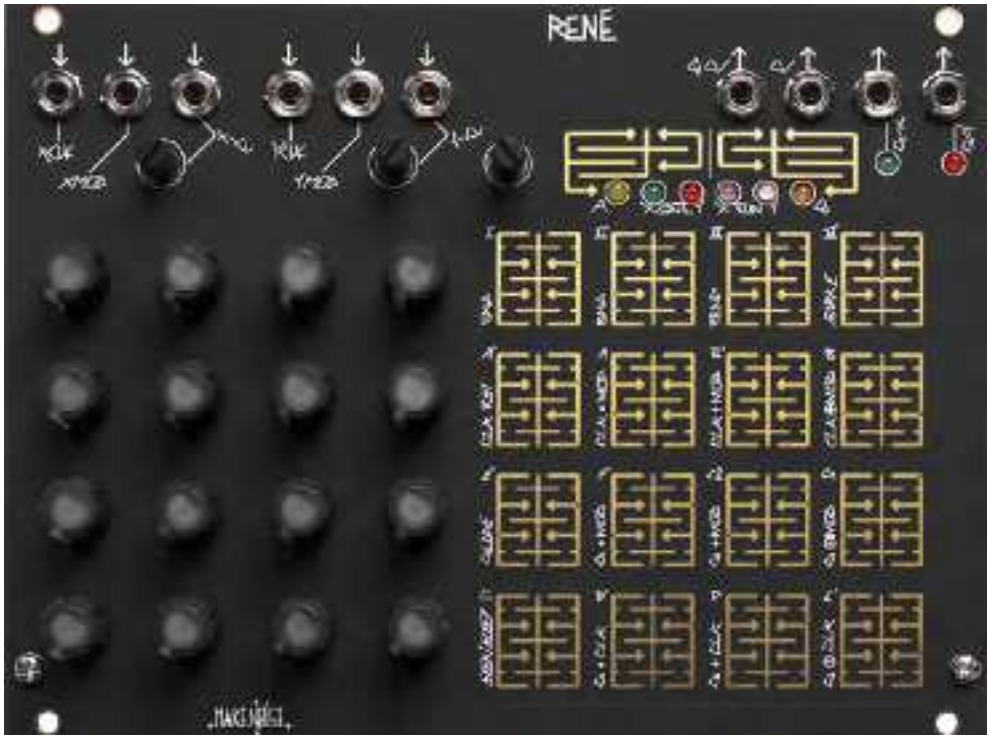
René



Limited WARRANTY:
Make Noise warrants this product to be free of defects in materials or construction for a period of one year from the date of purchase (proof of purchase/invoice required).

Malfunction resulting from wrong power supply voltages, backwards power cable connection, abuse of the product or any other causes determined by Make Noise to be the fault of the user are not covered by this warranty, and normal service rates will apply.

During the warranty period, any defective products will be repaired or replaced, at the option of Make Noise, on a return-to-Make Noise basis, with the customer paying the transit cost to Make Noise. Please contact Make Noise for Return To Manufacturer Authorization.

Make Noise implies and accepts no responsibility for harm to person or apparatus caused through operation of this product.

Please contact technical@makenoisemusic.com with any questions, needs & comments, otherwise...

go MAKE NOISE.

http://www.makenoisemusic.com

Installation:

The Make Noise René is an electronic analog control signal generator requiring 80mA of +12V regulated power and properly formatted distribution receptacle to operate. It is designed to be used within the euro format modular synthesizer system.

Go to http://www.doepfer.de/a100_man/a100t_e.htm for the details of this format.

To install, find 34HP of space in your euro-rack synthesizer system, plug the 16pin power cable into the euro-rack style power distribution board, minding the polarity so that the RED stripe on the cable is oriented to the NEGATIVE 12 volt (-12V) supply line. This is USUALLY at the bottom. Please refer to your case manufacturers' specifications for location of the negative supply.

PLEASE contact Make Noise with any questions regarding Powering of René.

