



The Pentodian Resonator Choir

Installation Guide & User Manual

D.A.Wilson, Hideaway Studio, Feb 2013

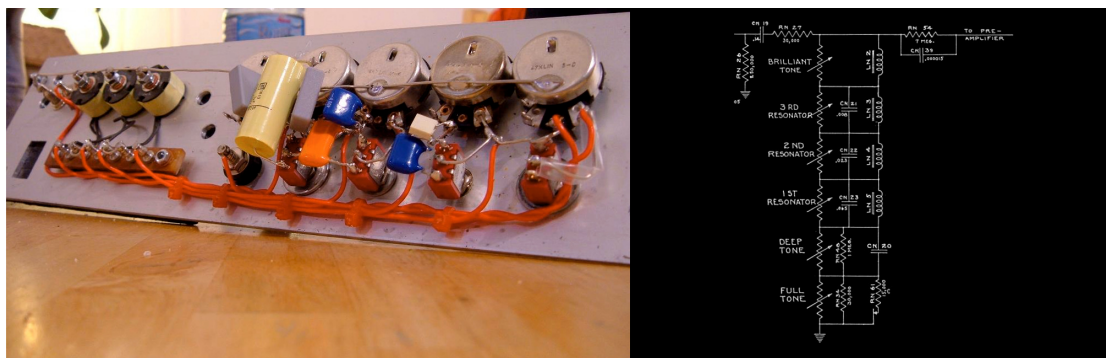
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Hideaway Studio Presents The Pentodian Resonator Choir....

Aka, a true labour of love!.... A selection of twelve unique synthetic choirs made up of 215 hand crafted vocal formants. At least 50% of the samples in this collection were created using little more than a handful of discrete circuits and vintage lab gear all processed with vintage classic analog and tube technology and brought together in the same proven 4-voice layering engine as the Orbitone library....



Passive L/C Formant Resonator....



The Celestial Choirs featured in The Pentodian Choir started off life as little more than a series of short pulses created by an old hand-configured analog lab signal generator. The frequency of the pulse train was gently modulated using the swept oscillator function to act as a vibrato. The pulses were converted into exponential ramps using a passive wave shaper circuit similar to those found in early string synths and the resulting sawtooth fed into a Triple Passive L/C Resonator circuit based on the 1939 Novachord formant

resonator section. This is little more than three coils of wire and three capacitors! The resulting waveform was then impedance buffered using the entire vertical signal path of a 1968 Tektronix 545B tube oscilloscope! The output from the vertical signal output socket was then fed into a prototype tube overdrive unit and into a tube equaliser.

Well over 100 samples were painstakingly captured by hand configuring the equipment for each note and then sampling the results. The samples were further EQ'd and loaded into multi-samples.

Some of multi-samples were further processed with an analog chorus unit.

Polymoog Formant Resonator...



Two of the choirs were created by feeding the brass organ stop from a 1972 Eminent 310U into a rehoused 1978 Polymoog Resonator Section. This proved remarkably effective and a similarly successful choir was made by feeding a string patch from a Matrix 1000 into the resonator. A third choir was the result of recording the previous results hot onto a 1967 Revox G36 tube tape machine and resampling.

The Vox Box...



A curious solo vocal effect was created using a prototype concept consisting of a triode based relaxation oscillator feeding a passive L/C resonator passed into a tube band pass filter modulated by the same LFO as the pitch vibrato.

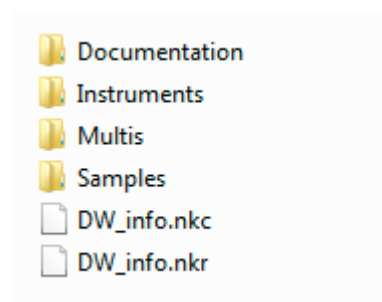
Equipment Used:

Hand configured analog pulse signal generator modulated by LFO, DIY Passive pulse to exponential wave shaper circuit, DIY Passive Triple L/C Formant Resonator Circuit based on 1938 Novachord impedance buffered with Y-amplifiers from a 1968 Tektronix 545B tube scope! DIY Tube Overdrive, 1972 Eminent 310U fed into rehoused 1978 Polymoog Formant Resonator Section, prototype analog chorus, 1967 Revox G36 tube half track tape machine, prototype Tube VoxBox.

Installation

Installation is straightforward. The Pentodian Resonator Choir 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.

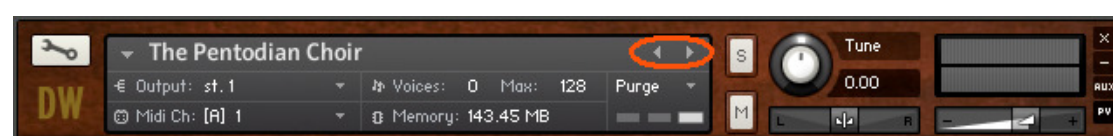
This should result in a folder called The Pentodian Choir containing the following folders:



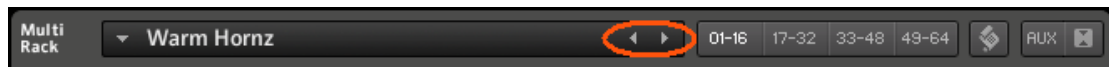
To run the library simply load up one of the .nki files in the Instruments folder. You will also find a basic template in this directory to use as a starting point for new instruments.

Instant Gratification

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



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 examples you will be able to see how they have been constructed in the layering engine and can be used as starting points for new sounds which can be saved under new file names.

