The Voltage Research Laboratory Encyclopedia Touch Controller Patches

Touch Controller Interface

Because the Lifeforms Touch Controller simply produces voltages to control other Eurorack format modules, this manual pairs the Touch Controller with the Voltage Lab synthesizer voice module. The patches highlight different ways to utilize the Touch Controller within a Eurorack system so the Voltage Lab can be substituted with any other Eurorack module that accepts 0v to 5v control voltage and/or 0v to 5v gate signals.

This Patch Guide is meant as a starting point for exploration. Signal paths covered in one patch can easily be tweaked and/or combined with other ideas to create more complex patches.

This Patch Guide does not cover every detail and is not a substitute for reading the manual. Instead, the Patch Guide is meant to reinforce the most important concepts/

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2. Left Output Section
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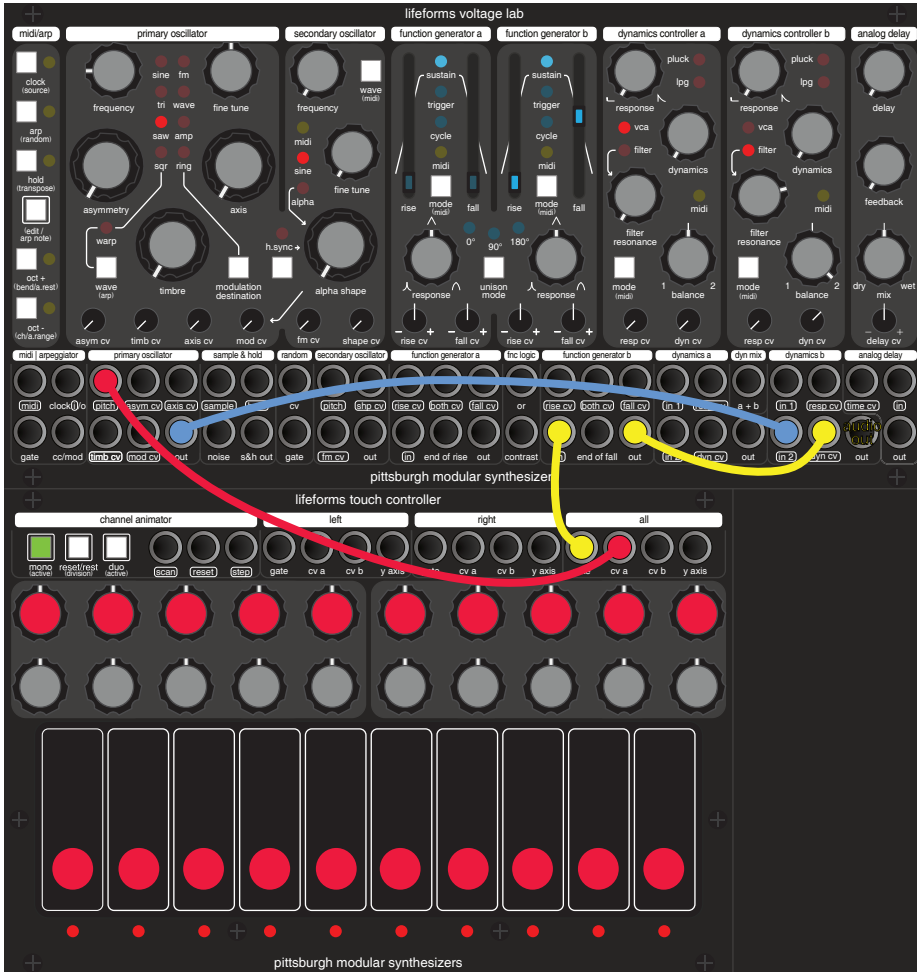
Voltage Lab Interface

1. MIDI Clock Button (Clock Source)
2. MIDI Arpeggiator Button (Random)
3. MIDI Hold Button (Transpose)
4. MIDI Edit Button (Arpeggiator Note)
5. MIDI Octave + Button (Bend/Arp Rest)
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7. Primary Frequency Knob
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9. Primary Asymmetry Knob
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25. Function A Rise Slider
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28. Function A Response Curve Knob

