

DuoPoly

Quick Operation Guide

Version 2.52

Cornfield Electronics

Intro

DuoPoloy is a polyphonic music synthesizer that can be played with the ArduTouch board's touch-keyboard. It has 8 octaves, Tremelo, Vibrato, distortion effects, Low Pass Filter, and several interesting waveform voices. It can also be used as a sequencer. As well as the touch-keyboard, DuoPoly makes use of the two knobs and two buttons on the ArduTouch board.

DuoPoly was the first synth created for the ArduTouch music synthesizer project. DuoPoly can be played as a synth, but its main intent was a synth to demonstrate and show off the sounds and features of the project and the ArduTouch Arduino library functions.

It can be played alone, but it can be more easily controlled (and understood) if you use the Arduino Serial Monitor (or, even better, another serial Terminal program).

The pages that follow comprise a reference guide for all of the features of DuoPoly.

Please see the last page of this document for an explanation of the types of button presses used on this synthesizer, including “*Tap*”, “*Double-Tap*”, “*Tap-Press*”, etc.

main>

r	right voice
l	left voice
k	push console's virtual keyboard
p	select preset (0, 1, 2, 3, 4)
v	set volume (0 to 255)
w	select waveform (0, 1, 2*)
*	latch oscillator frequencies (geometric)
+	latch oscillator frequencies (arithmetic)
u	unlatch oscillator frequencies
x	set transposition amount (in semi-tones)
[start sequencers
]	stop sequencers
 	pause/resume sequencers
.	mute
<	unmute
!	reset
?	display info
ESC or `	exit sketch

* waveform 2 available only for `__STNDLONE__` and `__BAREBONE` runtime models

(continued ...)

main

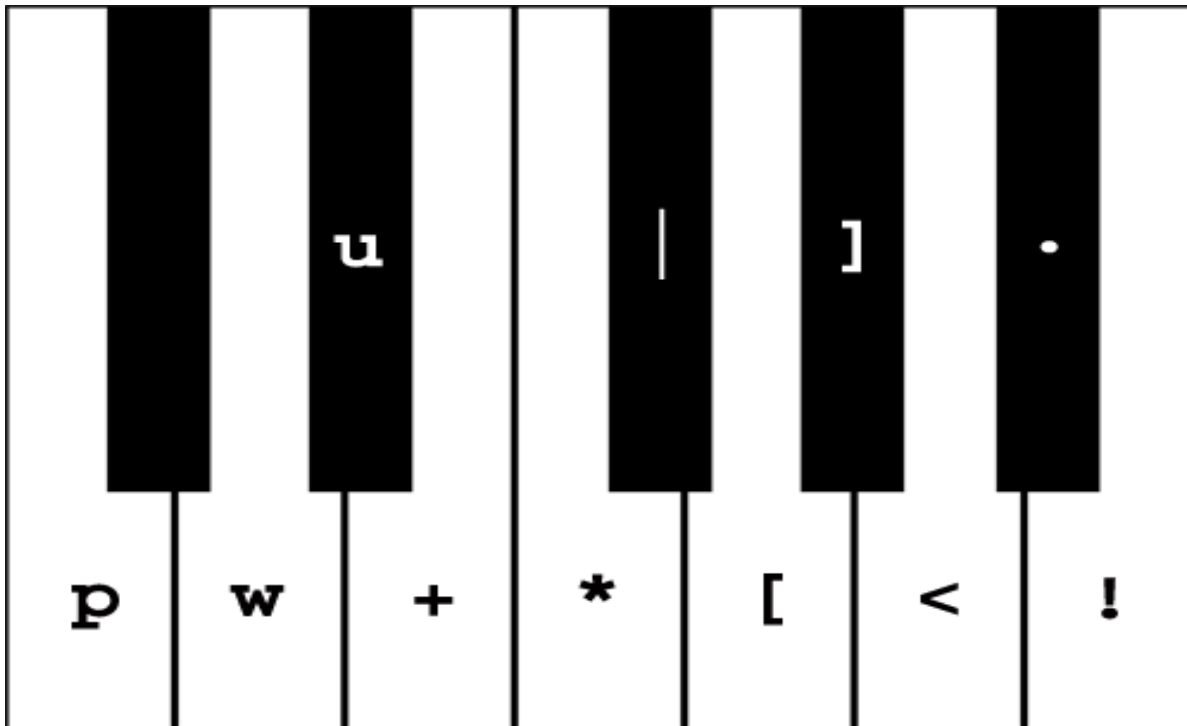
left button

right button

<i>Press</i>	left voice	<i>Press</i>	right voice
<i>Tap</i>		<i>Tap</i>	
<i>Double-Tap</i>	exit sketch	<i>Double-Tap</i>	



