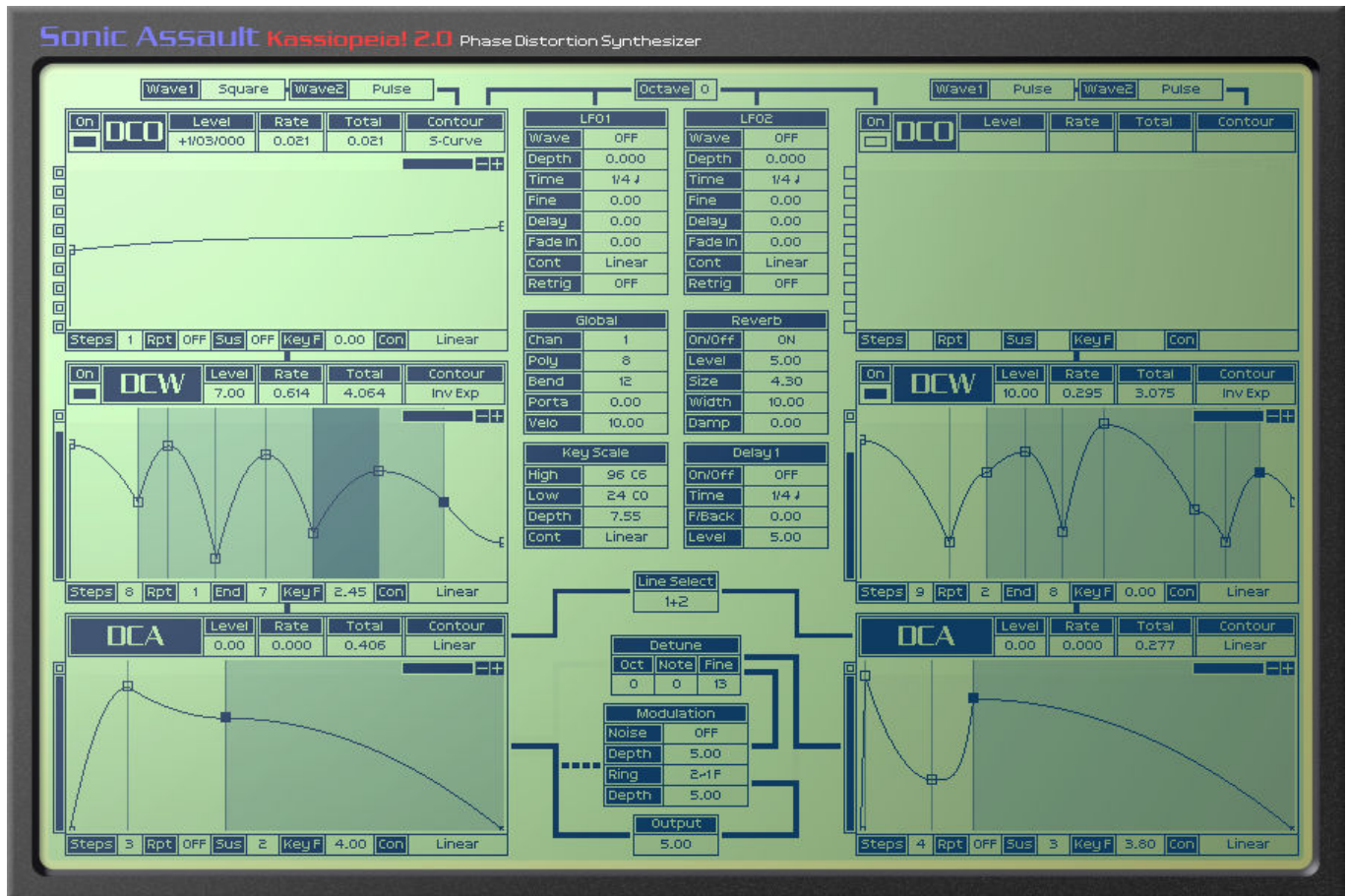


# Kassiopeia! 2.0

## Phase Distortion Synthesizer



### Features:

Casio CZ Inspired Dual Line Phase Distortion Synthesizer

User selectable 1-8 Note Polyphony

6 Graphic 16-stage Envelope Generators with Stage Looping, Independent Stage Contouring and Key Follow

2 Mono Pitch LFOs with Delay and Contoured Fade-In

Reverse Routing Multi-timbre Ring Modulator

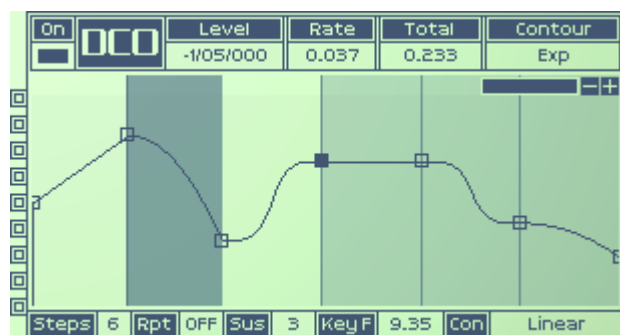
Variable Noise Generator

User Adjustable Key Scaling

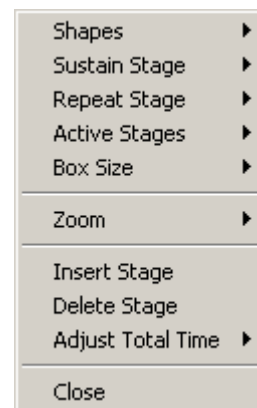
Stereo Reverb

2 Independent Cross Feedback Delays

## ENVELOPES



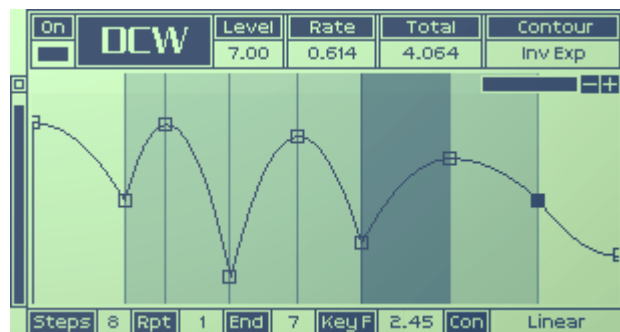
**POP-UP MENU** - Clicking on the envelope display just above the main draw area brings up the envelope's POP-UP MENU. The menu can be used as an alternative method of editing the basic parameters of the envelopes, but also allows access controls not available from the envelope display.



**ON** - Activates the DCO or DCW envelopes. Deactivate an envelope if it is not required for a particular patch as this reduces CPU load.

**LEVEL - DCO** [Digital Controlled Oscillator] - Indicates the currently selected stage's pitch value using the format +/-OCT/NOTE/CENT

**LEVEL - DCW** [Digital Controlled Waveshaper] - Indicates the currently selected stage's waveshaper depth.



**LEVEL - DCA** [Digital Controlled Amplifier] - Shows the currently selected stage's output level.

**RATE** - Indicates the duration of a selected stage.

**TOTAL and ADJUST TOTAL TIME MENU** - Shows the total duration of the envelope. The ADJUST TOTAL TIME MENU allows the user to make coarse percentage adjustments to the envelopes total time.

Note: The current selected stage RATE indication will not update after changing the TOTAL TIME until the stage has been reselected.

**CONTOUR and SHAPES MENU** - Shows the contour shape of the currently selected stage and along with the SHAPES MENU provides an alternative way to scroll through the available contour shapes.

**OCTAVE MARKERS** [DCO Only] - Clicking on an OCTAVE MARKER to the far left of the DCO envelope display will snap the level of the currently highlighted stage to that octave value [-4, -3, -2, -1, 0, +1, +2, +3, +4].

**ENVELOPE DEPTH SLIDER** [DCW and DCA only] - Adjusts the overall depth of the envelope. Please note: the slider operates independently of the indicated stage levels. The Slider can be reset to its default maximum position by clicking on the small box above the slider.

