X H U N | A U D I O

ZeroBox

Analogue Bass Line Synthesizer

OPERATIVE MANUAL

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www.xhun-audio.com

Content

Overview

ZeroBox is an accurate analogue modeling simulation of a legendary, iconic, sequencer-driven bassline synthesizer that defined an era.

In addition to a meticulous replica of both the signal path and the physics of each of the electronic components found inside the original device (oscillator, filters, envelopes, etc.), an extended set of features, improvements and circuit-bents have been added, bringing the whole synthesis engine a step ahead.

Last but not least, a redesigned sequencer front-end and the inclusion of a full set of modulation, analogue saturation and multi-type distortion effects units make ZeroBox an expressive, powerful, self-contained tool for use in any electronic music scenario.

That Silver Voodoo Box

ZeroBox mimics not just the behaviour and physics of all the electronic components and the signal path, but also the miriad of quirks and idiosyncrasies found on the original hardware.

From the peculiarly shaped analogue oscillator's waveforms to the iconic 4-pole diode ladder analogue filter, from the biased envelope generators to the so-called gimmick circuit, everything is faithfully preserved in ZeroBox — including the uncommon interlinks and interactions between the different components.

The embedded digitally controlled sequencer is also modeled preserving the same vintage back-end logic and sub-pulse clock divisions of the original gear, while having the full benefit of a refreshed front-end with many easily accessible function improvements (triplets, shuffle, etc...).

ZeroBox can be used in conjunction with its embedded sequencer as well as with external sequencers, or as a single-oscillator monophonic solo synthesizer with a very bold sound and an incredibly deep low-end.

In addition to the main bassline synthesizer, a total of six insert effects and two master effects are provided, all accessible from the single-view rack interface. It is possible to choose between a chorus unit, a flanger unit, an analogue modeled vacuum tube distortion unit, an analogue modeled transistor-based distortion unit, a digital foldback distortion unit, a creative bitcrusher unit, a digital delay unit and a resonator-based reverb unit.

Product Images

Product Features

- Physical modeling simulation of real analogue hardware, achieved by the adoption of the Advanced Component Simulation (ACS) approach - oscillators, filters, envelopes (,...) are built preserving their original architecture, featuring all the micro-instabilities and imperfections of the analogue technology

- Full 64-bit processing accuracy for every single aspect of the simulation

- An all-in-one complete setup : monophonic analogue bassline synthesizer + embedded analogue sequencer + analogue and digital insert/master effects

- Full preservation of all quirks found on the original device :

    - The legendary gimmick circuit and its signal paths

    - The analogue filter limited self-oscillation

    - The peculiar behaviour of the accent and slide functions

    - The internal signal polarity inversion

- An aliasing-free analogue modeled oscillator proving the same capacitors' charging/discharging responses as found on the original analogue circuits, featuring sawtooth and square waveforms with blending (morphing) control

- A separate control for the oscillator waveshaping (from naive to analogue supersaw / pulse width modulation)

- A legendary 4-pole resonant, analogue low pass diode ladder filter (modeled by the adoption of the topology-preserving transform / zero-delay feedback approach) proving all the original quirks, non-linearities, frequency responses (also at extreme modulation scenarios), analogue clipping

- Two analogue envelope generators (MEG / VEG) proving the same capacitors' charging/discharging responses as found on the original analogue circuits

- Analogue components age selector. Choose the virtual age of the components used inside ZeroBox and, as a consequence, its resulting overall instability

- An extended operative range (compared to the original) for several knobs and internal components

- Built-in circuit-bents as found in different hardware clones and also never seen before, experimental ones (while 100% preserving all the original functions)

- An exclusive low-frequency-oscillator (LFO) with frequency (from 0.05 Hz up to 20 Hz) and destination amount controls, affecting the oscillator waveform blending, waveshaping and filter cutoff frequency