Overview:

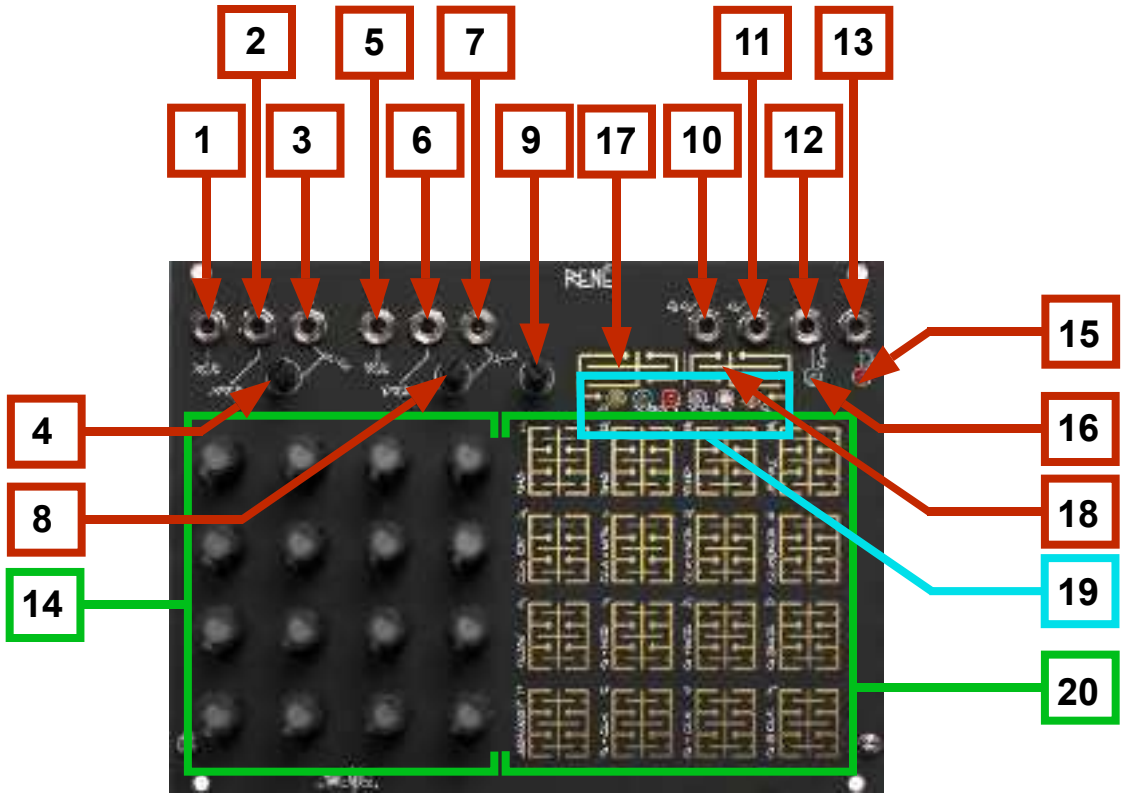
René is deep, but all you really need to know: Patch one clock to X-CLK, and a second clock to Y-CLK, adjust clock rates and/ or divisors, tune voltages per location (the knobs) as desired. Adjusting those two clocks relative to each other will create seemingly infinite variations on the theme that is your sequence. Much joy may be had without any further knowledge, but I am certain you will want to know more, so read on.

René is the world's first and only Cartesian Sequencer for music synthesizers. Named for the French philosopher & mathematician René Descartes, it uses his cartesian coordinate system to unlock the analog step sequencer from the shackles of linearity. Like the classic analog sequencers, there are only 16 steps on René, each having an associated knob with which the note for that step is tuned. However, using René the patterns are not limited to 16 steps in length because the path taken through those steps is, for all practical purposes, infinite. In fact, René does not “step” at all, but rather it maps coordinates to locations in a grid, and because if this, it is possible to move in ways that you would never imagine a step sequencer to move. For this reason, we call the 16 steps on René “LOCATIONS,” and rather than one Clock input there are two; one each for the X-Axis, and the Y-Axis.

The primary goal of this sequencer is to have a maximum amount of artist controlled musical variation, with a minimum amount of data input. There are no menus, ALL editing is done real-time, and thus, the ProGraMming of René becomes a key performance element.