volume



right> or left>

d	detune oscillator <i>(-128 to 127, total range is a quarter tone)</i>
e	push envelope control
E	push effects chain
f	set oscillator frequency <i>(20.0 to 20000.0)</i>
g	set glide speed <i>(0 to 255, 0 = off)</i>
k	push console's virtual keyboard
S	push sequencer
t	set sequencer tempo <i>(15.0 to 20000.0)</i>
T	push tremolo control
V	push vibrato control
v	set volume <i>(0 to 255)</i>
w	select waveform <i>(0, 1, 2*)</i>
*	latch frequency geometrically
+	latch frequency arithmetically
[start sequencer
]	stop sequencer
 	pause/resume sequencer
.	mute
<	unmute
!	reset
?	display info
ESC or `	return to main panel

* waveform 2 available only for `__STNDLONE__` and `__BAREBONE__` runtime models

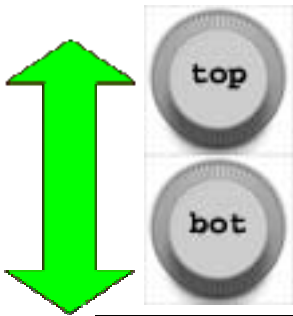
(continued ...)

right *or* left

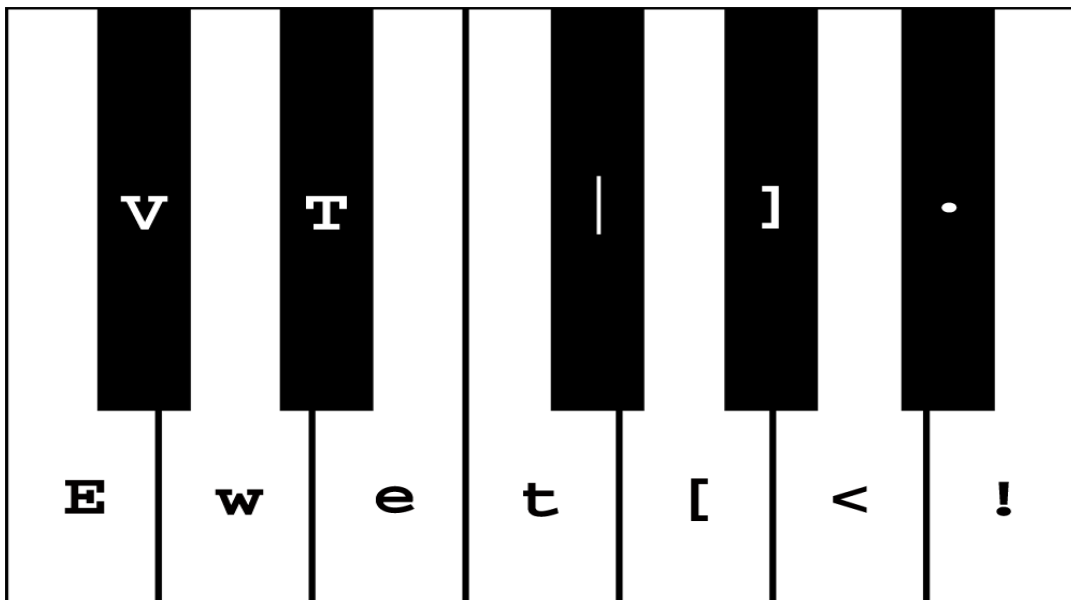
left button

right button

<i>Press</i>		<i>Press</i>	scroll pots
<i>Tap</i>	- 1 octave	<i>Tap</i>	+ 1 octave
<i>Double-Tap</i>	return to main panel	<i>Double-Tap</i>	run key menu once
<i>Tap-Press</i>		<i>Tap-Press</i>	program a sequence



volume
detune
glide



Sqnc>

r record a sequence (push step programmer)
t set sequencer tempo **(15.0 to 20000.0)**
[start sequencer
] stop sequencer
| pause/resume sequencer
! reset
? display info