- Adjustable highpass filter cutoff frequency

- Adjustable filter envelope (MEG) minimum decay time

- Adjustable slide time control

- A VCA envelope (VEG) smoother control

- Polarity inverter control, useful to achieve different sound flavours when using an asymmetric (biased) distortion unit

- Three ways of control, for both studio and / or live scenarios :

    - Sequencer Off : individual notes are MIDI triggered directly by the DAW

    - Sequencer (Pitched) : the internal sequencer (8 scenes / patterns per preset) is MIDI triggered and tuned

    - Sequencer (KeyTrig) : each of the 8 sequencer scenes / patterns (per preset) are assigned to different MIDI keys

- A multi-mode (PTC / KTG) embedded digitally controlled clock generator and sequencer, featuring the same internal pulse timing and behaviour of the original one, with :

    - Mode selector (normal / triplet)

    - Beat pulse divider selector

    - Tempo / external controls

    - Swing amount control

    - Step gate control

    - Step pitch control

    - Step octave selector

    - Step slide control

    - Step accent control

    - Steps number (from 1 up to 16) selector

- A multi-scene loader engine with 8 scenes per preset

- Including an insert effect slot with the possibility to choose :

    - CHOR-S unit (rack), an expressive stereo chorus effect

    - FLANG-R unit (rack), an expressive stereo flanger effect

    - X-TREME unit (rack), an accurately modeled, ground-shaking tube distortion effect

    - SOLIDA unit (rack), an accurately modeled, rock-solid transistor distortion effect

    - PHEEBEE unit (rack), an expressive digital foldback distortion effect

    - CRUSH-R unit (rack), a creative digital bitcrusher effect

- Including a master effect slot with the possibility to choose :

    - D-LAY unit (rack), a tempo-synced stereo delay effect

    - REEVERB unit (rack), a resonator-based electronic reverb effect

- Including 130+ ready-to-use factory presets collection covering multi-genre styles

- Multi-color synth panel (silver grey or acid yellow)

- MIDI automation

- Support for sample rates from 44.1 kHz up to 192 kHz

- Available in multi-size GUI resolutions

Parameters Guide
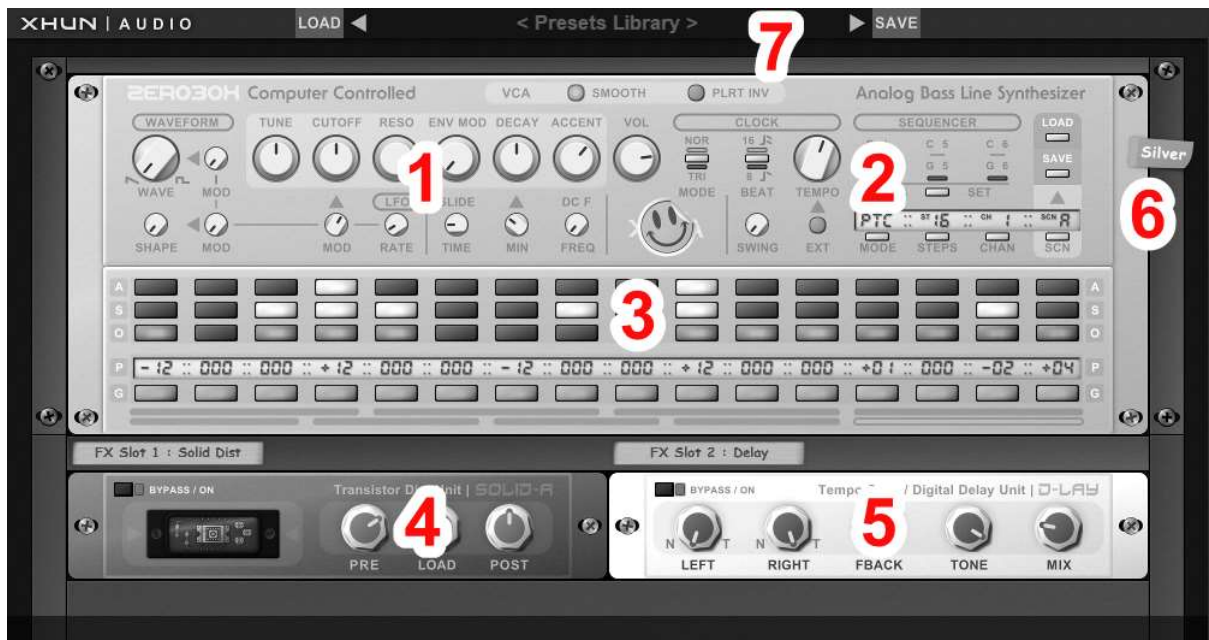
Section 1 : The Analogue Synthesizer