The basic concept for how René works: each Axis is being driven by the corresponding clock and control voltages, to generate a number from 0 to 3. These numbers together make up the coordinates for the next location that René will go to. If X hits 2 and Y is at 3, then René goes to location 14. The concept is simple, but the results are madly complex, especially when combined with some of the other math that
René will do.

René was developed in collaboration with firmware wizard Yerpa58. We spent nearly one full year realizing and growing the original concepts, and over that time we also became good friends. In all, it was wonderful project, and we hope to realize others. Also of great help in developing René were Shawn “Packin' Peanuts!” Cleary, Josh “Wood-finger” Kay, Richard “don't like sequencers” Devine, Aaron “Leadfinger” Abrams, Surachai, James “Data Cadet” Cigler, Tim “Stone-Finger” Hurley and especially, Kelly Kelbel.



René Panel Controls

Inputs:

1. X- CLK Input: clock/ gate signal (of width greater than .5ms and amplitude greater than 2.5V) applied to this input drives the X- Axis Counter. If using MATHS to clock, then set Vari- Response to LINEAR. When René counts Snake Style, X- CLK steps linearly through a stored set of coordinates; it drives the sequence.
2. X- MOD Input: The state of this input (either HI or LO) further determines behavior of René depending upon the selections made in the X- Fun PGM Page. For example, when CLK- RST is selected under X- Fun a logic HI at this input will Reset the X- Axis Counter to 0.

3. X- CV Input: control signal at this input generate a number that is added to the number generated by the X- Axis Counter, to create the X coordinate. When René counts Snake Style, X- CV scans linearly through a stored set of coordinates. X- CV is normalled to +5V so that with nothing patched the attenuator acts as offset generator

4. X-CV Input CV Attenuator

5. Y- CLK Input: clock/ gate signal (of width greater then .5ms and amplitude greater then 2.5V) applied to this input drives the Y- Axis counter. If using MATHS to clock, then set Vari- Response to LINEAR. When René counts Snake Style, Y- CLK selects stored coordinates set.

6. Y- MOD Input: The state of this input (either HI or LO) further determines behavior of René depending upon the selections made in the Y- Fun PGM Page. For example, when Glide is selected under Y- Fun a logic HI at this input will engage the glide function.

Inputs (Continued)

7. Y- CV Input: control signal at this input generate a number that is added to the number generated by the Y- Axis Counter, to create the Y coordinate. When René counts Snake Style, Y- CV selects stored set of coordinates.. Y- CV is normalled to +5V so that with nothing patched the attenuator acts as an offset generator.

8. Y-CV Input CV Attenuator

Sensitivity:

9. Touch Grid sensitivity control. To increase sensitivity, set the position 100% clockwise.

Outputs:

10. QCV: The Quantized Control Voltage for the currently active location will appear at this output. QCV may also yield a Stored Quantized Voltage (if selected on Q Page), in which case the corresponding location potentiometer is no longer “live.” Value, 4 octaves.

11. CV: An unquantized Control Voltage of the currently selected location will appear at this output. At the CV OUT, the location potentiometers are always “live.” Value 0 to 4.5V

12. Gate X: this output reflects the ProGraMming on the X-Gate Page. When René arrives at a location, and the location is set to ON (lighted) at the X-Gate PGM Page, this output goes HI for duration determined by the XCLK width and any ProGraMmed Logic Operations that Axis Clock or Gate.

    When counting SNAKE style, the Gate output is always a skinny pulse (2ms) perfect for ringing LoPass Gates. Value, 0V or +8V. Gate Y: this output reflects the ProGraMming on the Y- Gate Page. When René arrives at a location, and the location is set to ON (lighted) at the Y- Gate PGM Page, this output goes HI for duration determined by the YCLK width and any ProGraMmed Logic Operations affecting the Axis Clock or Gate. When counting SNAKE style, the Gate output is always a skinny pulse (2ms) perfect for ringing LoPass Gates. Value, 0V or +8V.

13. Gate Y: this output reflects the ProGraMming on the Y-Gate Page. When René arrives at a location, and the location is set to ON (lighted) at the Y-Gate PGM Page, this output goes HI for duration determined by the YCLK width and any ProGraMmed Logic Operations affecting the Axis Clock or Gate. When counting SNAKE style, the Gate output is always a skinny pulse (2ms) perfect for ringing LoPass Gates. Value, 0V or +8V.