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38. Dynamics A Response Knob
39. Dynamics A Dynamics Knob
40. Dynamics A Filter Resonance Knob
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42. Dynamics A Mode Button (MIDI Enable)
43. Dynamics A Response CV Trimmer
44. Dynamics A Dynamics CV Trimmer
45. Dynamics B Response Knob
46. Dynamics B Dynamics Knob
47. Dynamics B Filter Resonance Knob
48. Dynamics B Input Balance Knob
49. Dynamics B Mode Button (MIDI Enable)
50. Dynamics B Response CV Trimmer
51. Dynamics B Dynamics CV Trimmer
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53. Delay Feedback Knob
54. Delay Mix Knob
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Voltage Lab Patch Bay

56. MIDI Adapter Cable Input Jack
57. MIDI Gate Output Jack
58. MIDI Clock Input/Output Jack
59. MIDI Control Change / Modulation Output Jack
60. Primary Pitch Input Jack
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62. Primary Asymmetry CV Input Jack
63. Primary Modulation CV Input Jack
64. Primary Axis CV Input Jack
65. Primary Output Jack
66. Sample & Hold Sample Input Jack
67. Noise Output Jack
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76. Function A Rise CV Input Jack
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90. Dynamics A Input 1 Jack
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92. Dynamics A Response CV Input Jack
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95. Dynamics A Output Jack
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98. Dynamics B Response CV Input Jack
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100. Delay Time CV Input Jack
101. Dynamics B Output Jack
102. Delay Input Jack
103. Delay Output Jack

Simple Mono Controller

Patch Description
Mono pitch and gate control using all 10 touch plates. This allows the Touch Controller adjust the pitch of the oscillator and trigger an envelope, VCA, or Dynamics Controller.
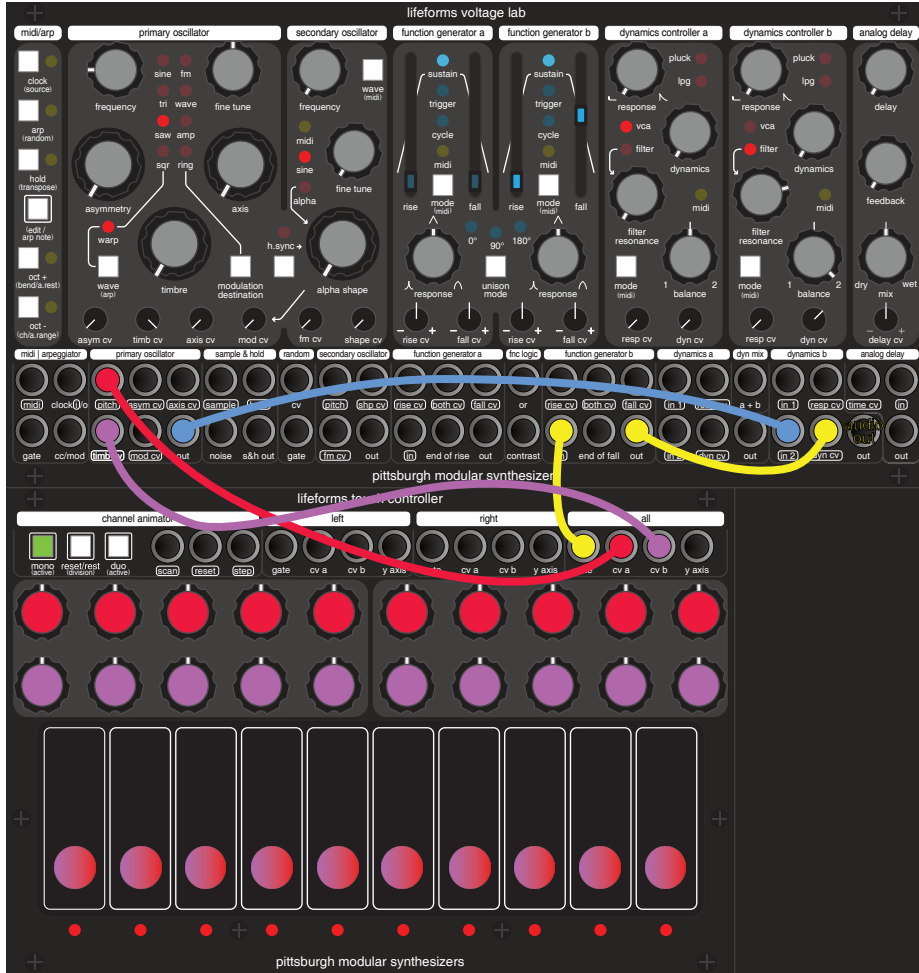
Patch Notes
Press the MONO BUTTON (5) to put the Touch Controller in Mono Mode. Adjust top row (ROW A) of the VOLTAGE PRESET KNOBS (30-39) to define the output voltage of each Touch Plate. Pressing a Touch Plate will output a gate signal and set the ALL CV A OUTPUT JACK (20) to the value stored in the associated VOLTAGE PRESET KNOB A.

