syn-chrome

synthesizer

Contents

made by

ORBITONE

COMPATIBLE

version 2

PULSAR

version 2

1. Introduction

Orbitone's syn-chrome synthesizer introduces a unique new sound character for the pulsar/scope.
This is the second synth from orbitone, following the classic three-o-three.

This time, our focus was on the synth's sound design flexibility. syn-chrome is stacked with 4 oscillators, 3 filters, and 2 effects:

- 1 master sync oscillator
- 3 slave (carrier) sync oscillators (saw, pulse, and sub)
- 3 mixed 2-pole filters (hipass, lopass, and bandpass filters)
- Assignable, midi syncable lfo
- Distortion
- Chorus

This architecture affords enormous flexibility and a unique sound palette.

What's new in version 1.1

- Completely redesigned surface. see entire synth setup at a glance
- LFO is now midi syncable
- Transformer is now completely smooth and noise-free, with improved eq characteristics
- More new presets

2. The Oscillators

Most subtractive synths have 4 basic "colors" of sound: sine, saw, pulse and triangle.

Syn-chrome's sync synthesis provide a much wider palette of sound colors.sync is just does what is says, it is one oscillator synced to anothers cycle.

When the master sync oscillator finishes its cycle, it cuts the slaves oscillators cycle in its position and starts the cycle from 0. the sound output is from the slave oscillator. If the slave oscillator is tuned up it gives higher and more complex overtones.

The synth has 3 parallel (also synced to each other for maximum smoothness of the sound) slave sync oscillators: a saw, pulse and a square sub osc. The slave oscillators can be controlled with an a(ttack)d(ecay)s(ustain)r(elease) envelope or the assignable lfo for sync sweeps. (very cyber sounding)

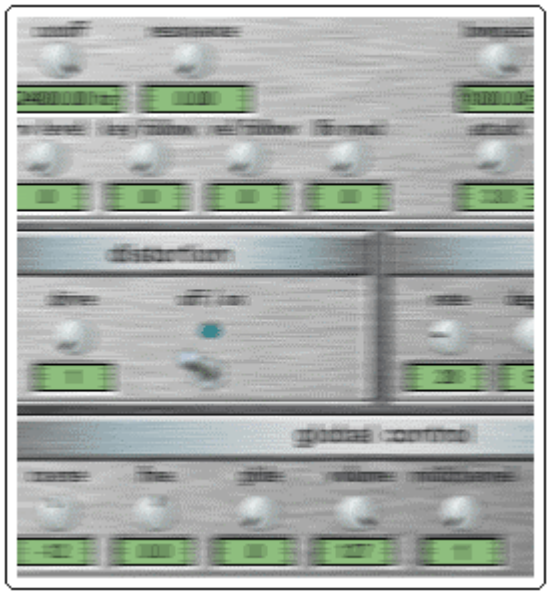
You can also control the phase (position of cycle start) of the oscillators (saw and pulse), and the pulse width of the pulse oscillator. The combination of sync, phase and pulse width allows you to generate very fat sounds from the oscillators. but as you know, you need fat filters to go with fat oscs :o)

3. The Filters

Three fat 2-pole filters (lowpass, hipass and bandpass) are simultaneously available in this synth, instead of switching between them, you can also mix them together!

This way you can combine endless filter balances and sounds! the filters are fully controllable by envelope, key velocity, key position and the assignable lfo.

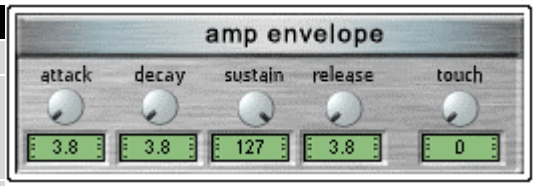
All these go through a switchable distortion unit, for overtone enhancement, and chorus for fattening the sound even more!



