# Zero-1 Synth

## Installation Guide & User Manual

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**HS-K4L-A003**

# Hideaway Studio Presents the Zero-1 Synthesizer

## The Virtual Analog With a Twist….

**Zero-1** is in essence a single oscillator virtual analog synthesizer (VA) loosely based on the CS01 monosynth which was released in 1982 as an affordable entry into the world of analog synthesis…. but with a twist!  Rather than simply sample the basic DCO oscillators from the original instrument I thought it might be more interesting to first pass them through a tube overdrive and Watkins Copicat tape delay.  Mangling the raw oscillators in this manner injected a significant amount of character and movement to the original waveforms – even the splice in the tape loop adds something!  Five oscillators were multi-sampled in 24-bits in this manner: triangle, sawtooth, 50% square, 25% square and PWM.
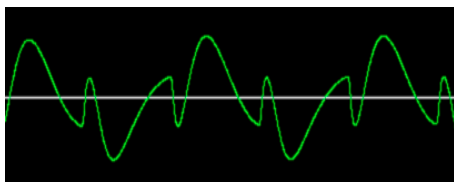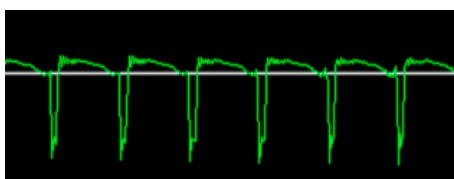


## Distorted DCOs

The tube waveshaping process certainly mangled things a treat!
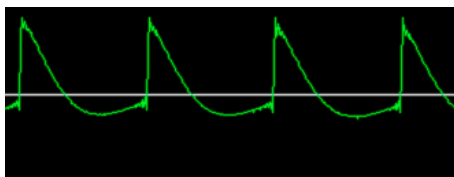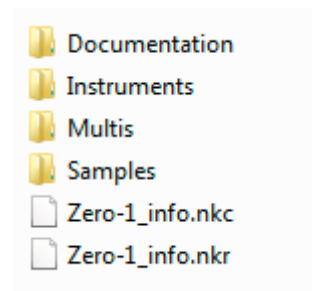

Saggy Ramps


Tube Folded Triangles


Spiky Pulse Waves

## Installation

Installation is straightforward. The **Zero-1** Synth requires Kontakt version 4.2.4 or higher. Once the .zip file has been downloaded unzip the archive making sure the original directory structure is retained.

This should result in a folder called Zero-1 Synth containing the following folders:



To run the **Zero-1** simply load up one of the .nki files in the Instruments folder. You will also find a basic template in this directory to use as a starting point for new instruments.

## Instant Gratification

You can easily run through each of the 40 or so example instrument patches (.nki) in the instruments folder by clicking on the small arrows to the right of the instrument name.
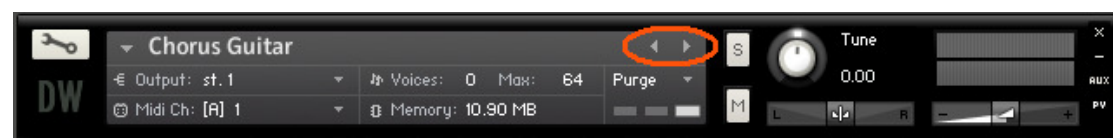


Please note that the example multi instruments (.nkm) in the Multis folder can also be cycled through by clicking on the arrows to the right of the multi rack window:



Hopefully by loading up the example patches you will be able to see how they have been constructed in the **Zero-1** and can be used as starting points for new sounds which can be saved under new file names.

## Programming the Zero-1 Synthesizer



Naturally the example instruments packed with the library can be used as is but where the fun starts is having a go dialling in your own sounds into the synthesizer.

### The Oscillator Section



The **Zero-1** is a classic single oscillator subtractive synthesizer. Oscillator selection is made by moving the **WAVE** switch to one of the five waveforms.

A sub-oscillator can be brought in to bolster the low frequency content by setting the level of the **SUB** slider.

Portamento (Slide) rate can be adjusted by moving the **GLIDE** control. Portamento is disabled when the glide control is set to the bottom of its travel. Please note that glide is only available in MONO mode.

The **MONO/POLY** switch sets the **Zero-1** to either run in a classic monophonic mode (one note at a time, as in the original synth) or a fully polyphonic mode (several notes can be played at once).

The **LFO** slider determines how much of the LFO is used to modulate the pitch.  This can create everything from a subtle vibrato (slider set a notch or so away from the zero position) to a deep plunging effect.

The **CLN/DIST** switch selects an overdriven/saturated effect when in the DIST position.

**The Filter Section**
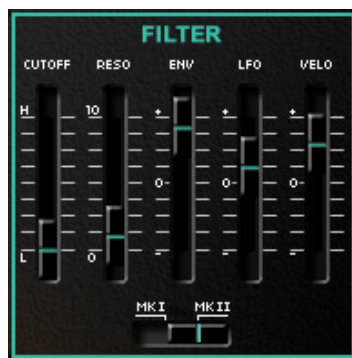


One unique feature of the **Zero-1** is the ability to switch between a Mk I and Mk II CS01 filter emulation.  This selects either a **12dB/oct** or **24dB/oct** filter and changes the livery of the control panel to match the original variants – a flash of genius by Stephen Howell at Hollow Sun!

The filter cutoff and resonance levels are set by the **CUTOFF** and **RESO** sliders.