**STEPS and ACTIVE STAGES MENU** - Selects the number of required envelope stages. Each stage is indicated by an outlined black box and, apart from stage 1, a selected stage is highlighted by a dark greyed background. To edit stage 1, click on its marker box and ensure the envelope CONTOUR reads 'STEP' - the contour of stage 1 cannot be altered.

**RPT and REPEAT STAGE MENU** - Allows the user to set the start stage of a repeating section. When REPEAT is active the SUS control label changes to read END to indicate its change in function.

**SUS/END and SUSTAIN STAGE MENU** – Selects the position of the sustained stage, indicated by a filled black stage marker. When in SUSTAIN mode the release phase of the envelope is indicated by the light greyed background after the sustain stage.

If the REPEAT STAGE function is active, the SUS control label changes to read END, and the control then acts to sets the last stage of the repeated section. In REPEAT mode the light greyed background indicates which stages will be repeated. If no end stage is selected and the END indicator is set to OFF, the envelope will repeat from its current RPT stage and last indicated STEP stage.

**ZOOM/ZOOM MENU** – Click '+' to zoom in on an envelope, or '-' to zoom out. Use the slider to move the envelope either left or right. The ZOOM MENU allows the user to select a zoom scale directly.

**KEY F (Key Follow)** – Shortens the indicated total duration of the DCO and DCA envelopes the higher the pitch played on a keyboard. With the DCW envelopes, the KEY FOLLOW reduces the depth of the envelope the higher the pitch on the keyboard.

The range of the KEY FOLLOW is determined using the HIGH and LOW key settings in the KEY SCALE section [see later].

**CON** – Used to select the contour shape of the KEY FOLLOW over the selected KEY SCALE range.

**BOX SIZE MENU** – Allows the user to change the size of the Stage Marker boxes – adjust as required.

**INSERT STAGE MENU** – Adds a new stage 'before' the currently selected stage, or 'after' the first stage if selected.

**DELETE STAGE MENU** – Deletes the currently selected stage.

**CLOSE MENU** – Closes the POP-UP MENU, and can be used to deselect the currently highlighted stage.

### EDITING AN ENVELOPE

Light greyed stage backgrounds – Release Phase stage[s] or Repeat Section stage[s].

Dark greyed stage background – Currently selected stage.

Click and hold the required stage marker [outline/filled black box] then move the mouse vertically to alter the level, or horizontally to alter the duration of the stage.

Holding down the SHIFT key whilst moving the mouse will allow fine editing; using the CONTROL key allows ultra-fine adjustment.

**REPEAT STAGE** – Select a start stage using the RPT control or the REPEAT STAGE MENU. Then, if required, set an end position using the END control or the SUSTAIN STAGE menu. If no END stage is set, the envelope will repeat from its last active stage. To have the entire envelope repeat, set RPT to 'ST' (Start) and END to 'OFF'

The envelope's repeated section is indicated by a light greyed background.

**CHANGING THE CONTOUR OF A STAGE** – If the stage is not already selected (darker greyed background), highlight the stage with a single mouse click. Each subsequent click will scroll through the available contour shapes. The contour can also be selected through the SHAPES MENU or scrolled through using the CONTOUR indicator above the envelope display.

**OCTAVE**

**Octave 0** OCT - Shifts the tuning of the synth +/-1 octave above or below standard.

**PITCH LFO** - Please note: The Pitch LFOs are monaural only.

LFO1	
Wave	OFF
Depth	0.000
Time	1/4 ↓
Fine	0.00
Delay	0.00
Fade In	0.00
Cont	Linear
Retrig	OFF

**WAVE** - Activates the LFO and selects a waveshape.

**DEPTH** - Adjusts the depth of the LFO (Maximum of 2 octaves). A minus value indicates the output wave is inverted.

**TIME** - Scrolls through the available time values - dotted, whole or triplet values. The supplied SONIC font must be installed in the Windows font folder to display the note value symbols [see later].