Switch to using the bottom row (ROW B) of the VOLTAGE PRESET KNOBS (40-49) and the ALL CV B OUTPUT JACK (21).

Experiment by switching between Mono Mode and Duo Mode. In Duo Mode, the ALL CV A OUTPUT JACK (20) is the sum of the active Left VOLTAGE PRESET KNOB A and the active Right VOLTAGE PRESET KNOB B.
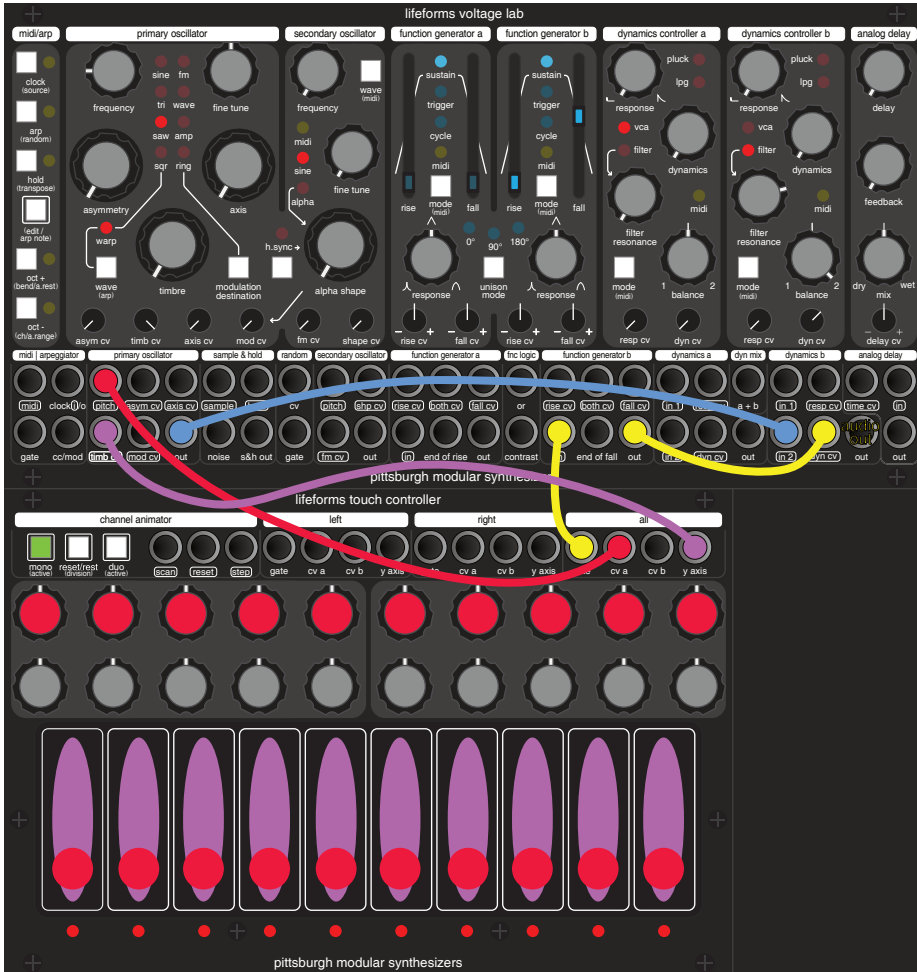
Patch Description

Mono pitch, gate, and CV control using all 10 touch plates. This allows the Touch Controller adjust the pitch of the oscillator, trigger an envelope, VCA, or Dynamics Controller, and output an assignable CV voltage. This example has the CV patched into the PRIMARY TIMBRE CV INPUT JACK (61).

