A-1 Precision Adder Has knob recorder Parameters 0: Z smooth or integers	A-2 Four Quadrant Multiplier Has knob recorder Parameters 0: Z smooth or integers	A-3 Full-wave Rectifier	A-4 Minimum Maximum
Z Offset	Z Scale	Z Mode ●	Z Gate
X Input	X Input	X Input	X Input
Y Input	Y Input	Y Input	Y Input
A X + Y + Z	A X * Y * Z	A abs(X + Y) abs(X)	A min(X, Y)
B X - Y - Z	B -X * Y * Z	B abs(X - Y) abs(Y)	B max(X, Y)

A-5 Linear/ Exponential Converter	A-6 Quantizer Parameters 0: Attenuation X 1: Transpose mode 2: Key	A-7 Comparator	A-8 Dual Waveshaper Has knob recorder
Z Tune	Z Scale & Mode ●	Z Hysteresis	Z Gain
X Exp In	X Input	X Input	X Input
Y Linear In	Y Transpose Trigger In	Y Input	Y Input
A Linear Out	A Quantized	A X > Y	A Folded X
B Exp Out	B Trigger	B X < Y	B Shaped Y

B-1 Sample and Hold	B-2 Slew Rate Limiter	B-3 Pitch & Envelope Tracker	B-4 Clockable Delay/Echo
Press Z to trigger Parameters 0: Track or sample			Has tap tempo
Z Slew rate	Z Slew rate	Z Slew rate	Z Feedback
X Input	X Input } summed	X Audio In	X Audio In
Y Trigger	Y Input	Y Offset A	Y Clock
A Sampled X	A Linear slew	A V/Octave	A Dry+delay
B Noise	B Log slew	B Envelope	B Delay only
B-5 LFO	**B-6 Clockable LFO**	**B-7 VCO with Linear FM**	**B-8 VCO with waveshaping**
0: Attenuation A 1: Attenuation B 2: Offset A 3: Offset B	Has tap tempo Parameters 0: Attenuation A & B	Parameters 0: Octave shift 1: Attenuation A 2: Attenuation B	0: Octave shift 1: Attenuation A 2: Attenuation B 3: Y offset
Z Tune	Z Multiplier	Z Tune	Z Tune
X Hz/V In	X Clock	X V/Octave	X V/Octave
Y Waveshape	Y Waveshape	Y Linear FM	Y Waveshape
A Saw/Sin/Tri	A Saw/Sin/Tri	A Sine	A Saw/Tri/Saw
B Square	B Square	B Saw	B Square

C-1 Precision Adder	C-2 Voltage Controlled Delay Line	C-3 Clockable Ping Pong	C-4 Clockable Ping Pong
Has knob recorder Parameters 0: Z divisor	Parameters 0: Y offset	Has tap tempo Parameters 0: Output Mode	Has tap tempo Parameters 0: Feedback
Z Offset	Z Feedback	Z Feedback	Z Input Pan
X Input	X Audio In	X Audio In	X Audio In
Y Input	Y Delay Time	Y Clock	Y Clock
A X + Y + Z	A Delay only	A Left	A Left
B X - Y - Z	B Dry+delay	B Right	B Right

C-5 Resonator	C-6 Vocoder	C-7 Phaser	C-8 Bit Crusher
Push Z for 'strike' Parameters 0: Y offset	Parameters 0: Filter bank	Parameters 0: Y offset 1: Number of stages	Parameters 0: Y offset 1: Reduction mode 2: Mangling mode
Z Gain	Z Decay	Z Feedback	Z Bit depth
X Audio In	X Modulator	X Audio In	X Input
Y V/Octave	Y Carrier	Y Sweep	Y Sample rate
A Audio Out	A Audio Out	A Dry+phase	A Output
B Envelope	B Envelope	B Phase only	B Comparator

D-1	D-2 Tape Delay Parameters 0: Tape length	D-3 Waveform Animator 0: LFO depth 1: Y offset 2: LFO rate 3: Scale	D-4 State Variable Filter Parameters 0: Filter resonance
	Z Feedback	Z Separation	Z Filter Type
	X Audio In	X Audio In	X Audio In
	Y Tape speed	Y Threshold	Y V/Octave
	A Dry+delay	A Audio out	A LP/BP/HP
	B Delay only	B Square out	B HP/BP/LP