**FINE** - Allows a +/- 10% manual adjustment over the indicated time value.

**DELAY** - Determines the delay (in seconds) before the LFO takes effect.

**FADE-IN** - Adjust the length of time (in seconds) until the full depth of the LFO is achieved.

**CONTOUR** - Adjusts the contour shape of the fade.

**RETRIG** - Allows the LFO wave to be restarted when playing. 'Legato' retriggers the wave on the first played note, and as long as each following note is played in the legato style, will not retrigger the wave again. 'Staccato' retriggers the wave on every note played regardless of playing style.

**GLOBAL**

Global	
Chan	1
Poly	8
Bend	12
Porta	0.00
Velo	10.00
Key Scale	
High	96 C6
Low	24 C0
Depth	0.00
Cont	Linear

**CHAN** - Selects the MIDI input channel.

**POLY** - Selects the voice polyphony (1-8 notes).

**BEND** - Pitch bender range.

**PORTA** - Portamento depth.

**VELO** - MIDI Velocity Sensitivity.

**KEY SCALE**

**HIGH** - Sets the upper MIDI note of the Key Scale/Envelope Key Follow range.

**LOW** - Sets the lower MIDI note of the Key Scale/Envelope Key Follow range.

**Do not** set the low MIDI key value above that of the high, this will result in the Key Scale/Envelope Key Follow functions effectively being disabled.

**DEPTH** - Lowers the output level of the DCA envelopes the higher the pitch played on a keyboard.

**CONTOUR** - Adjusts the contour shape of the key scale range.

**REVERB**

Reverb	
On/Off	OFF
Level	5.00
Size	0.00
Width	0.00
Damp	0.00

**ON/OFF** - Activates the reverb.

**LEVEL** - Adjusts the original signal/reverb mix.

**SIZE** - Creates a perception of room size.

**WIDTH** - Adds stereo width.

**DAMP** - Dampens the high frequency content of the reverberation.

Delay 1	
On/Off	OFF
Time	1/4 ↓
F/Back	0.00
Level	10.00

**DELAY** - Clicking on the DELAY1 or DELAY2 LABEL toggles between the delays.

**ON/OFF** - Activates the selected delay.

**TIME** - Scrolls through the selected delay's available time values.

**F/BACK** - Controls the feedback of the delay.

**LEVEL** [only visible in DELAY1] - Adjusts the depth of both delays.

**PAN** [only visible in DELAY2] - Controls the stereo spread between the 2 delays. The L/R indicator before the level value shows the stereo position of DELAY2.

**LINE SELECT**

Line Select
1+2

**LINE SELECT** - Selects one of the 4 line configurations (see later).

**DETUNE**

Detune		
Oct	Note	Fine
+1	0	0

**DETUNE** - Depending on the selected LINE CONFIGURATION (see later), DETUNE allows Line 2 or one of the two Line 1 outputs to be detuned in relation to the other,

**MODULATION**

Modulation	
Noise	OFF
Depth	5.00
Ring	OFF
Depth	10.00

**NOISE** - Activates the noise modulation.

**DEPTH** - Adjusts the tone of the noise.

**RING** - Activates and selects one of the 17 types of ring modulation. The ring modulator has 2 routing types - modulator/carrier or multiplying.

1~2 = Line 1 modulates Line 2.

2~1 = Line 2 modulates Line 1.

1\*2 = Each line output modulates the other.

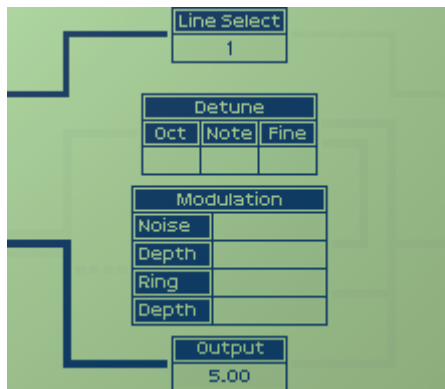
Each of the modulator/carrier routings has 8 tonal settings, represented by a letter after the routing type.