step>

SPACE or . ++duration
z C
s C#
x D
d D#
c E
v F
g F#
b G
h G#
n A
j A#
m B
, high C
0 thru 8 select octave 0 thru 8
? display current octave
ESC or ` commit sequence

left button

right button

<i>Press</i>	<i>Press</i> ++duration
<i>Tap</i> - 1 octave	<i>Tap</i> + 1 octave
<i>Double-Tap</i> commit sequence	<i>Double-Tap</i>

envelope>

a set attack time (0 to 255)
d set decay time (0 to 255)
r set release time (0 to 255, 0 = hold)
s set sustain level (0 to 255)
~ set legato retriggering
' set staccato retriggering
. mute
< unmute
! reset
? display envelope state
ESC or ` exit envelope panel

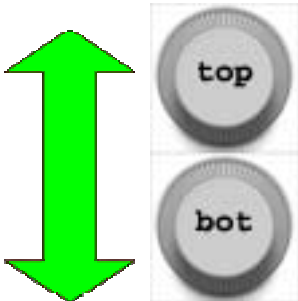
(continued ...)

envelope

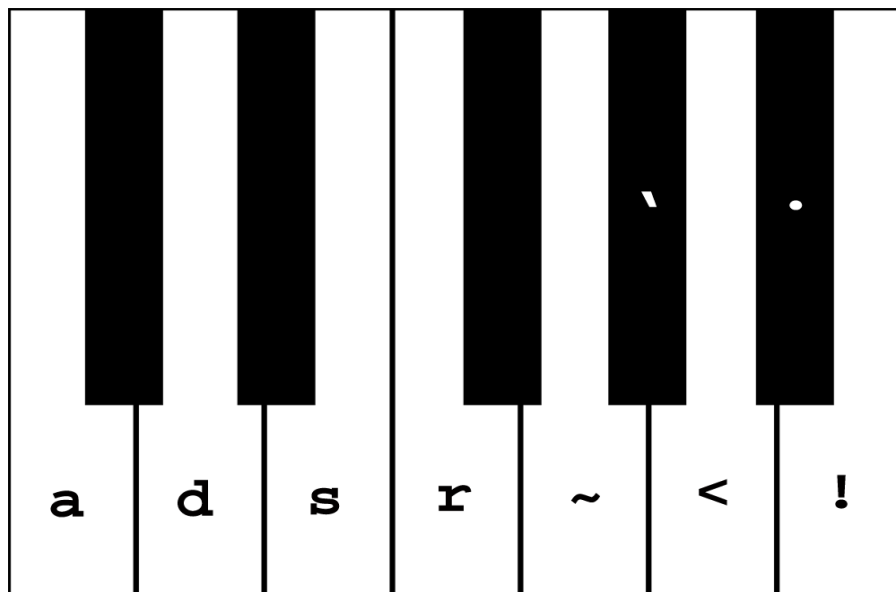
left button

right button

<i>Press</i>		<i>Press</i>	scroll pots
<i>Tap</i>	-1 octave	<i>Tap</i>	+1 octave
<i>Double-Tap</i>	exit envelope panel	<i>Double-Tap</i>	run key menu once



attack
decay
sustain
release



tremolo>

f set tremolo frequency **(0.01 to 20.0)**
d set tremolo depth **(0.0 to 1.0)**
t set trigger count (# half-cycles to traverse: **0-255**)
~ set legato retriggering
' set staccato retriggering
+ trigger starts at “softest” level, and increases
- trigger starts at “loudest” level, and decreases
. mute
< unmute
! reset
? display tremolo state
ESC or ` exit tremolo panel

(continued ...)