D-5 LP/HP Filter	D-6 LP/BP Filter	D-7 BP/HP Filter	D-8 BP/Notch Filter
Z Resonance	Z Resonance	Z Resonance	Z Resonance
X Audio In	X Audio In	X Audio In	X Audio In
Y V/Octave	Y V/Octave	Y V/Octave	Y V/Octave
A Low pass	A Low pass	A Band pass	A Band pass
B High pass	B Band pass	B High pass	B Notch

E-1 AR Envelope 0: Trigger Mode 1: Z Mode 2: Out A Attenuverter 3: Out B Attenuverter	E-2 AR Envelope (w/ push) Press Z to trigger Parameters 0: Trigger Mode	E-3 AR Envelope & VCA 0: Trigger Mode 1: Z Mode 2: Out A Attenuverter 3: Out B Attenuverter	E-4 AR Envelope & VCA Press Z to trigger Parameters 0: Trigger Mode
Z Times	Z Times	Z Times	Z Times
X Trigger	X Trigger	X Trigger	X Trigger
Y Trigger	Y Trigger	Y VCA In	Y VCA In
A Env Out	A Env Out	A Env Out	A Env Out
B Env Out	B Env Out	B VCA Out	B VCA Out
E-5 Dual AR Envelope 0: Trigger Mode 1: Z Mode 2: Out A Attenuverter 3: Out B Attenuverter	E-6 Dual AR Envelope Press Z to trigger Parameters 0: Trigger Mode	E-7 Euro to Buchla Converter Parameters 0: Octave shift	E-8 Buchla to Euro Converter Parameters 0: Octave shift
Z Times	Z Times	Z Tune	Z Tune
X Trigger A	X Trigger A	X 1V/Oct	X 1.2V/Oct
Y Trigger B	Y Trigger B	Y Gate	Y Gate/trigger
A Env Out A	A Env Out A	A 1.2V/Oct	A 1V/Oct
B Env Out B	B Env Out B	B Gate/trigger	B Trigger

F-1 Clockable AD (mute)	F-2 Clockable AD (gate)	F-3 Clockable AD (trig)	F-4 Clockable AD & VCA
Has tap tempo Parameters 0: Output Attenuverter	Has tap tempo Parameters 0: Output Attenuverter	Has tap tempo Parameters 0: Output Attenuverter	Has tap tempo Parameters 0: Output Attenuverter
Z Shape	Z Shape	Z Shape	Z Shape
X Clock	X Clock	X Clock	X Clock
Y Mute	Y Gate	Y Trigger	Y VCA In
A Env Out	A Env Out	A Env Out	A Env Out
B Env Out	B Env Out	B Env Out	B VCA Out
F-5 Shift Register CVs 0: Direction 1: Length 2: Slew rate 3: Output attenuator	F-6 Shift Register Quantized 0: Direction 1: Length 2: Scale 3: Output attenuator	F-7 Shift Register Triggers Press Z to modify seq Parameters 0: Length	F-8 Shift Register Dual Trigs Parameters 0: Length A 1: Length B
Z Randomness	Z Randomness	Z Randomness	Z Randomness
X Clock	X Clock	X Clock	X Clock
Y Modify	Y Modify	Y Modify	Y Modify
A Unipolar	A Quantized	A Trigger	A Trigger A
B Bipolar	B Trigger	B Inverse	B Trigger B

G-1 ES-1 Emulation	G-2 ES-2 Emulation	G-3 Pitch Reference Parameters 0: Semitone 1: Octave	G-4 Frequency Reference
Z Trim	Z Trim	Z Amplitude	Z Amplitude
X Input 1	X Input 1	X	X
Y Input 2	Y Input 2	Y	Y
A Output 1	A Output 1	A Sine Out	A Sine Out
B Output 2	B Output 2	B Square Out	B Square Out
G-5 Tuner	G-6 MIDI Clock 0: Divisor A 1: Divisor B 2: Divisor MIDI out 3: Y Mode	G-7 MIDI/CV Parameters 0: Transpose 1: Bend depth	G-8 CV/MIDI Parameters 0: Offset 1: Z Mode
Z Amplitude	Z Unused	Z Unused	Z Mod or Vel
X Input	X Clock	X Unused	X Pitch CV
Y	Y Run/stop	Y Unused	Y Gate
A Output	A Output	A Pitch CV	A Unused
B Sine Out	B Output	B Gate	B Unused