**DEPTH** - Adjusts the level of the Ring Modulator.

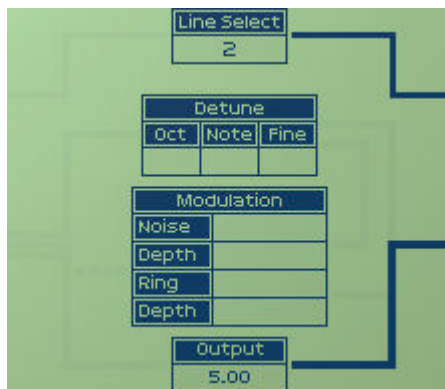
**OUTPUT**

Output
10.00

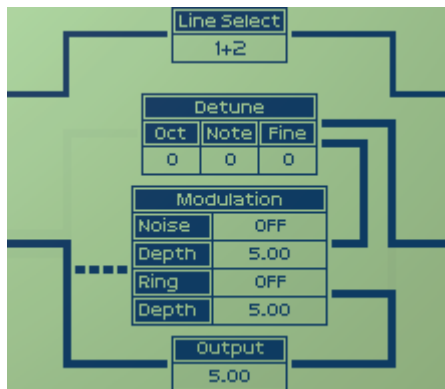
**OUTPUT** - Controls the overall volume of the synth.

LINE CONFIGURATIONS

1 - Line 1 direct output - Line 2 and LF02 disabled  
Detune and Modulation sections inactive

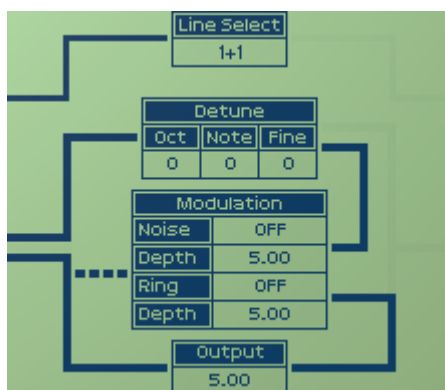


2 - Line 2 direct output - Line 1 and LF01 disabled  
Detune and Modulation sections inactive



1+2 - Line 1 and 2 active  
Line 1 routed to direct output and Modulation section  
Line 2 routed through both the Detune and Modulation sections

Both Lines can be modulated by via the ring modulator.  
Line 2 can be modulated by noise.



1+1 - Line 1 and LF0 1 active - Line 2 and LF02 disabled  
Line 1 dual output - Output 1/2  
Output 1 routed to direct output and Ring Modulator  
Output 2 output routed through both Detune and Modulation sections

Both Outputs can be modulated via the ring modulator  
Output 2 can be modulated by noise.

**NOTES** – In all cases clicking on a control's label resets the control, or the currently selected stage, to its default value.

All controls other than the envelopes can be fine adjusted by holding down the CONTROL key whilst scrolling.

All displayed time values are in seconds.

**COMPATABILITY WITH VERSION 1.0 PATCH FILES** – Largely due to a bug in SE1.0 which caused the multi-stage envelopes to crash in regionalised versions of Windows, it was necessary to completely rebuild Kassiopeia! to accommodate some major changes made in SE1.1. This has meant it was impossible to maintain compatibility with version 1.0 patch files. Sorry.

**SONIC FONT** – The 'Sonic.fon' file must be installed in your Windows system font folder to display the text in the selector boxes correctly. This is a copyright free font file originally designed for use with the Sonic Assault plug-ins, and you may use it as you see fit (although, a credit in this direction would be nice). ☺

Please note: The version dated 10/08/09 supersedes all previously released versions of the font, but is fully compatible with earlier Sonic Assault VSTs.

To install the Sonic font in Windows:

1. Open 'Fonts' in Control Panel.
2. On the 'File' menu, click 'Install New Font'.
3. In 'Drives', click the drive the required font is stored on.
4. In 'Folders', double-click the folder that contains the font you want to add.
5. Tick 'Copy fonts to Fonts folder'.
6. In 'List of fonts', click the font you want to add, and then click 'OK'.

**INSTALLING KASSIOPEIA!** – Please consult your VST host application's documentation for specific instructions on installing VST plug-ins.