tremolo

left button

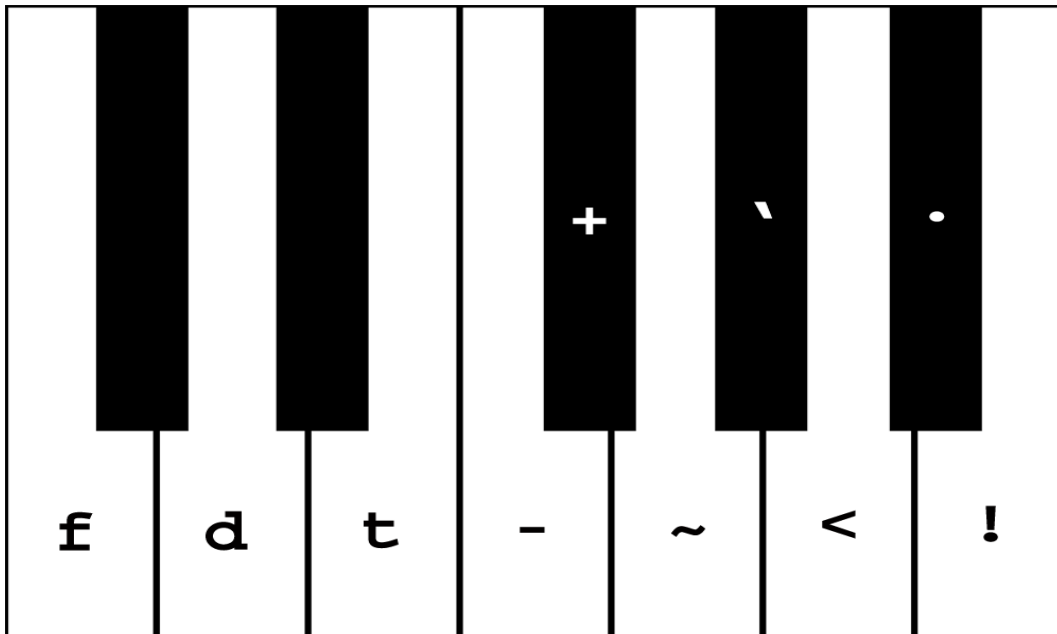
right button

<i>Press</i>		<i>Press</i>	
<i>Tap</i>	-1 octave	<i>Tap</i>	+1 octave
<i>Double-Tap</i>	exit tremolo panel	<i>Double-Tap</i>	run key menu once



frequency

depth



vibrato>

f set vibrato frequency **(0.01 to 20.0)**
d set vibrato depth **(0.0 to 1.0)**
t set fade time (in 1/8ths of sec: **0-255**)
~ set legato retriggering
' set staccato retriggering
+ set positive polarity (“fade in”)
- set negative polarity (“fade out”)
. mute
< unmute
! reset
? display vibrato state
ESC or ` exit vibrato panel

(continued ...)