4. Controls

Amp envelope

knob name	function of the knob
Volume	Adjusts the overall volume of the synthesizer.
Touch	Makes the amp sensitive to note velocity. when the knob is set to 127 the touch sensitivity will be highest
Att	Attack (3.5-5000ms)
Dec	Decay (3.5-5000ms)
Sus	Sustain (0-127)
Rel	Release (3.5-5000ms



Master Oscillator

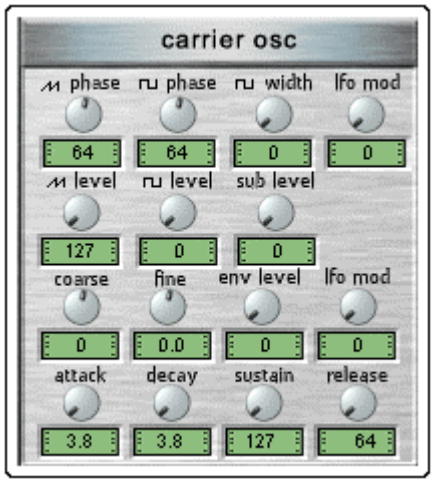
Controls the pitch of the slave oscillator and its cycle.
therefore we have added 2 knobs for its pitch.

knob name	function of the knob
Coarse	Coarse tuning in half steps –48 to +48.
Fine	Fine tuning in cents –100 to +100

Carrier oscillator

This controls the Sync Slave osc's pitch, but not the tone's pitch.
the higher its pitch is the higher the overtone on the sound is.

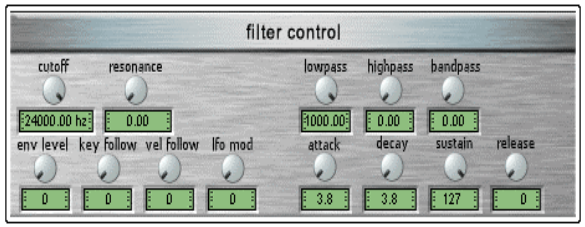
knob name	function of the knob
Coarse knob	Coarse tuning in half steps –48 to +48
Fine knob	Fine tuning in cents –100 to +100
Env knob	Pitch envelope amount. The higher the figure is, the more the envelope affects the pitch (0-127) you can edit the envelope with the adsr knobs below and make this sync sweeps! (*tip: 28 is an octave on this knob*)
Att knob	Attack (3.5-5000ms)
Dec knob	Decay (3.5-5000ms)
Sus knob	Sustain (0-127)
Rel knob	Release (3.5-5000ms)
Extra button	Opens a drawer with extra controllers for the carrier osc (look @ extras)
Sub, pulse and saw level knobs	You can mix the 3 oscillators together (1-127) *
Pulse width knob	You can control the pulse oscillators pulse width (how do you want your wave? square or rectangle?) (1-127)
Pulse and saw phase knobs	You can change the oscillators' phases relative to each other and this way you can focus or unfocus the sound coming from them (1-127)



Filter

The filter section is built from three 2-pole filters, low pass filter, high pass filter, and band pass filter.

knob name	function of the knob
Freq knob	This knob adjusts the cutoff frequency of the filter. The figures represent Hz, although the actual frequency is the result of any modulation applied
Res knob	This knob adjusts the filters resonance (q) amount. The resonance is actually a boost on the cutoff frequency.
Env knob	Filter envelope amount. The higher the figure is, the more the envelope affects the filter (0-127). You can edit the envelope with the adsr knobs below and make filter sweeps!
Key follow knob	Filter/note tracking amount . when knob is set to 127, the filter frequency moves parallel to the note frequency. When set to 0 the filter frequency does not respond to the key position (note)
Vel follow knob	Filter/velocity tracking amount. when set to higher levels the filter frequency responds to the note **velocity**. when set to 0 the filter is not touch sensitive
Lpass knob	The mix level of the 2-pole low pass filter
Hpass knob	The mix level of the 2-pole high pass filter
Bpass knob	The mix level of the 2-pole band pass filter
Att knob	Attack (3.5 to 5000ms)
Dec knob	Decay (3.5 to 5000ms)
Sus knob	Sustain (0-127)
Rel knob	Release (3.5 to 5000ms)



LFO

Low frequency oscillator used to control different elements on the synth. to open the lfo drawer, click on the exposed left edge of the drawer, along the lower left edge of the synth.

knob name	function of the knob
retrigger button	if retrigger is on, the lfo will start from the same cycle position every time its given a trigger (every time a note is pressed). if it is off the lfo will run independantly
midi sync button	if midi sync is on, the lfo frequency will be determined by the external MIDI clock, as divided by the value of the divider selector.
divider selector	if midi sync is on, the divider selector specifies what clock divider to use to specify the frequency of the LFO. To change the sync divider click on the sync division text and drag up/down. When the divider is 8, the LFO will cycle once every 8th note, at the tempo of the current MIDI clock. When it is 4, it will cycle every quarter note.
freq knob	lfo frequency (speed) represented in Hz. the higher the value the faster the lfo goes (from 0.1 Hz to 20 Hz). note, this knob is ignored it the midi sync button is on.
waveform knob	here you can choose the lfo shape. (sine, square, saw up, saw Down, triangle, and random)
delay knob	this knob is a predelay for the lfo. if the value is higher the lfo will start operating in a bigger lag from the moment the trigger is given.
phase knob	lfo phase determines the lfo's phase and if using retrigger it determines where the cycle of the lfo will start.