Interface:

14. CV ProGraMming Grid

15. Gate Y Activity Indicator LED

16. Gate X Activity Indicator LED

17. ProGraM Page Select; PGM 1

18. Return to Play, PGM 2: Hold to store settings.

19. Indicate Latch (Hold) or Indicate Active Program Page

20. Touch Grid: Flashes to indicate storage taking place.

CONTROLS

4x4 CV Programming grid: potentiometer sets Tuned Voltage for corresponding location 0 thru 15.

4x4 touch grid: In PLAY, the touch pads may be used to set ACCESS in real time, effectively allowing the performer to play the ACCESS parameter. In use, this means that René will go to only the locations that the performer is touching. Additionally, touching and releasing a single location while René is PLAYing will set a new start point, thus creating a variation on your sequence. With no Clocks patched to René, touching any location in the grid will select said location, and the CV and QCV value is held until the next location is touched, or a clock pulse is applied to either XCLK or YCLK. This is useful for Programming/Tuning Notes (with CV applied to VCO 1V/oct input, for example). In ProGraM Page the touch grid is used select/deselect the various parameters available under each PGM Page.

PGM 1: This touch plate is used to cycle through the different ProGraM Pages. Each of the 6 ProGraM pages has an associated LED which lights when selected. PGM1 returns to last selected PGM Page.

PGM 2: While PLAYing, this touch plate is used to Latch/Unlatch the steps held by the performer using the 4x4 touch grid. Once within the PGM Pages, the PGM2 touch is used to EXIT the PGM Pages and return to PLAY. PGM2 button is also used to save the default start-up programming for René. To do this, make all changes to all ProGraM Pages. Touch PGM2 and exit PGM Pages. Now Touch and HOLD PGM2 until all PGM LEDs blink.

PLAY

This is the primary state of mind in which René will exist. The Location Lights (within the Knobs) show the Cartesian or Snake motion of the sequence through the grid. While in PLAY, the performer may use the touch grid to ProGraM ACCESS on the fly, stop and hold the sequence at a particular note or set a new start point. Touching PGM1 brings up the PGM Pages (see below). Touching PGM2 LATCHES locations currently touched by the performer (if any). All of the PGM Page LEDs will light until PGM2 is touched again, at which point the Latched pattern is no longer. Movement is always governed by the X and Y clock inputs. For example, the performer cannot select a three step sequence in the Y direction if there is no Y clock signal input. Touch and HOLD PGM2 for 2 seconds, and the current state of René (all programming) is saved as the start-up state.

ProGraM Pages

These pages give the performer real-time control over the deeper processes within René, allowing real time sculpting of the thought processes that drive the sequence

ACCESS: the performer Grants ACCESS or Denies ACCESS to any of the 16 locations in the grid. If a location is ON (lighted) the René will be able to map those coordinates. If a location is OF (not lighted) then René not be able to map those coordinates, and will either SEEK the nearest possible location, or SLEEP (keep in mind that René counts in it's sleep) until mappable coordinates are conjured. ACCESS ProGraMming allows the performer to limit a pattern.

X-Gate: the performer may select/deselect which locations in the 4x4 grid will generate a gate at the X-Gate output.

Y-Gate: the performer may select/deselect which locations in the 4x4 grid will generate a gate at the Y-Gate output.

X-FUN: at this Page the 4x4 touch grid is used to edit the behavior of X-Axis. For complete details of X-Fun’s features please see appendix A.

Y-FUN: at this Page the 4x4 touch grid is used to edit the behavior of Y-Axis. For complete details of X-Fun’s features please see appendix A.

Q: This PGM Page gives the performer the ability to define the Scale to which the QCV will be quantized. The performer is also given four slots to store Scales and the Voltages Programmed at the 16 locations. For complete details of the quantization edit mode please see appendix B.

APPENDIX A
(X-FUN and Y-FUN)

COUNTING:
FWD: for every Clock Pulse, associated counter advances one digit. 0, 1, 2, 3. After 3 counter returns to 0.