vibrato

left button

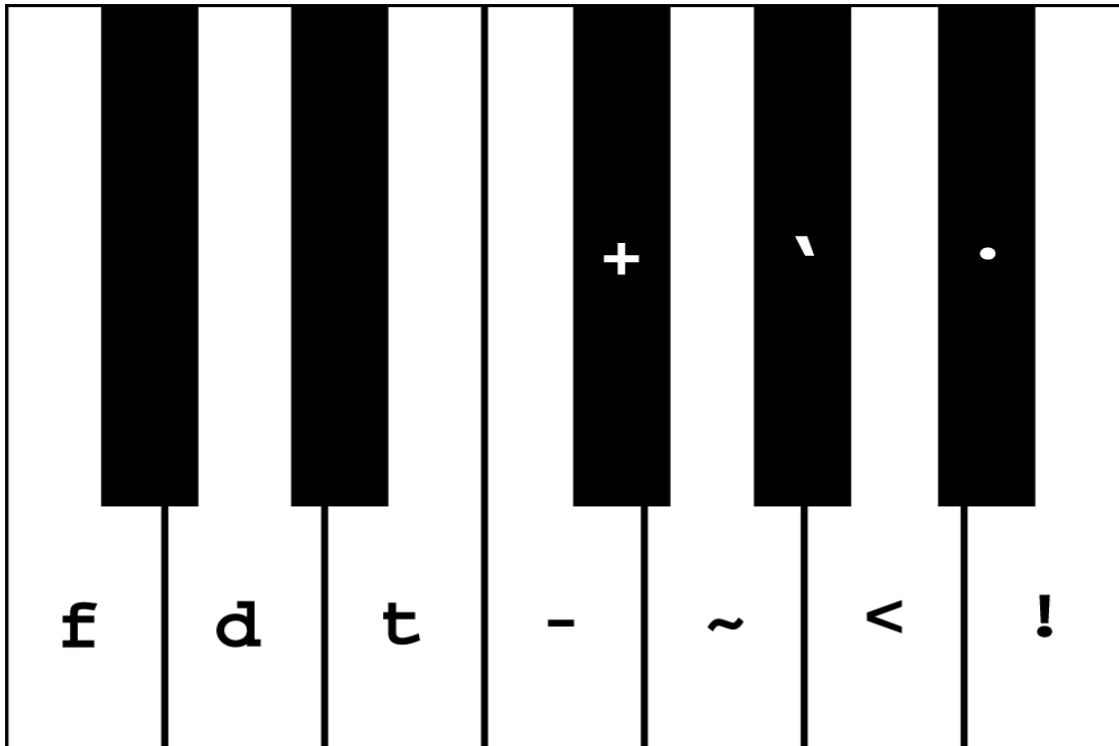
right button

<i>Press</i>		<i>Press</i>	
<i>Tap</i>	-1 octave	<i>Tap</i>	+1 octave
<i>Double-Tap</i>	exit vibrato panel	<i>Double-Tap</i>	run key menu once



frequency

depth



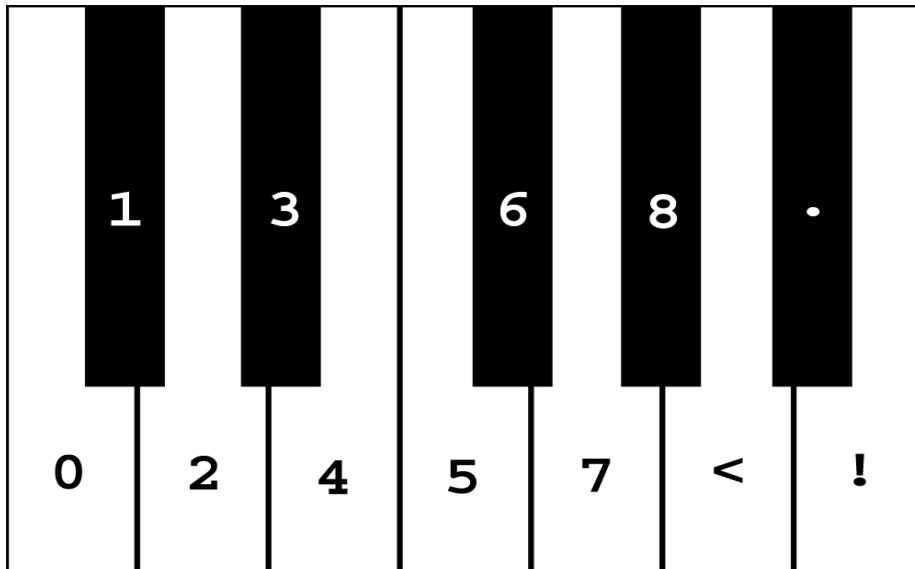
effects>

- b** select bsf effect
- l** select lpf effect
- 0 thru 8** select effect by number (**0 - bsf; 1 - lpf**)
- .** mute all effects
- <** unmute all effects
- !** reset all effects
- ?** list effects
- ESC or `** exit effects panel

left button

right button

<i>Press</i>		<i>Press</i>	
<i>Tap</i>		<i>Tap</i>	
<i>Double-Tap</i>	exit effects panel	<i>Double-Tap</i>	



bsf> (*Binary Shift Filter*)

c set number of bits to clip **(0-7)**
s set number of bits to shift **(0-7)**
+ normal filter output
- complement filter output
. mute
< unmute
! reset
? display filter state
ESC or ` exit filter panel

(continued ...)