master knob	master oscillator lfo frequency modulation depth. the higher the value, the more the lfo will affect the master oscillators pitch. tip: for vibrato, assign the modulation wheel to this knob
carrier knob	carrier oscillator lfo frequency modulation. the higher the value, the more the lfo will affect the carrier oscilators pitch. (this way you can make the sound fatter and with higher values you can make sync sweeps!)
pulse w knob	pulse width lfo modulation (pwm) . the higher the Value, the more the lfo will affect the pulse width of the pulse oscillator. this lets you fatten the sound like you had more oscillators!!! note, in order to hear the effect, the pulse osc has to be in the mix
filter knob	filter frequency lfo modulation. the higher the value, the more the lfo will affect the filters cutoff frequency. (you can make filter sweeps with that! try using with random lfo wave form)

Distortion

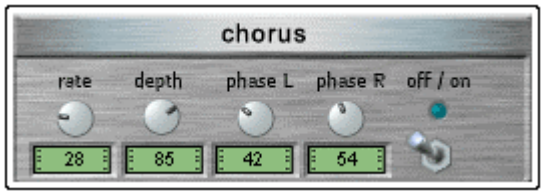
This distortion module is polyphonic. this means that the distortion is applied to each note by itself. This way you can refer to the distortion as a part of the sound and not just an effect unit.

knob name	function of the knob
Drive knob	Distortion amount. The higher the level the more distortion you'll get
On / off switch	Switches between the distortion and bypass

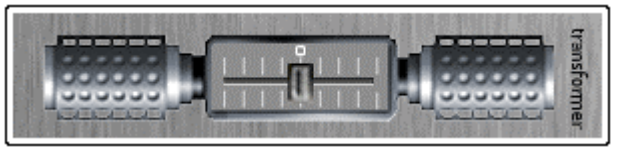
Chorus

For richening the sound, and creating a wide stereo image.

knob name	function of the knob
rate knob	chorus rate
depth knob	depth of the chorus
phase l and r knobs	independent selection of phase of the left and right chorus effects
on / off switch	switches between the chorus and bypass



Transformer



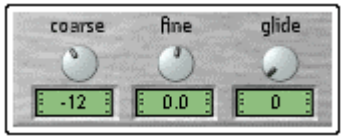
This is a slider that crossfades between two distinct EQ shapes.

This way, the entire synth character can be changed from one simple slider.

Master Pitch

controls the master pitch of the synth.

knob name	function of the knob
coarse knob	coarse tuning in half steps –48 to +48
fine knob	fine tuning in cents –100 to +100
glide knob	portamento amount (0-127)



5. Midi

Using the midi channel display in the lower right corner of the synth to select the midi channel (click on it and drag up and down to change the channel).

The midi light will flash when there is midi activity..

6. Known Issues

Arrow keys and lfo phase knob

The lfo phase isn't controllable with the left/right arrow keys. this is a known bug in pulsar/scope.

Distortion in some presets

Some presets might sound distorted when they are being played polyphonically. In order to get rid of this distortion you can push the transformer fader upwards, this way the EQ settings are less agressive and it will decrease the distortion in this preset. See the transformer section of this document for explanation of the fader and what its use is.

Old 1.0 presets

When loading old 1.0 presets, you may receive a warning "this preset may be incompatible with this device" just ignore this message and continue, and the preset should work fine. Note that the new midi sync button and the transformer slider have changed, so these values will not be restored in the preset you will have to manually adjust those, and resave your preset.

Also, the sound of the transformer eq has been improved in syn-chrome 1.1. Your old 1.0 presets may need to be slightly adjusted after loading into syn-chrome 1.1, to restore their original eq shape. If you absolutely need that classic 1.0 syn-chrome transformer sound, just use syn-chrome 1.0!

6. Enjoy!

We hope you enjoy the syn-chrome very much and that it will benefit to your musical creations!!

Go visit our website for the latest news on the latest developments:

http://www.orbitone.org