0-or-later. E' disponibile gratuitamente e scaricabile da GitHub e nella libreria ufficiale di VCV Rack.

Alcune componenti grafiche dei moduli SickoCV sono di proprietà © VCV con licenza creative commons CC BY-NC-4.0

Sickozell ringrazia Andrew Belt e tutto lo staff di VCV Rack per aver creato e messo a disposizione gratuitamente la piattaforma open source.

Si ringrazia anche tutta la community del forum VCV Rack per l'aiuto nello sviluppo di tutto il plugin.

Un grazie di cuore anche a Omri Cohen per gli insegnamenti e il supporto ricevuto.

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