BWD: for every Clock Pulse, associated counter recedes one digit. 3, 2, 1, 0. After 0 counter returns to 3.

PEND: counter advances from 0, 1, 2, 3 and then recedes 2, 1, 0. The motion is like that of the pendulum of a clock.

Snake: When selected, the X-CLK and X-CV scan linearly through one of 8 sets of coordinates René has memorized (see Appendix C), the result is a more predictable, snake like movement through the 16 locations. The memorized coordinate sets are selected via pulses at the Y-CLK input and/ or the Y-CV input and associated pot. Since the Y-CV is normalled to +5V, you may manually select a coordinate set by adjusting the Y-CV attenuator. Gates will be generated per axis, each time René moves along corresponding axis. So from loc. 2 to loc. 3 Gate-X will pulse. From loc. 3 to loc. 4 Gate-Y will pulse.

CLK RST: When selected, a pulse at the X-MOD input will reset the X Counter to 0, which is the left most column (coordinate 0, Y). A pulse at the Y-MOD input will reset the Y Counter to 0, which is the bottom most row (coordinate X, 0). If all of the zero coordinates are ACCESS DENIED by either ProGraMming or TOUCH ACCESS, and both X and Y Axis are Reset, then René will be forced to stop, since it has been Reset to a location in where there is no path out.

Glide: When selected under X-Fun and/ or Y-FUN the sequence will glide between each step in the X direction when a gate is present at the X-MOD input. To use Glide, patch the Gate or Clock you wish to set glide on/ off, to one of the two MOD inputs. If you are using XMOD, then go to X-FUN and set Glide ON. If you are patched to YMOD, then go to Y-FUN and set Glide to ON. The Glide function is not Axis independent, and only one of the two axis needs to be used for programming glides.

Seek/Sleep: When OFF (not lighted) René SEEKS, when ON (lighted) René SLEEPS. This refers to how René finds the next Accessible location. If you have at least one location set "Access Denied" you will hear the effects. When René is plotting coordinates on the grid and it comes to a location that has No Access (access denied) it will find Access in one of two ways:

Seek: with this behavior René is restless. If René comes to a location that is Access Denied, it looks for the next available location and goes immediately to this location, and FAST. Sleep: with this behavior René is more relaxed. If René finds a location that is Access Denied, it just kicks back and continues to count until it produces coordinates for a location that may be Accessed.

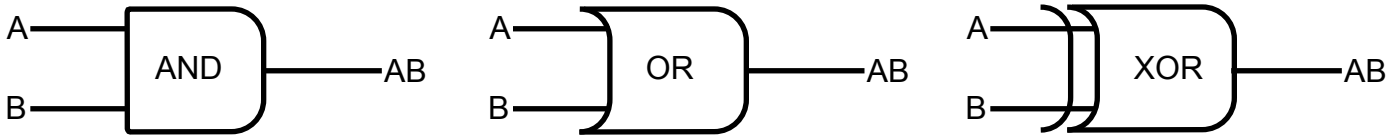
Musically speaking, Seek moves more, and Sleep will rest more. Using Sleep and ProGraMming Access and Gates, it is possible to create rests, pauses and etc...

LOGIC OPERATIONS

There are 3 rows of the logic processing. CLK by MOD, Gate by MOD and Gate by Opposing CLK. With the Clock Logic Ops (locations 9, 10, 11) the MOD input is AND, OR, XOR against the CLocK and the result drives the counter for the associated Axis.

With the Gate Logic Ops (locations 5, 6, 7) the MOD is AND, OR, XOR against the CLocK and the result drives the gate programming logic (X Gate or Y Gate pages). The LAST part of the chain is the GATE ON/OFF, thus giving Gate ProGraMming top level control in the grand scheme of René. When you want a particular location to NOT generate an event, you turn off the Gate and there will be NO event.
Truth Tables:

(NOTE: 0 = FALSE = OFF, 1 = TRUE = ON)



A	B	Out
0	0	0
0	1	0
1	0	0
1	1	1

A	B	Out
0	0	0
0	1	1
1	0	1
1	1	1

A	B	Out
0	0	0
0	1	1
1	0	1
1	1	0

For CLK by MOD logic operations the results apply to both the movement of the sequence and the associated gate outputs. For Gate by MOD logic operations the results apply only to the associated gates outputs. It is easy to experiment with different logic operations, so do not be shy. In some cases the results are wonderfully jumbled, while in others, they are barely noticeable. One parameter that has a great deal of bearing on the outcome of these logic processes is Gate Width of the incoming CLocK and MOD signals.