Patch Notes

Press the MONO BUTTON (5) to put the Touch Controller in Mono Mode. Adjust top row (ROW A) of the VOLTAGE PRESET KNOBS (30-39) to define the output voltage of each Touch Plate. Pressing a Touch Plate will output a gate signal and set the ALL CV A OUTPUT JACK (20) to the value stored in the associated VOLTAGE PRESET KNOB A. Adjust bottom row (ROW B) of the VOLTAGE PRESET KNOBS (40-49) to define the output voltage of each Touch Plate. Pressing a Touch Plate will output a gate signal and set the ALL CV B OUTPUT JACK (21) to the value stored in the associated VOLTAGE PRESET KNOB B.

Y-Axis Introduction

Y-Axis Introduction

Patch Description
Simple monophonic patch to get familiar with the Y-Axis Output. The Touch Controller offers independent Y-Axis 0v to 5v output for the Left and Right Touch Zones. The All Output Section outputs the Y-Axis value of the last touched Touch Plate regardless of the active Mono or Duo Mode.

Patch Notes
Experiment with patching the Left Y-Axis and Right Y-Axis into different CV inputs and using them simultaneously. The Left Y-Axis Output and Right Y-Axis Output hold their value when the other is changed so touching a Left Touch Plate does not affect the Right Y-Axis Output and vise versa.

The Y-Axis uses capacitive touch to determine the Y-Axis. The unique design of the Touch Plate attempts to minimize the impact of finger surface area when determining the location but capacitive touch responds strongly to increased surface area. Pressing firmly, using more of the finger, or using multiple fingers when touching the Touch Plates will have an effect on the output voltage.

Capacitive touch is far from perfect in the best of conditions. We have tuned our circuitry and software to mitigate the side effects of capacitive touch but anomalies exist. The process of measuring small amounts of change in capacitance to register a touch and determine y-axis location and is sensitive to many outside variables. Different power sources can create a different capacitive touch sensitivity response. The variation can be caused by both the +12v power supplied by the eurorack case, the power mains, and most importantly, the quality of the earth ground the case is plugged into. Also, because capacitive touch integrates the human body into the circuit, response can very from person to person. Poor grounding, some fluorescent lighting fixtures, and some power strips can cause problems with the response of the Touch Controller.