The degree to which the envelope modulates the filter and its polarity is set by the **ENV** slider. Similarly the **LFO** slider determines the amount the filter is modulated by the LFO.

The **VEL** slider can be used to make the filter response to keyboard velocity which is useful for adding expression to instruments such as brass timbres.

## The Envelope Controls
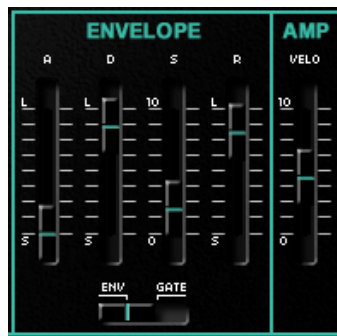


The **A**ttack**, D**ecay**, S**ustain and **R**elease controls offer basic envelope control for modulation of both the filter and VCA. The further the attack control is moved upwards (L-position) the more gradually the sound builds up. The more the release control is moved upwards the longer it takes for the sound to decay after the note is released.   The decay slider determines how quickly a sustained sound diminishes with time.  The higher the setting, the longer it takes to decay.  Very rapid settings (S-position) will produce plucked or staccato effects and slow settings (L-position) will produce a swelling effect. The sustain control determines the volume at which the sound will rest during sustain once the decay portion of the envelope has completed.

Normally the **ENV/GATE** switch would be left in the **ENV** position to route the envelope modulation to both the filter and the VCA sections.  In **GATE** mode only the envelope generator is only routed to the filter section and the VCA is simply gated on and off.  This can useful for certain types of sound (refer to the demo instrument patches for examples of its use).

The **VELO** control determines how much the overall sound level is influenced by the velocity of the key played.   The higher the slider is moved the more the amplitude is sensitive to key velocity.

Please note that some of the example patches in this library make use of velocity controlled attack modulation. This means that the attack parameter is lowered the harder the note is played. This is a means of improving the playability and expression of a sound especially in a live performance. It can be used to good effect by setting the attack a little longer than first expected.

**The LFO Controls**
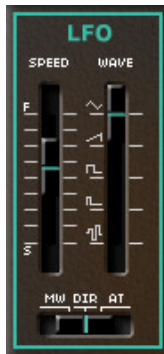


The **SPEED** of the LFO can be altered and one of five LFO **WAVE** shapes may be selected. The lowermost wave setting is the random LFO generator which can be very useful for creating various sound effects.

To disable the LFO simply set the **LFO** depth control to the centre position in the oscillator and filter sections.

The LFO is routed to both the filter and VCA sections. Each section has a dedicated control to set the amount of LFO modulation applied to each.

The three-way switch below the sliders offers three modes:

**MW**    Increases the depth of the LFO with the modulation wheel
**DIR**    Routes the LFO directly to the filter and VCA sections
**AT**    Increases the depth with aftertouch

## The Effects Section

Below the main synth user interface is the **Zero-1** effects section:



The effects section comprises of three basic types of effects. Each of the effects are chained in series and can be disabled by turning their respective **AMOUNT** control fully anti-clockwise.

### Modulation Effects

The synth offers three basic forms of modulation FX:

The **Chorus** (**CH**) is a digital simulation of a classic stereo analog chorus (minus the noise!). The **SPEED** control determines how rapidly the phaser is modulated and the **AMOUNT** control sets the amount of the effect to be mixed with the dry signal.

The **Flanger** (**PL**) is a digital simulation of a classic analog flanger. The **SPEED** control determines how rapidly the flanger is modulated and the **AMOUNT** control sets the amount of the effect to be mixed with the dry signal. The **REGEN** control determines the amount of signal fed back to the input to create a resonant effect.

The **Phaser** (**PH**) is a digital simulation of a classic analog phaser. The **SPEED** control determines how rapidly the phaser is modulated and the **AMOUNT** control sets the amount of the effect to be mixed with the dry signal. The **REGEN** control determines the amount of signal fed back to the input. At high levels it creates a sweeping resonant effect.

**Delay**

The delay section comprises of delay with feedback and damping. The **TIME** control sets the delay whereby turning the control clockwise increases the delay time. The **REGEN** control sets the amount of the signal from the delay that is fed back to the input. The further this control is turned clockwise the more the input signal is recycled thus creating dramatic repeating and sustain effects. The **HF DAMP** control determines how the high frequency content of the delayed signal decays with time. The **AMOUNT** control determines how much of the effect is mixed in with the dry signal.

**Reverb**

The reverb utilises the latest convolution technology to digitally simulate the reverberation of a physical or simulated acoustic space.

Use the **SIZE** control to set the size of the reverberation space and the **AMOUNT** control to set the amount of the effect to be mixed with the dry signal.

## Saving Your Own Patches

All of your creations can be saved as .nki instruments simply by using the **save as** function by clicking on the **files** icon in the main Kontakt control pane.

*Remember that if you edit an existing sound you must save it under a new name otherwise you will overwrite it!*

# Credits

**Dani Wilson (Hideaway Studio)**
Oscillator Capture & Wave Shaping, Sample Set & Example Patches

**Stephen Howell (Hollow Sun)**
UI Concept, GUI Design & Graphics, HS Example Patches

**Mario Krušelj**
Synth Engine Script


*A very big thank you to Stephen and Mario for making this project possible.*


For more information and many more releases for Kontakt by Hideaway Studio please visit:
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