APPENDIX B

Stored Quantized Voltages

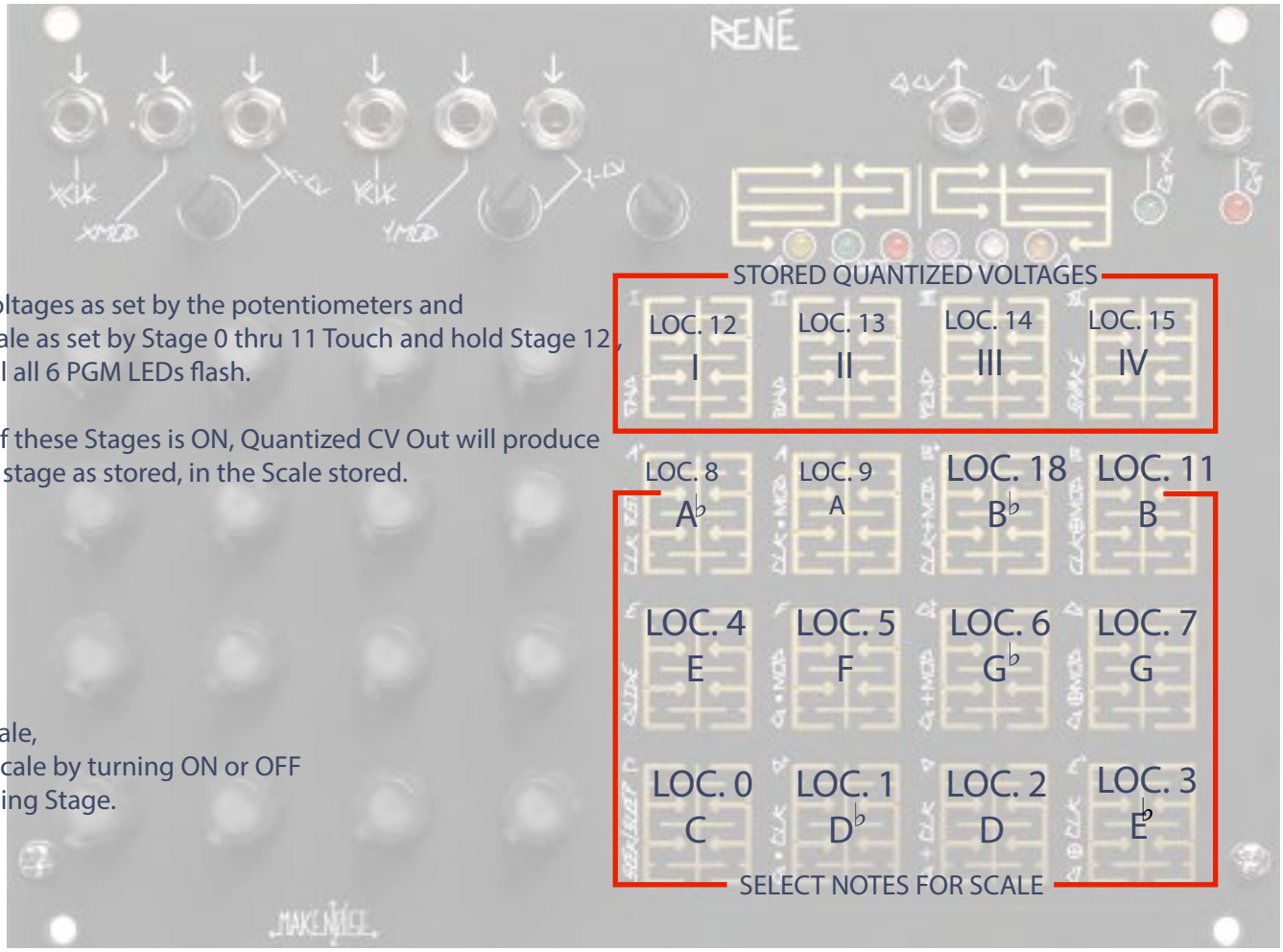
While at the Quantize Page, to store all 16 Voltages as set by the potentiometers and the ProGraMmed Scale as set by touch grid 0 thru 11, touch and hold either 12, 13, 14, or 15 until all 6 PGM LEDs flash. When any one of 12, 13, 14, or 15 is ON at the Q Page, QCV OUT will produce voltages per location as stored, in the scale stored. Scale may still be edited on the fly, but the knobs will no longer be “live” while any one of the Stored Quantized Voltage sets is in use. To turn OFF the Stored Quantized Voltage set, touch the location of the active set, thus toggling the SQV to OFF.