Simple Duo Controller
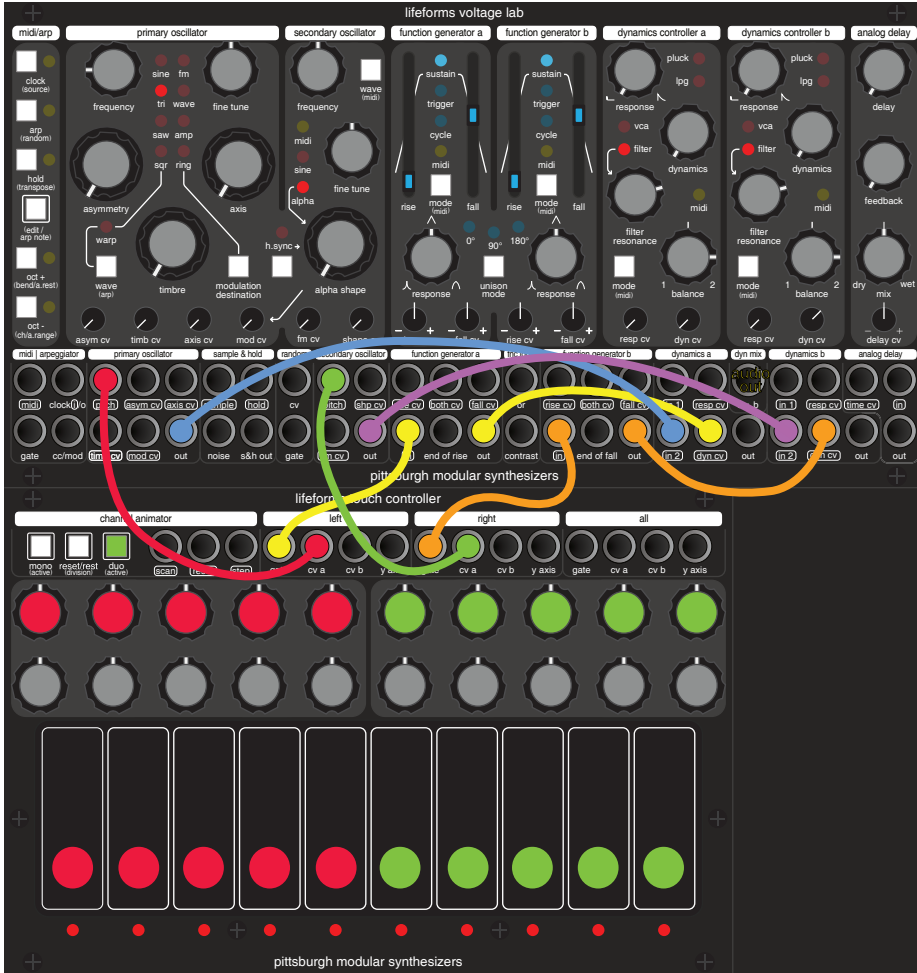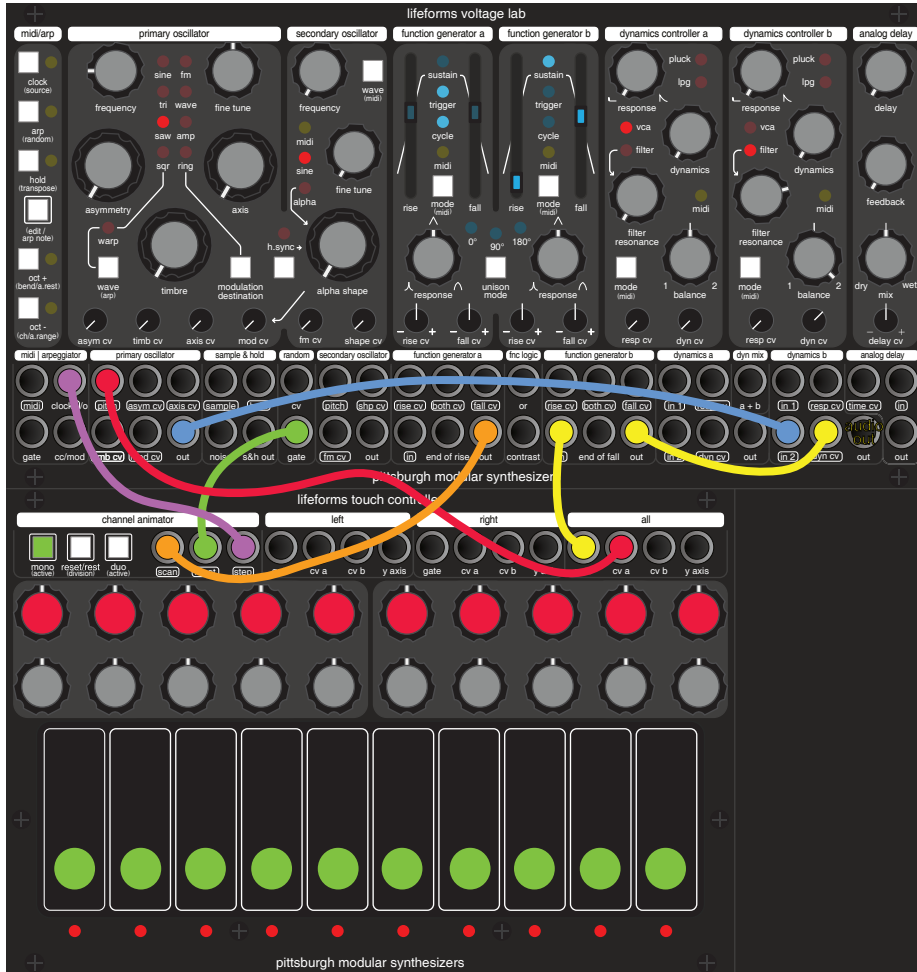
Simple Duo Controller

Patch Description
Dual pitch and gate control using 2 sets of 5 touch plates. This patch splits the Touch Controller into two independent control surfaces. In this example, the Left Side controls the Pitch and triggers the Function Generator A envelope of the Primary Oscillator voice and the Right Side controls the Pitch and triggers the Function Generator B envelope of the Secondary Oscillator voice.

Patch Notes
Experiment by switching between Mono Mode and Duo Mode. Notice that because we are using the Left and Right Outputs, the controller responds the same in both modes. The difference is that in Mono mode only 1 active Touch Plate Led will be lit and in Duo mode each side will have an active Touch Plate Led. Also, in Duo Mode, 1 Left and 1 Right Touch Plate can be used at the same time.