Using the Layering Engine



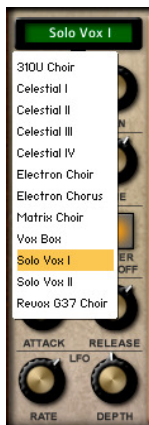
Naturally the example instruments packed with the library can be used as is but where the fun starts is having a go dialling in your own sounds using the intuitive layering engine. This permits up to four sounds to be blended together with a number of basic synthesis parameters at hand such as pitch and envelope control.

The layering engine consists of four identical programming panels and an effects section.

Voice Selection

Above each of the four voice panels there is a green LCD display showing the

selected voice. By clicking on each of the displays a pull down menu appears



allowing one of 12 voices/partial to be selected.

The selected sounds can be used in any combination including multiple instances of the same sound.

The Programming Panels

Each of the four voice programming panels features 10 basic controls to shape each sound in the layered instrument. Each control is altered by moving the mouse whilst clicking on it.

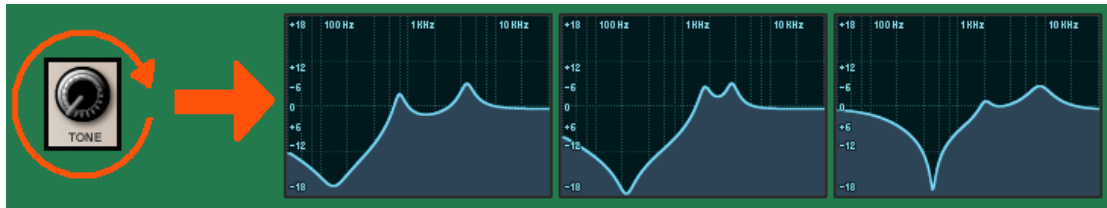


The **LEVEL** control sets the level of the voice in the layer

The **PAN** control sets the position of the voice in the stereo mix

The **SEMI** control sets a fixed pitch offset above or below the key played

The **FINE** control sets the fine pitch of the voice



The **TONE** control is a deceptively powerful feature. In the fully counter clockwise the signal is unaffected. As the control is rotated a continuously evolving complex EQ curve is applied. With some experimentation this

feature can be used for embellishing formants within each voice and helping to sit each of the layered voices together in the mix.

The **LAYER ON/OFF** enables each of the four voices in the instrument. By clicking on the button the layer toggles on and off. It is often useful to use this feature whilst creating new sounds to determine how each voice is contributing to the overall sound.

The Envelope Controls

The **ATTACK** and **RELEASE** controls offer basic envelope control. The further the attack control is rotated clock wise the more gradually the sound builds up. The more the release control is rotated clockwise the longer it takes for the sound to decay after the note is released.

NB: Several of the programs in this library make use of **velocity controlled attack modulation**. The use of **velocity sensitive** keyboards will therefore really bring out this feature. 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 more clockwise than first expected.

The LFO Controls

Each voice features it's own pitch LFO. This permits everything from a gentle vibrato to a dramatic plunging effect.

Both the **RATE** and the **DEPTH** of the LFO can be altered. To disable the LFO simply set the depth control to the centre position. The depth control is bi-polar which is not something you can hear in isolation but can become a very powerful effect when LFOs of opposite polarity are used on adjacent voices. A typical gentle vibrato is created by setting the depth control just slightly to one side of the centre position with the rate control somewhere around half way.

Mixing it all up

Although the layering engine is basic, it can be used to great effect. With experimentation a multitude of sounds can be created.

As well as the more obvious layers consisting of four different voices all tuned to the same pitch it is also possible to create other effects:

Making it Fat

Try selecting four instances of the same voice and then slightly detuning them using the **FINE** pitch controls and even setting different **LFO** parameters.

Expression

Setting a different **ATTACK** level for each voice can often help to make an instrument more responsive to changes in velocity and through sustain.

Please note that most voice/partial sounds in this library are designed to react in a number of ways to velocity (volume, VCA and VCF attack phase, filter cutoff and pitch). With this in mind it is highly recommended that a velocity sensitive keyboard is used and that many featured sounds often benefit from a very gentle and sustained playing style thus adding to the dynamic effect when more strident notes are subsequently played.

Making it Wide

Try setting the **PAN** controls for each voice to wildly different settings for each voice for a more spatial effect.

Intervals

Some interesting and sometimes quite beautiful effects can be created by setting one or more of the **SEMI** controls to something other than a simple octave. This can be used to create partials on organ voices in conjunction with careful adjustment of the level controls.

Phasey

When using two or more of the same voices setting the **FINE** tune controls to very similar but not identical settings can result in some interesting phasing effects.

Wobbly

Using relatively deep **LFOs** of slightly different speeds across all four voices, especially in conjunction with a suitably timed delay can be quite effective.

The Effects Section

To the right of the layering engine is the effects section.



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

Reverb

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

Click on the blue LCD display to select the type of room simulation required and then use the **SIZE** control to set the size of the space and the **AMOUNT** control to set the amount of the effect to be mixed with the dry signal.

Echo

The echo section is a delay with feedback and damping. The **TIME** control sets the delay whereby turning the control clockwise increases the delay time. The **FEEDBACK** 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 **DAMPING** control determines how the delay decays with time. The **AMOUNT** control determines how much of the effect is mixed in with the dry signal.

Phaser

The phaser is a digital simulation of a classic analog phaser. The **RATE** 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.

Chorus

The phaser is a digital simulation of a classic stereo analog chorus (minus the noise!). The **RATE** 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.

Saving Your Own Sounds

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)

Equipment Design, Sound Design, Sample Set & Example Instruments

Stephen Howell (Hollow Sun)

Layering Engine Concept, GUI Design & Graphics

Mario Krušelj

Layering Engine Script

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