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 povided 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 (Track 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* if you encounter any problems, bug reporting, or for any suggestions.

Fabio Sickozell

Table of contents

1. GLOBAL CONTROLS

The steps advance by means of an external main clock.

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.

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

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

2. 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.

3. TRACKS

Each track has an auxiliary clock input that replaces the main clock.

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 CHANGE): if the gate is HIGH when the step is advanced, the step is inverted on trigStation, on stepStation it will change to a random value in the track range setting
- IN CHANGE PROB: a CV 0-10v sets the probability with which the step is randomized. If on the track thre is a user IN CHANGE this input is ignored
- 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, CV)
- IN OUTSCALE: this is the attenuator at the output. The attenuation percentage is set using CV 0-10v.
- 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 SKIP (trigStation only): if the gate is HIGH when the step advances, the step value is ignored and will not be passed to the output (skipped)
- IN SKIP PROB: using CV 0-10v you set the probability with which the step is ignored. If there is an IN SKIP user control in the track, this input is ignored
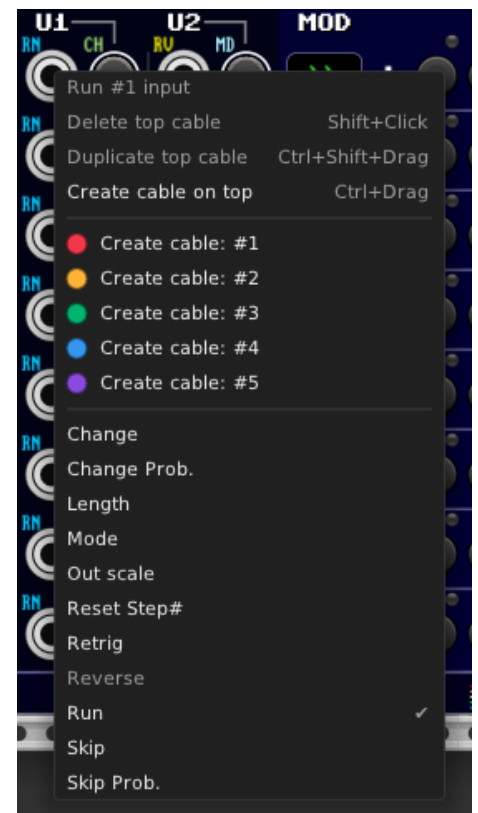
The available KNOB types are:

- KNOB CHANGE PROBABILITY: 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, CV)
- KNOB OUTSCALE: sets the attenuation percentage on the track output
- 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 RETIRG is HIGH
- KNOB SKIP PROBABILITY (trigStation only): sets the probability with which the step value is ignored
- 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, RESET STEP#, SKIP PROB, inputs,
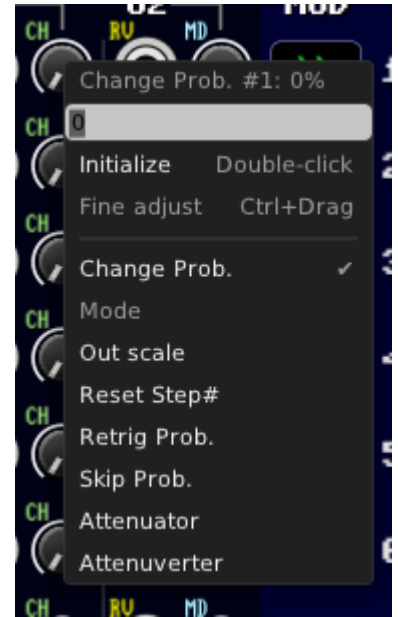
3.1   Advance Modes (MOD)

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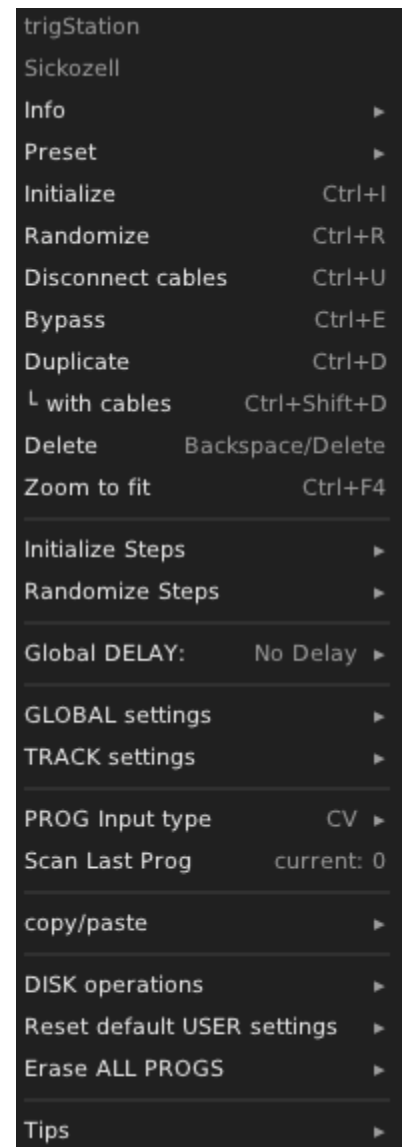
These are the possible modes:

- " >> " : 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

4. GENERAL CONTEXT MENU

The general context menu has the following items:

- Initialize Steps: initializes all steps or only those of a specific track. On stepStation the knobs are all initialized to 0 depending on the track range (see below)
- Randomize Steps: randomizes all steps or only those of a specific track
- Knobs Range: (stepStation only): this sets the range of every single step knob
- Global Delay: (see below)
- GLOBAL Settings: set the default settings for the tracks (see below) and the general module settings
- TRACK Settings: settings of each individual track and any exceptions to the global defaults
- 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 U1/U2, all sequences, the sequences of each individual track
- DISK operations: saves and loads various types of presets, even from other sequencer modules
- Reset default user settings: recalls the default settings for all U1/U2
- ERASE ALL PROGS: erases all programs, restoring them to factory settings
- Tips: shows some quick tip about the module

trigStation	
Sickozell	
Info	▶
Preset	▶
Initialize	Ctrl+I
Randomize	Ctrl+R
Disconnect cables	Ctrl+U
Bypass	Ctrl+E
Duplicate	Ctrl+D
└ with cables	Ctrl+Shift+D
Delete	Backspace/Delete
Zoom to fit	Ctrl+F4
Initialize Steps	▶
Randomize Steps	▶
Global DELAY:	No Delay ▶
GLOBAL settings	▶
TRACK settings	▶
PROG Input type	CV ▶
Scan Last Prog	current: 0
copy/paste	▶
DISK operations	▶
Reset default USER settings	▶
Erase ALL PROGS	▶
Tips	▶

4.1   GLOBAL SETTINGS

The GLOBAL settings menu has the following items:

a) Track Defaults:
- Out Type (solo trigStation): Trig / Gate
- 1st clck 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.

b) Module Settings
- RUN input: Gate (default), Trig
- Reset Seq on PROG change: it resets the sequences when a program is changed

c) Turing settings (trigStation only, see below)

d) User Interface
- MODE mouse controls: Enables mouse buttons to change the MODE setting. Allows you to use the mouse buttons on the MODE display to change the setting. If disabled, the right button opens a selection menu
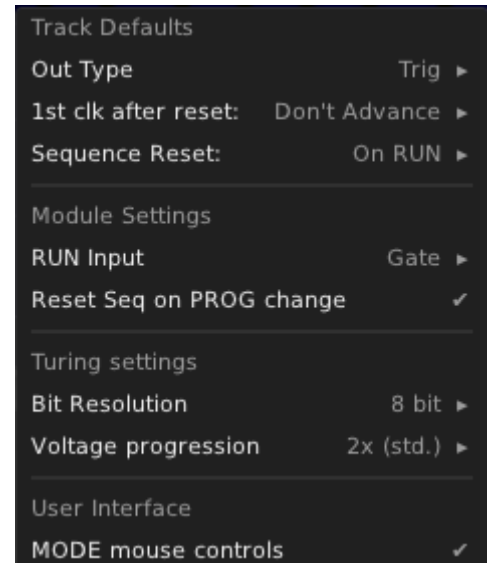
5.   TRACK MENU

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 Delay, copy and paste the sequence and randomize or initialize the steps.
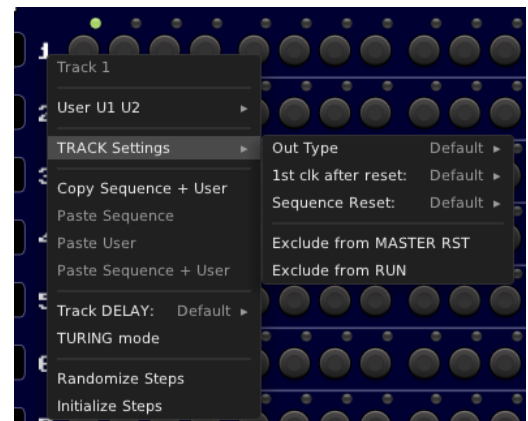
5.1   TURING MODE (trigStation only)

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)

6. TRACK DELAY

This feature allows you to delay up to 5 samples the Step Advance of each individual track.

Only the track outputs are delayed, the clock output is always without a delay.

Setting up properly different Track Delay is possible to easy modulate the inputs of a track with the output of another track, maintaining correct synchronization.

In practice, it consists setting the Track Delay on the track to be modulated one sample greater than the Track Delay of the modulating track.
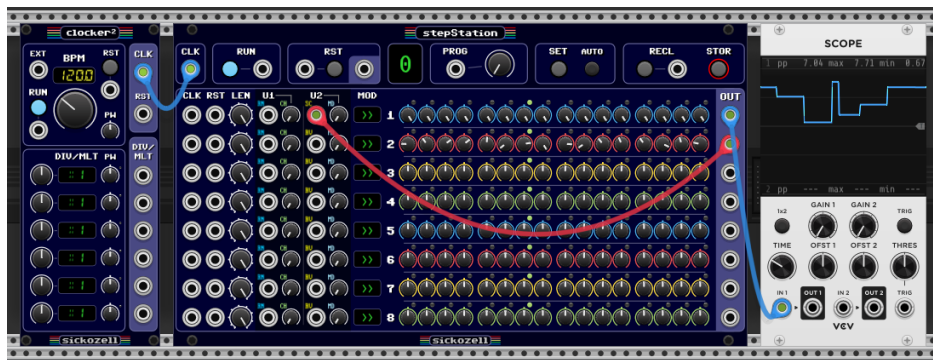
In this example, a Global Out Delay of "1 sample" has been set, and track 2 has been individually set to "No Delay". This way, each individual step on track 2 sets the attenuation of the output of track 1.

7. CREDITS

SickoCV is the name of the plugin project for the VCV Rack platform that groups together all modules created by Sickozell, including stepStation and trigStation.

SickoCV is open source and distributed under the GPL-3.0-or-later license. It's available for free on gitHub and on the official VCV Rack library.

Some of the graphic components of the SickoCV modules are © VCV under creative commons license CC BY-NC-4.0

Sickozell would like to thank Andrew Belt and all the VCV Rack staff for creating and making this platform available, open source and free of charge.

Best thanks to all the entire VCV Rack forum community for their help in the development of these plugins.

A big thank to Omri Cohen for his teachings and support.

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