bsf

left button

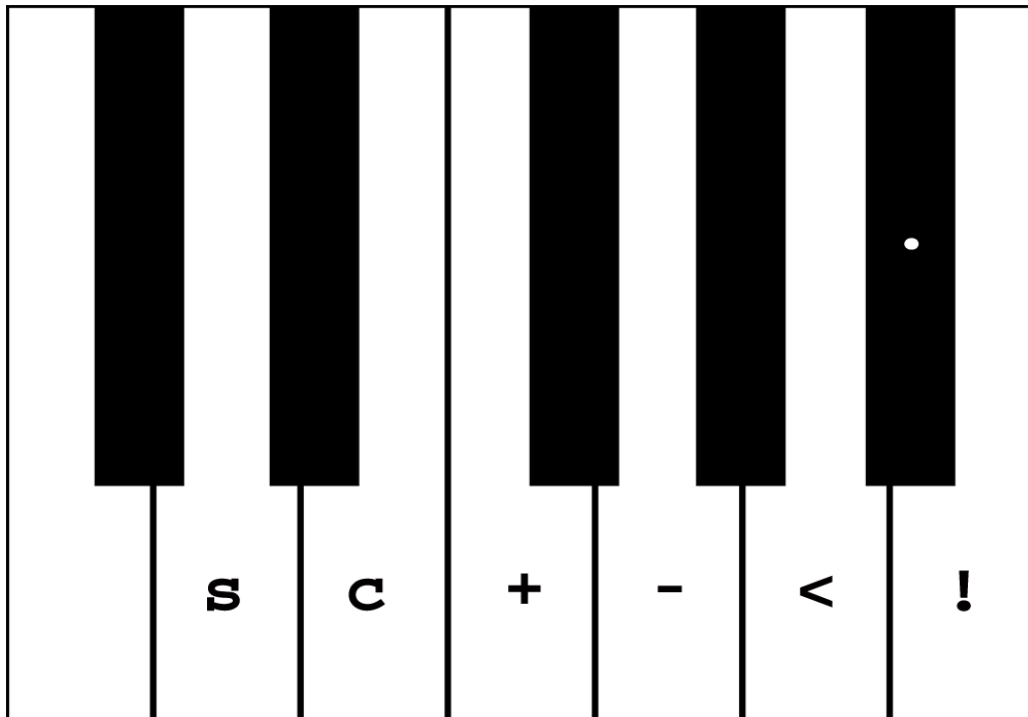
right button

<i>Press</i>		<i>Press</i>	
<i>Tap</i>	-1 octave	<i>Tap</i>	+1 octave
<i>Double-Tap</i>	exit filter panel	<i>Double-Tap</i>	run key menu once



shift

clip



lpf> (*Low-Pass Filter*)

c	set cutoff freq level (parts per 255: 0-255)
.	mute
<	unmute
!	reset
?	display filter state
ESC or `	exit filter panel

(continued ...)

lpf

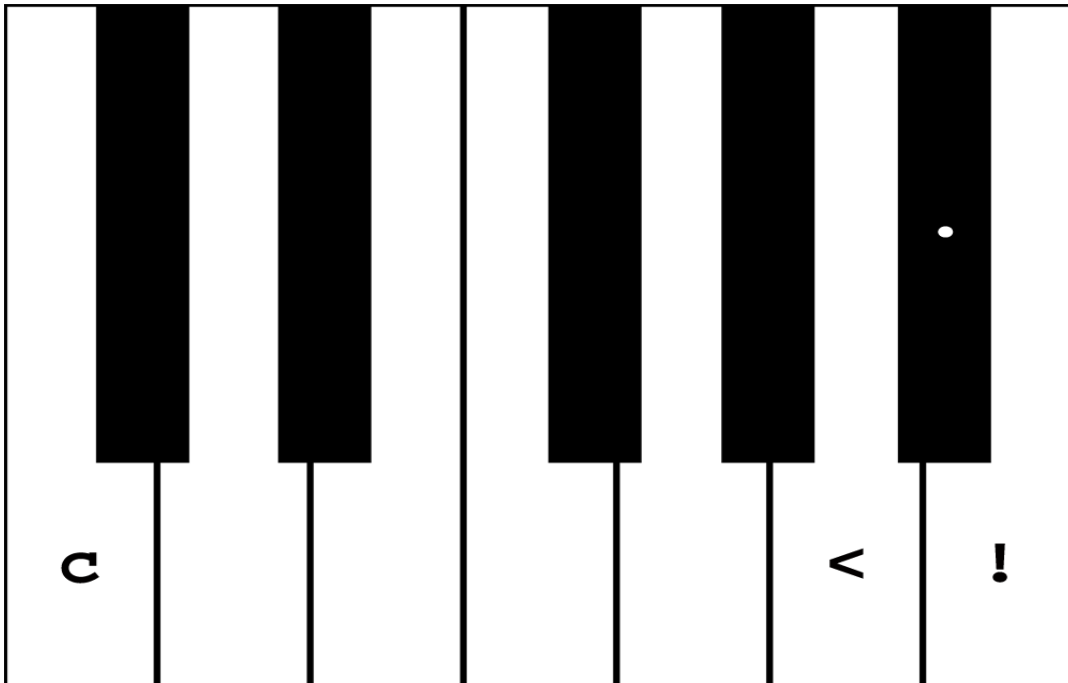
left button

right button

<i>Press</i>		<i>Press</i>	
<i>Tap</i>	-1 octave	<i>Tap</i>	+1 octave
<i>Double-Tap</i>	exit filter panel	<i>Double-Tap</i>	run key menu once