Mono Sequencer Control

Patch Description
This patch covers all the ways to control mono sequences. For simplicity, the Touch Controller is patched to work as a mono controller patched into the pitch and gate inputs of a basic monophonic Voltage Lab voice.

Patch Notes
Try patching the SCAN INPUT JACK (8) and STEP INPUT JACK (10) one at a time.

The STEP INPUT JACK (10) is patched into the MIDI CLOCK INPUT/OUTPUT JACK (58) of the Voltage Lab.

In Mono Mode, the Sequencer treats all 10 Touch Plates as a single monophonic touch interface. A sequence is recorded by pressing and holding the MONO BUTTON (5). While the MONO BUTTON (5) remains pressed, up to 64 steps can be added to the sequence by tapping the Touch Plates. The Y-Axis is also recorded into the sequence during programming.

While the MONO BUTTON (5) remains pressed, a Touch Plate can be pressed multiple times to repeat a step.

While the MONO BUTTON (5) remains pressed, the RESET/REST BUTTON (6) can be pressed to add a rest step in the sequence.

The sequence begins cycling through the programmed steps as soon as the first step is programmed and a trigger or gate signal triggers the STEP INPUT JACK (10). To prevent the sequence from cycling during programming, remove the clock from the STEP INPUT JACK (10) until programming is finished.

Clearing a Sequence
Press and release the MONO BUTTON (5) without touching a TOUCH PLATE to clear the sequence.

Switching from Mono to Duo clears the sequence.

Powering off the Touch Controller will clear the sequence.

Attention!
While a sequence is running, touching the TOUCH PLATES will not trigger the channel. Instead, touching a TOUCH PLATE will re-record the Y-Axis. This allows the Y-Axis recorded into the sequence to be modified without changing the selected channel sequence.

If the Touch Plates are not responding to touch, Press and release the MONO BUTTON (5) to clear the active sequence and enable the Touch Plates.

Scan Input
The Scan Input of the Touch Controller accepts a 0v to 5v control voltage signal and sets the active channel based on the incoming voltage. The Scan Input updates the active channel when the incoming voltage changes. In Mono Mode, the Scan input spreads the 0 to 5v range across all 10 channels. In Duo Mode the Scan input spreads the 0v to 5v range across both the Left and Right sides so each side responds the the full 0v to 5v range.

Duo Sequence Control

Patch Description
This patch covers duo sequences. For simplicity, the Touch Controller is patched to work as a duo controller patched into the pitch and gate inputs of 2 basic Voltage Lab voices.

Patch Notes
The STEP INPUT JACK (10) is patched into the MIDI CLOCK INPUT/OUTPUT JACK (58) of the Voltage Lab.

In Duo Mode, the Left Zone and Right Zone work as independent sequencers. A sequence is recorded by pressing and holding the DUO BUTTON (7). While the DUO BUTTON (7) remains pressed, up to 64 steps can be added to the Left and Right sequences by tapping the Touch Plates. The Y-Axis is also recorded into the sequence during programming.

The Left and Right Sequences can be entered simultaneously or one at a time.

While the DUO BUTTON (7) remains pressed, a Touch Plate can be pressed multiple times to repeat a step.

While the DUO BUTTON (7) remains pressed, the RESET/REST BUTTON (6) can be pressed to add a rest step in the sequence with the last assigned step. If no steps have been programmed in the Left or Right sequencers, the rest is assigned to the first step of the Left sequencer.

The sequencers begin cycling independently through their programmed steps as soon as the first step of a sequence is programmed and a trigger or gate signal triggers the STEP INPUT JACK (10). To prevent the sequencers from cycling during programming, remove the clock from the STEP INPUT JACK (10) until programming is finished.

If only one sequence is active, the other Touch Plate Zone can be played manually.

Clearing a Sequence
Press and release the DUO BUTTON (7) without touching a Left or Right Touch Plate to clear the sequences.

Switching from Duo to Mono clears the sequences.

Powering off the Touch Controller will clear the sequences.

Attention!
While the Left and/or Right sequencers are running, touching their Touch Plates will not trigger the channel. Instead, touching a TOUCH PLATE will re-record the Left or Right Y-Axis. This allows the Y-Axis recorded into the sequence to be modified without changing the selected channel sequence.

If the Touch Plates are not responding to touch, Press and release the DUO BUTTON (7) to clear the active sequences and enable the Left and Right Touch Plates.

Pittsburgh Modular Synthesizers