NO LEGAL REQUIREMENTS OR OBLIGATIONS ARE MADE BY THE CREATOR AS TO THE USE OF THIS VST PLUG-IN. LIKEWISE, NO LEGAL REQUIREMENTS OR OBLIGATIONS WILL BE MADE ON ITS CREATOR. THE PLUG-IN IS FREE – YOU USE IT AT YOUR OWN RISK. HOWEVER, PURLEY AS A MATTER OF COURTESY, I DO ASK ANYBODY WHO WISHES TO DISTRIBUTE THIS PLUG-IN ON A WEB SITE OR COVER DISK CONTACT ME BEFOREHAND.

I make no guarantees that Kassiopeia! will run on any specific system, or in all available host programs.

**CREDITS** – Thanks to Jeff McClintock – <http://www.synthedit.com/> - for SynthEdit,

Special thanks to:

Chris Kerry – <http://www.chriskerry.f9.co.uk>

Dave Haupt – <http://www.dehaupt.com/SynthEdit>

Kelly Lynch – <http://www.rubidiumhexafluorosilicate.com/synthedit/>

Oli Larkin – <http://www.oli.adbe.org/>

Simonluca Laitempergher – <http://www.puntoexe.info/SLSEModules/>

Peter Schoffhauzer – <http://scp.web.elte.hu/synthedit/>

Steinberg – [www.steinberg.net](http://www.steinberg.net)

Many thanks to Vlad [Jazz Franco] and Nahkranoth in the KVR Forum, for their invaluable help resolving the regional Windows issue. Thanks again guys.

Kassiopeia! 2.0 is 'Patchware'. Simply, if you like it, show your appreciation by sending a few patch files. Not much to ask. Plus you will receive the honour of being credited on the Sonic Assault web site, and in the Kassiopeia! Manual.

All the best... Jez

Those wishing to experiment by converting an original CZ patch for use with Kassiopeia! may find this conversion table useful. The table converts CZ Envelope Rate values to their actual values in seconds. To convert CZ Envelope Level values for use with Kassiopeia! divide the value by 10.

## CZ ENVELOPE TIME CONVERSION

CZ Rate value	Time[s]	CZ Rate value	Time[s]	CZ Rate value	Time[s]	CZ Rate value	Time[s]
0	103.8900	25	7.6471	50	0.5629	75	0.0414
1	93.5946	26	6.8893	51	0.5071	76	0.0373
2	84.3195	27	6.2066	52	0.4569	77	0.0336
3	75.9635	28	5.5915	53	0.4116	78	0.0303
4	68.4356	29	5.0374	54	0.3708	79	0.0273
5	61.6537	30	4.5382	55	0.3341	80	0.0246
6	55.5438	31	4.0885	56	0.3009	81	0.0222
7	50.0395	32	3.6833	57	0.2711	82	0.0200
8	45.0806	33	3.3183	58	0.2442	83	0.0180
9	40.6132	34	2.9895	59	0.2201	84	0.0162
10	36.5885	35	2.6932	60	0.1982	85	0.0146
11	32.9626	36	2.4263	61	0.1786	86	0.0132
12	29.6960	37	2.1895	62	0.1609	87	0.0118
13	26.7532	38	1.9693	63	0.1450	88	0.0107
14	24.1019	39	1.7741	64	0.1306	89	0.0096
15	21.7135	40	1.5983	65	0.1177	90	0.0087
16	19.5617	41	1.4399	66	0.1060	91	0.0078
17	17.6231	42	1.2972	67	0.0955	92	0.0070
18	15.8767	43	1.1687	68	0.0860	93	0.0063
19	14.3033	44	1.0528	69	0.0775	94	0.0057
20	12.8859	45	0.9485	70	0.0698	95	0.0051
21	11.6089	46	0.8545	71	0.0629	96	0.0046
22	10.4585	47	0.7698	72	0.0567	97	0.0042
23	9.4221	48	0.6935	73	0.0511	98	0.0038
24	8.4883	49	0.6248	74	0.0460	99	0.0034

Thanks to Rurik Leffanta for his SynthEdit CZ101ms module from which I calculated the values.