cutoff



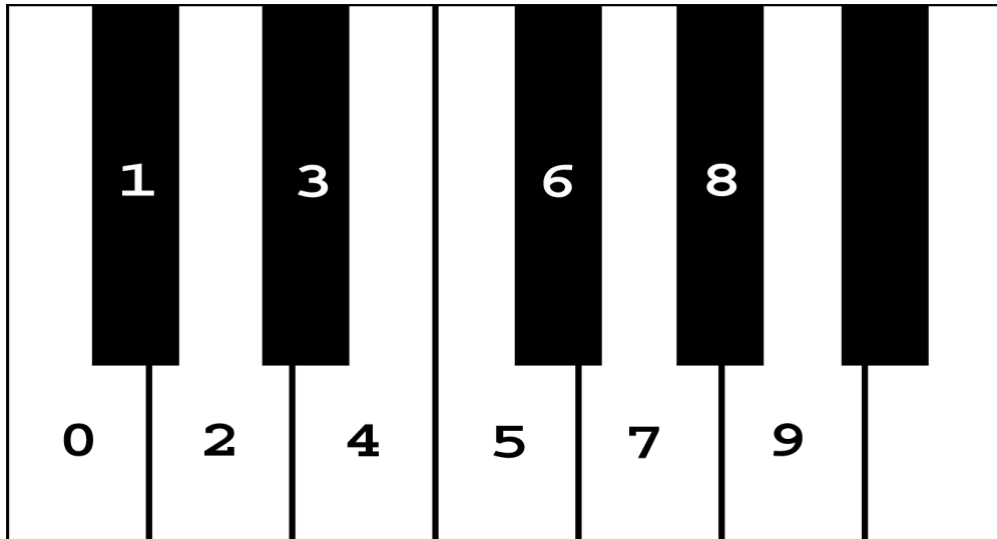
preset>

0 thru 9 select preset by number **(0, 1, 2, 3, 4)**
? list presets
ESC or ` abort preset selection

left button

right button

<i>Press</i>		<i>Press</i>
<i>Tap</i>		<i>Tap</i>
<i>Double-Tap</i>	abort preset selection	<i>Double-Tap</i>



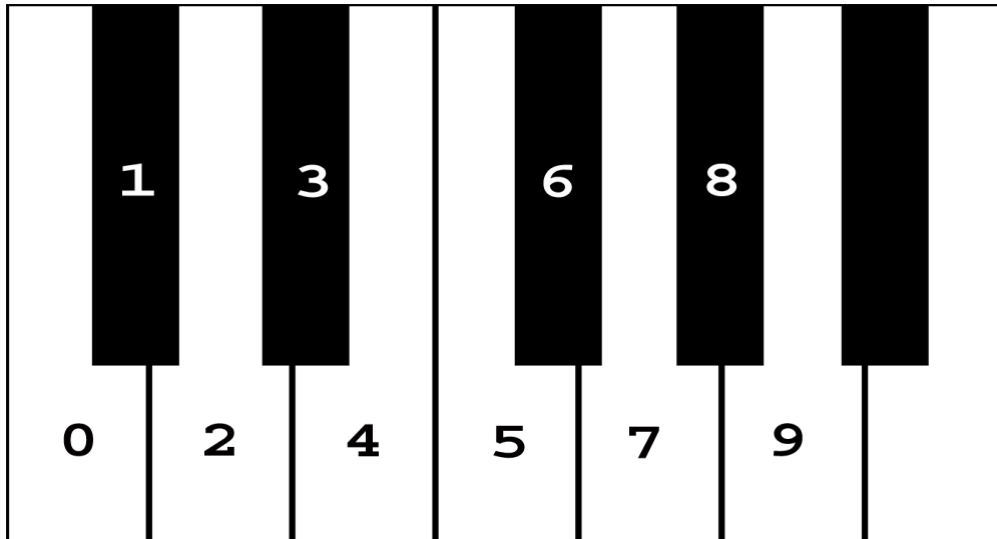
waveform>

- 0 thru 9** select waveform by number **(0, 1, or 2)**
- ?** list waveforms
- ESC or `** abort waveform selection

left button

right button

<i>Press</i>	<i>Press</i>
<i>Tap</i>	<i>Tap</i>
<i>Double-Tap</i> abort waveform selection	<i>Double-Tap</i>