ZeroBox is a single-oscillator, multi-waveform analogue synthesizer with a 4-pole low pass diode ladder filter, two envelope generators, one multi-destination LFO and loads of circuit-bents, quirks and idiosyncrasies.

WAVE [SAW...SQUARE] : Select the analogue oscillator waveform (blending).

WAVE MOD [0...MAX] : Set the LFO modulation amount for the WAVE parameter.

SHAPE [0...MAX] : Set the oscillator waveshaping amount. When fully counterclockwise (0) it produces naive analogue sawtooth and/or square waveforms. When raised (up to MAX) it produces supersaw modulation (for the sawtooth waveform) and pulse width modulation (for the square waveform). The pulse width range goes from 50% up to about 95%. On the original hardware, the pulse width is hardwired to about 66%.

SHAPE MOD [0...MAX] : Set the LFO modulation amount for the SHAPE parameter.

TUNE [-1oct...+1oct] : Adjust the oscillator main tuning.

CUTOFF [63Hz...2500Hz] : Set the main filter cutoff frequency.

CUTOFF MOD [0...MAX] : Set the LFO modulation amount for the CUTOFF parameter.

RESO [0...MAX] : Set the main filter resonance amount. From zero up to about 84% no self-oscillation is produced (as found in the original hardware). From 84% up to 100% filter self-oscillation is produced (circuit-bending).

ENV MOD [MIN...MAX] : Set how much the envelope generator (MEG) controls the analogue filter. When set at MIN, the envelope generator (MEG) action is not fully excluded (as found in the original hardware).

DECAY [MIN...4sec] : Set the envelope generator (MEG) decay time.

DECAY MIN [100ms...300ms] : Set the envelope generator (MEG) minimum decay time.

ACCENT [MIN...MAX] : Set the accent action amount.

LFO RATE [0.05Hz...20Hz] : Set the LFO (low frequency oscillator, triangle waveform) operative frequency.

SLIDE TIME [10ms...360ms] : Adjust the slide / portamento time.

DC F FREQ [0Hz...100Hz] : Adjust the DC block filter frequency. On the original hardware, this is fixed to about 60Hz.

VCA SMOOTH [OFF...ON] : Smooth the envelope generator (SEG) attack signal (VCA modulation).

VCA PLRT INV [OFF...ON] : Invert the signal polarity at VCA output. This is useful when processing the signal with asymmetrical (biased) distortion units.

VOL [0...MAX] : Set the main VCA level / volume.

ANALOGUE COMPONENTS AGE [MODERN...VINTAGE] : Set the analogue components virtual age. Vintage electronic components (smiley sticker attached) are much more unstable than modern electronic components (no smiley sticker attached).

Section 2 : The Clock Generator, Computer Controlled Sequencer and Global Parameters

ZeroBox features an embedded clock generator unit and a "computer controlled" sequencer modeled preserving the same vintage back-end logic and sub-pulse clock divisions of the original gear, while having the full benefit of a refreshed front-end.

CLOCK MODE [NORMAL...TRIPLET] : Set the clock generator operative mode.

CLOCK BEAT [16th...8th] : Set the clock generator beat division mode.

CLOCK SWING [OFF...MAX] : Set the clock generator swing amount.