With the scale AND the Voltages you have programmed stored, you effectively have two channels of Control Voltages. The most common use would be to apply the QCV to 1V/ Octave input on your VCO, Program your scale and the notes you want to use in your composition. Store those to one of the 4 locations (12, 13, 14, 15). If you want variations, then store those variations to the remaining locations. Now patch the CV out (un-Quantized) to a timbre control, such as FM Index, wave shape, filter resonance... Because your QCV is using the Stored Quantized Voltages to drive the VCO, the unquantized CV out is now independent, and you may turn the knobs to program new voltages to control timbre without changing the notes pattern driving your VCO. Apply the Gate outs to EG/ VCA combo or LPG, and you have full control of one voice.

To Store all 16 Voltages as set by the potentiometers and ProGraMmed Scale as set by Stage 0 thru 11 Touch and hold Stage 12, 13, 14, or 15 until all 6 PGM LEDs flash.

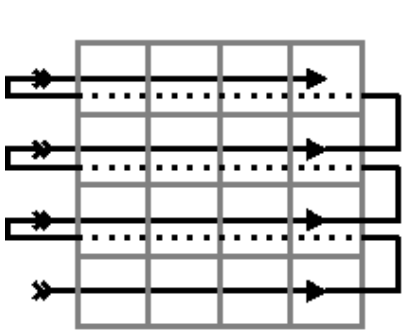
When Any one of these Stages is ON, Quantized CV Out will produce voltages at each stage as stored, in the Scale stored.

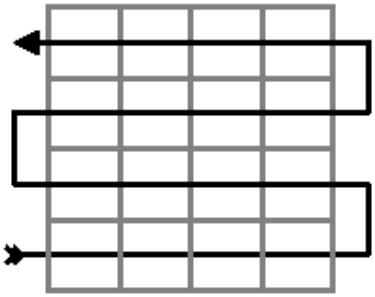
TO ProGraM a Scale,
select notes for scale by turning ON or OFF each corresponding Stage.

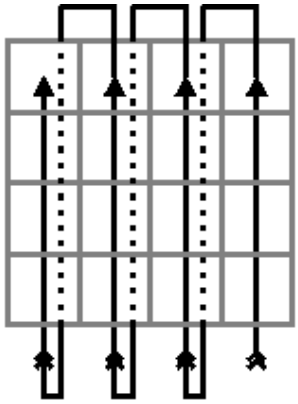


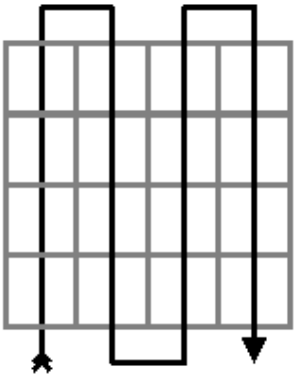
APPENDIX C

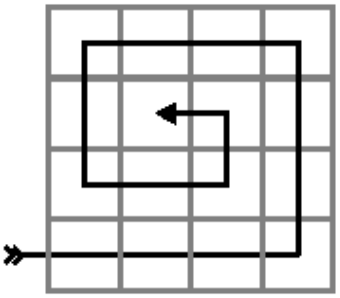
Snake: Memorized Coordinate Sets:
These drawings illustrate the SNAKE like paths that René travels, reading coordinates from memory.
Conceived and Illustrated by yerpa58.