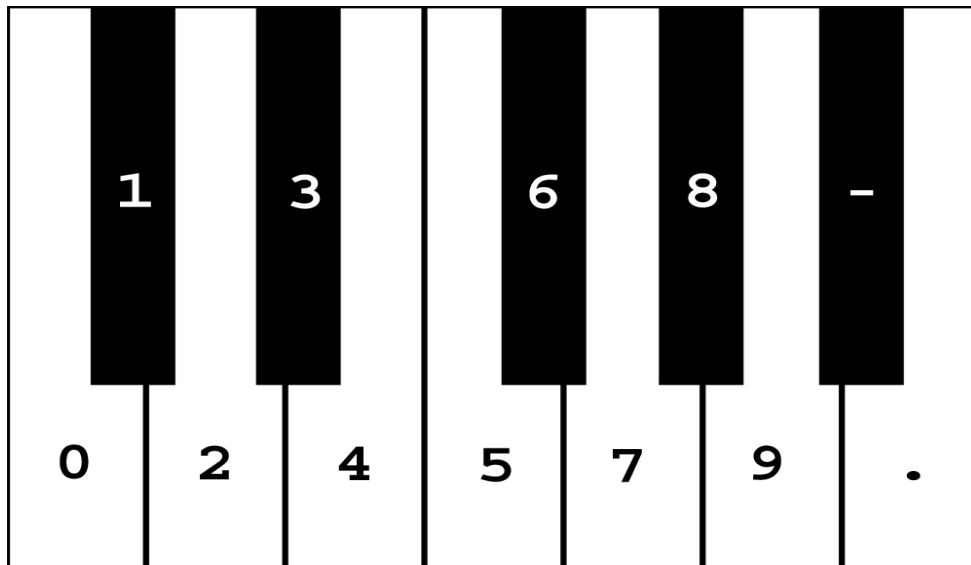
(numeric input)

0 thru 9 decimal digit
- minus sign
. decimal point
CR or / commit input
ESC or ` abort input

left button

right button

<i>Press</i>		<i>Press</i>	commit input
<i>Tap</i>		<i>Tap</i>	commit input
<i>Double-Tap</i>	abort input	<i>Double-Tap</i>	



keybrd>

z **C**
s **C#**
x **D**
d **D#**
e **E**
v **F**
g **F#**
b **G**
h **G#**
n **A**
j **A#**
m **B**
, **high C**
0 thru 8 **select octave 0 thru 8**
? **display current octave**
ESC or ` **exit virtual keyboard**

left button

right button

<i>Press</i>	<i>Press</i>
<i>Tap</i> - 1 octave	<i>Tap</i> + 1 octave
<i>Double-Tap</i> exit virtual keyboard	<i>Double-Tap</i>

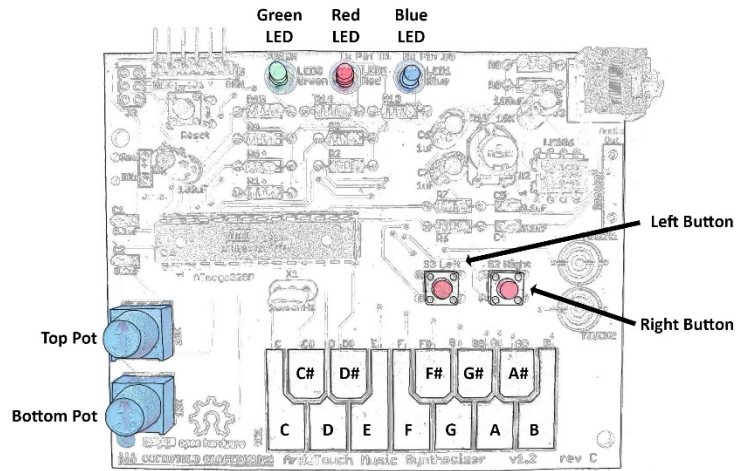
Types of button presses:

Tap: quickly tap a button

Press: long-press a button

Double-Tap: quickly double-tap a button

Tap-Press: think of this as a *Double-Tap* but with the second tap being of a longer duration.



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