CLOCK TEMPO [40Bpm...200Bpm] : Set the clock generator internal tempo.

CLOCK TEMPO EXT [OFF...ON] : Override the clock generator internal tempo and sync to the external DAW / Host tempo.

SEQUENCER MODE [OFF...PTC...KTG] : Select the sequencer operative mode. When set to OFF (sequencer disabled), Zerobox is controlled by incoming MIDI messages as a standard MIDI-controlled synthesizer (when this mode is selected : MIDI velocity values from 100 to 109 will activate the slide function, MIDI velocity values from 110 to 119 will activate the accent function, MIDI velocity values from 120 to 127 will activate both the slide and accent functions). When set to PTC, the sequencer "pitched" mode is enabled (different keys alter the pitch of a sequence/pattern). When set to KTG, the sequencer "keytrig" mode is enabled (different keys control up to 8 different scenes/patterns).

SEQUENCER KTG SET [C4-G4...C5-G5...C6-G6] : Select the operative octave for the keytrig mode. For example, when the C4-G4 set is selected, scenes/patterns from A to H are assigned to keys from C4 to G4.

SEQUENCER STEPS [1...16] : Set the sequencer/pattern steps number.

MIDI CHAN [1...16] : Set the MIDI input channel.

SCENE [A...H] : Select one of the eight scenes available (A...H) per preset. It is possible to real time switch and reorder multiple scenes and play complex, multi-pattern sequences. When SEQUENCER MODE is set to OFF or PTC, the scene selection is performed by the MIDI CC#01 (mod wheel) control. When SEQUENCER MODE is set to KTG, the scene selection is performed by the KTG keys (see SEQUENCER KTG SET). A single scene loads and stores the value of each of the following parameters :
*WAVE*
WAVE MOD
SHAPE
SHAPE MOD
TUNE
CUTOFF
CUTOFF MOD
RESO
ENV MOD
DECAY

ACCENT
LFO RATE
CLOCK MODE
CLOCK BEAT
CLOCK SWING
SEQUENCER STEPS
SEQUENCER NOTE GATE 1...16
SEQUENCER NOTE PITCH 1...16
SEQUENCER NOTE OCTAVE 1...16
SEQUENCER NOTE SLIDE 1...16
SEQUENCER NOTE ACCENT 1...16

SCENE LOAD : Load a scene (from file) to the currently selected scene slot (A...H).

SCENE SAVE : Save the currently selected scene (A...H) on file.

Section 3 : The Sequencer Pattern Editor
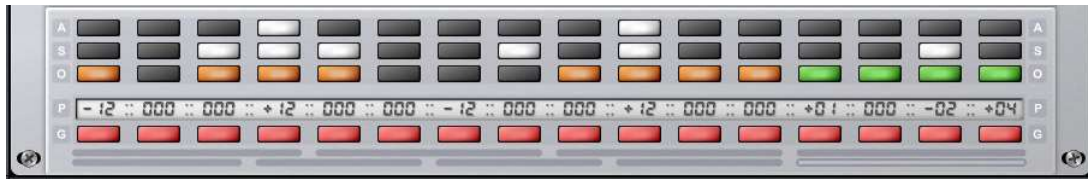
Compared to the original hardware synthesizer, ZeroBox features a fully refreshed pattern editor front-end.

SEQUENCER NOTE GATE 1...16 [OFF...ON] : Enable or disable the gate control for each step of the pattern.

SEQUENCER NOTE PITCH 1...16 [-12semi...+12semi] : Set the note pitch for each step of the pattern.

SEQUENCER NOTE OCTAVE 1...16 [-1oct...+1oct] : Set the note pitch octave for each step of the pattern. When the led light is off, the pitch is not affected. An orange led light sets the pitch 1 octave lower, a green led light sets the pitch 1 octave higher.

SEQUENCER NOTE SLIDE 1...16 [OFF...ON] : Enable or disable the note slide / portamento for each step of the pattern.