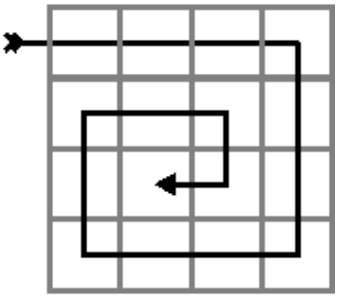


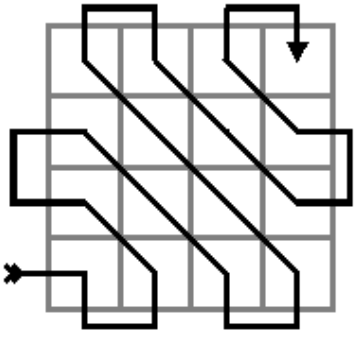


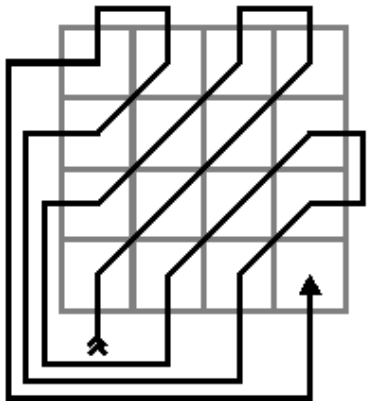












Patch Examples

Voltage Controlled Raga: www.youtube.com/watch?v=DHf4q7pehtg

QCV -> VCO 1v/Oct. Wogglebug Woggle CV Out -> Rene X-CV.
Put Rene in Snake Mode and clock it with your choice of clock source. Mult clock to Wogglebug Clock Input. Set Woggle Time to full CCW (0%), all other Wogglebug controls full CW.
Adjust XCV input attenuator slowly up from 0% until the Woggle out begins to destabilize the sequence, adding embellishments. Adjust Woggle Time and Wogglebug Chaos Control (Clock/Slew) to taste. Optional: send VCO output through an Optomix and strike it with one or both of Rene's gate outputs and/or Wogglebug Random Gate output.

Toggled Sequencing:

Pressure Points Gate 1 -> Rene X-MOD; Pressure Points Gate 2 -> Rene Y-MOD
Put Rene in Cartesian mode with two clocks of your choice in the clock inputs. Engage CLOCK AND MOD on both X-FUN and Y-FUN pages. Rene will only sequence along each axis when the associated touchplate is pressed.

Non-Linear Quantization: www.youtube.com/watch?v=BnoFMimnK6s

With Rene in Snake Mode and no clock applied, patch positive-going (unipolar) CV signal (such as a cycling function from MATHS or Function, or the Stepped Random out from Wogglebug) to X-CV. Choose quantization values with individual panel controls, and scale with Q page. Adjust the X-CV input attenuator to taste. Optional: switch snake patterns after each function cycle by patching EOC to Rene Y-CLK input.

"Arpeggiation" of a 4-step sequence:

MATHS Ch4/Function EOC -> X-Clk
MATHS Ch4/Function positive CV output -> YCV
Put Rene in Cartesian mode, engage cycling on MATHS/Function, and use the YCV input attenuator to change the amount of "arpeggiation" on the Y-Axis. Adjust envelope rise and fall times, and especially curve/response, to taste. For best results, tune each Y-axis column to a chord using the knobs and Q page.

Cogito Ergo Sum Ergo Cogito Ergo Sum Ergo Cogito: www.youtube.com/watch?v=4aBjM08cndA

Patch Rene unquantized CV output into X-CV or (in Cartesian mode) Y-CV input. For best results, process CV out with a MATHS or dynamically controlled VCA, and attenuate to taste at CV input. This feedback patch will cause Rene to jump locations every time it sends a CV value much greater than zero. Many nonlinear patterns await discovery. A "cluster" of higher CV values will cause extended sudden movement. "Eddies" can be created by setting several adjacent knobs to low values. Different clock sources in the X and Y clock inputs can create variation in the patterns. Optional: recall a stored sequence on the Q page to allow constant reconfiguring of the knob settings for the feedback patch but with the same "melodic" values from the QCV output.