H-1 Crossfade/ Pan	H-2 Dual Sample & Hold	H-3 Dual Quantizer (Z scale)	H-4 Dual Quantizer
Has knob recorder Parameters 0: Crossfade/pan law	Parameters 0: Sample or Track	0: X Attenuation 1: Y Attenuation 2: X Transpose 3: Y Transpose	0: X Attenuation 1: Y Attenuation 2: X Scale 3: Y Scale
Z Fade/pan	Z Gate	Z Scale	Z Trigger
X Input 1	X Input A	X Input A	X Input A
Y Input 2	Y Input B	Y Input B	Y Input B
A Left Out	A Output X	A Quantized X	A Quantized X
B Right Out	B Output Y	B Quantized Y	B Quantized Y

H-5 Dual Euclidean Patterns	H-6 Dual Delayed Pulse Gen	H-7 Noise	H-8
0: Steps 1: Pulses 1 2: Rotation 3: Pulse length	0: Z Mode 1: Range 2: Delay 3: Length	0: Type A 1: Type B 2: Attenuation A 3:: Attenuation B	
Z Pulses 2	Z Control	Z Blend	
X Clock	X Trigger A	X VCA 1	
Y Reset	Y Trigger B	Y VCA 2	
A Output 1	A Output X	A Output 1	
B Output 2	B Output Y	B Output 2	

I-1 Audio Playback	I-2 Clocked Audio Playback	I-3 Audio Playback V/Oct Parameters 0: Octave shift	I-4 Audio Playback Z Speed Parameters 0: Sample selection
Z Select	Z Select	Z Select	Z Speed
X Retrigger	X Retrigger	X Retrigger	X Retrigger
Y Start Pos	Y Clock	Y V/Oct	Y Start Pos
A Left Out	A Left Out	A Left Out	A Left Out
B Right Out	B Right Out	B Right Out	B Right Out
I-5	I-6	I-7	I-8

J-1 MIDI Playback (Clocked)	J-2	J-3 MIDI Playback (Free)	J-4 Audio Playback End CV
		Parameters 0: MIDI File selection	Parameters 0: Sample selection
Z Select		Z Speed	Z Trigger /End Pos
X Clock		X V/Oct	X End Pos /Trigger
Y Retrigger		Y Retrigger	Y Start Pos
A CV Out		A CV Out	A Left Out
B Gate Out		B Gate Out	B Right Out

J-5 Audio Recorder	J-6	J-7	J-8
Z Record			
X Input L			
Y Input R			
A Output L			
B Output R			

K-1 Wavetable VCO Parameters 0: Wavetable 1: Octave shift 2: Y offset Z Tune X V/Octave Y Wave A Wave Out B Sub Out	K-2	K-3	K-4
K-5	K-6	K-7	K-8

L-1 Stereo Reverb	L-2 Mono-to-Stereo Reverb	L-3 Dual Reverb	L-4
0: Size 1: Feedback 2: Character 3: Lowpass filter	0: Size 1: Feedback 2: Character 3: Lowpass filter	0: Size 1: Feedback 2: Character 3: Lowpass filter	
Z Wet/dry	Z Wet/dry	Z Wet/dry	
X Left In	X Input	X Input A	
Y Right In	Y Feedback	Y Input B	
A Left Out	A Left Out	A Output A	
B Right Out	B Right Out	B Output B	

L-5 Stereo Chorus	L-6 Mono Chorus	L-7	L-8
0: LFO depth 1: Y offset 2: Feedback 3: Lowpass filter	0: LFO depth 1: Y offset 2: Feedback 3: Lowpass filter		
Z Wet/dry	Z Wet/dry		
X Input	X Input		
Y LFO rate	Y LFO rate		
A Left Out	A Blend		
B Right Out	B Chorus		

Expert Sleepers disting mk4 Quick Reference Guide

For firmware v4.3

X, **Y** and **Z** are **Inputs**.
A and **B** are **Outputs**.

Changing Algorithm

Either:

- Push 'S' and hold in while turning, or
- Use the menu:
  - Press 'S' twice
  - Turn to select algorithm
  - Press to accept

Parameters

Turn 'S' to modify the currently selected parameter.
Press 'Z' to cycle between parameters (if the current algorithm has more than one parameter).

Tap Tempo

If available – press 'Z'. The time between two presses defines the delay/LFO/etc. time.

Knob Recorder

If available – push 'Z' and hold in while turning. Release to begin playback. Turn 'Z' to stop playback and regain manual control.

Menus

Press 'Z' to cancel menu mode.