SEQUENCER NOTE ACCENT 1...16 [OFF...ON] : Enable or disable the note accent for each step of the pattern.

Section 4 : Insert Effect Slot (FX Slot 1)

ZeroBox rack features one insert (multi) effect slot.

BYPASS/ON (available for all effects units) : Turn the effect processor off or on.

CHOR-S [BWIDTH,CENTER,FBACK,RATE] : A 1U half-rack, 2-channel chorus unit, achieving a very warm, natural sound as well as extreme, esoteric modulations.

FLANG-R [BWIDTH,CENTER,FBACK,RATE] : A 1U half-rack, 2-channel flanger unit, with extended controls to achieve an evolving, deep and rich sound.

X-TREME [PRE,LOAD,POST] : A 1U half-rack, tube distortion unit, with an organic asymmetrical, biased response.

SOLID-A [PRE,LOAD,POST] : A 1U half-rack, transistor based distortion unit, with a rock-solid transients sound.

PHEEBEE [PRE,THRSH,POST] : A 1U half-rack, expressive digital foldback distortion unit, with threshold control.

CRUSH-R [PRE,DEPTH,POST] : A 1U half-rack, creative bit crusher distortion unit, with bit-depth control.

Section 5 : Master Effect Slot (FX Slot 2)

ZeroBox rack features one master (multi) effect slot.

BYPASS/ON (available for all effects units) : Turn the effect processor off or on.

D-LAY [LEFT N/T,RIGHT N/T,FBACK,TONE,MIX] : A 1U half-rack, 2-channel tempo-synced digital delay unit, with the possibility to set the timing mode for each channel (normal or triplet), adjust the feedback, cutoff and mix parameters.

REEVERB [SIZE,WIDTH,DAMP,MIX] : A 1U half-rack, 2-channel resonator-based reverb algorithm, allowing the design of beautiful small resonator bodies or endless open spaces.

Section 6 : Device Panel Styles

ZeroBox comes in two different styles and colors - useful to quickly identify the different instances of the software.

PANEL STYLE [SILVER...ACID] : Select between silver grey or acid yellow styles / colors.

Section 7 : Presets

ZeroBox features a proprietary, cross-platform presets management system. Presets files are plain-text, human readable, open source : each preset is stored into a separate file, with no complicate sound banks or archives to manage and/or to keep updated.

LOAD : Press to manually load a preset.

SAVE : Press to save current preset.

FACTORY PRESETS : Press to select one of the factory presets from the full list.

Compatibility

Operating Systems and Plugin Formats

ZeroBox is compatible with Windows XP / Vista / 7 / 8 / 10 (64-bit).

ZeroBox is compatible with macOS (formerly OS X) version 10.7 and above (64-bit).

ZeroBox is compatible with the VST(2.4) / VST3 / AU plugin formats.

For a complete and up-to-date list of all the supported Operating Systems and Plugin Formats, please visit the Products Compatibility section on Xhun Audio website.

Technical Support

For technical support, DAW/Host-specific compatibility topics, please visit the Support section on Xhun Audio website.

MIDI Implementation

MIDI CC#s Assignments List

Function	CC#
Scene Selector	01
Main Volume	07
Clock Gen Tempo Amt	09
Filter Amp Accent Amt (A...H)	11
Filter Env Mod Amt (A...H)	14
Env Filter Decay Min	15
Mod LFO Rate (A...H)	70
Filter Resonance (A...H)	71
Filter Cutoff (A...H)	74
Osc Waveform (A...H)	75
Osc Waveform Mod Amt (A...H)	76
Osc Waveshaper (A...H)	77
Osc Waveshaper Mod Amt (A...H)	78
Filter Cutoff Mod Amt (A...H)	79
Env Filter Decay (A...H)	80
Dc Block Filter Cutoff	81
Osc Slide Time	84
Main Tuning (A...H)	94

Credits