Introduction

ReDominator is an emulation of the classic Alpha Juno 1/2 (JU-1/2), a polyphonic DCO (digitally controlled oscillator) based synth from 1986. The JU-1/2 became popular in the early 90's techno and rave scene particularly by the classic Hoover sound (which ReDominator attempts to emulate accurately). But beyond those niche sounds there lays a versatile synthesizer that does bass, pads, leads, organs and a lot of other sounds waiting to be discovered!

Features

- Accurate emulation of the Alpha Juno 1/2 including the famous Hoover patch
- 14 different low aliasing waveforms including a unique PWM-sawtooth
- High quality full range 24dB/octave low-pass filter
- Unique 8 parameter envelope generator which enable much more complicated and expressive sounds than a standard ADSR
- External audio input to the filter
- 200+ bundled patches (of which many are sysex converted from our own JU-2)
- External Patch converter (beta) to convert sysex patches from your own Alpha Juno and play them in ReDominator

Definitions

- A voice is a one sound generator of ReDominator. ReDominator can

play a maximum of 16 voices
- A played note is a note played via a midi keyboard, or from a sequencer. As long as the key is down the note is considered played
- A released note is a note that has been playing but the key has now been released
- Dynamics refers to the velocity of the played note (how hard or quickly a note is played)
- CV means control voltage, refer to the Reason manual for further explanations on how this works

Front Panel
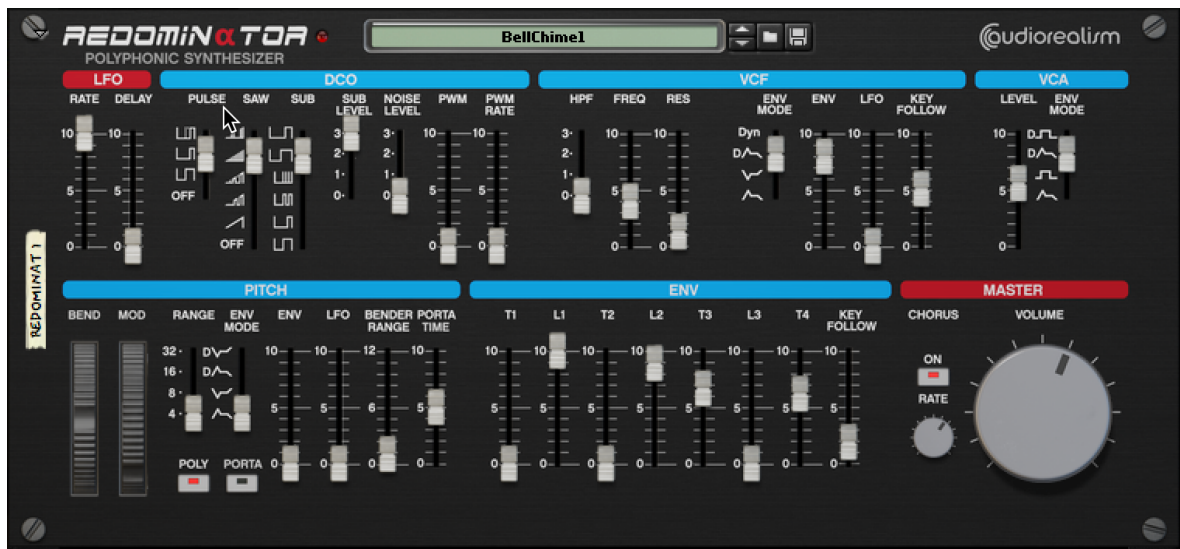
Patch Browser

The Patch Browser allows loading and saving of ReDominator patches (.repatch). To navigate to a new folder click the patch name area and select *Open Browser.*

When saving patches, please note that any CV routing on ReDominator's back panel is not saved with the patch. In order to save the CV routing, insert ReDominator into a Combinator and save the Combinator.

LFO
The LFO (low frequency oscillator) is common to all voices, so all voices are affected equally by the LFO. The LFO has two controls:
RATE: The rate of the LFO which ranges from very slow (1/60 Hz) to near audio rate
DELAY: Sets the time for the LFO to reach maximum modulation (delay envelope) when a new note is played. At the minimum setting the LFO will reach maximum modulation immediately.

In order for the LFO to re-trigger the delay envelope all played notes must be released.

DCO

ReDominator has a single DCO (digitally controlled oscillator) per voice. The DCO can produce 14 different waveforms split into three groups: Pulse, Saw and Sub Waveform. The DCO can combine from each of these three groups producing a harmonically rich sound. The DCO also generates white noise with a three level volume control.

Pulse:
- Pulse 0: Off
- Pulse 1: Square
- Pulse 2: Pulse
- Pulse 3: PWM Pulse

Saw:
- Saw 0: Off
- Saw 1: Sawtooth
- Saw 2: Chopped Saw (Saw & Pulse*4)
- Saw 3: PWM Sawtooth
- Saw 4: Chopped Saw (Saw & Pulse*8)
- Saw 5: Chopped Saw (Saw & Pulse*2 & Pulse*8)

Sub:
- Sub 0: Square/2
- Sub 1: Pulse/2
- Sub 2: Square/2 & Pulse*2
- Sub 3: Square/2 & Pulse*4
- Sub 4: Square/4
- Sub 5: Pulse/4

The *2,*4,*8 and /2,/4 operations denote the base frequency scaling (i.e *2 is one octave up and /2 is one octave down). The & (and) denotes a logical and operator.

SUB LEVEL: The sub oscillator's level can be set to off or three different volume levels
NOISE LEVEL: The noise generators' level can be set to off or three different volume levels

PWM: The amount of pulse width modulation for Saw 3 and Pulse 3 waveforms.
PWM RATE: The rate of PWM modulation. When PWM Rate is set to zero there is no PWM modulation, instead the PWM control sets the static pulse width for the Saw 3 and Pulse 3 waveforms.

VCF

The VCF in ReDominator consists of a HPF (High Pass Filter) and a LPF (Low Pass Filter).

The HPF has four operation modes:
- HPF 0: Bass Boost (boosts the bass frequencies)
- HPF 1: Normal (HPF is Off in this setting)

- HPF 2: High Pass filter with a lower cutoff frequency
- HPF 3: High Pass filter with a higher cutoff frequency

The LPF is a 24dB/oct filter with cutoff, resonance, envelope, LFO and key tracking controls.

- Freq: The basic cutoff frequency
- Res: The resonance level of the LPF. A higher setting produces a more electronic type of sound.

ENV MODE:
- Env: The LPF is modulated by the envelope
- -Env: The LPF is modulated by the inverted envelope
- Dyn.Env: The LPF is modulated by the envelope scaled by the dynamics (the velocity) of the played key
- Dyn: The LPF is modulated by the dynamics of the played key (hence the envelope has no effect here).

ENV: The amount of envelope modulation selected by Env.Mode that affects the cutoff frequency.
LFO: The amount of LFO modulation of the cutoff frequency
KEY FOLLOW: The amount of keyboard tracking. At 0 (zero) there is no keyboard tracking in the filter. At value 127 (maximum) there is full chromatic keyboard tracking

VCA
The VCA (voltage controlled amplified) controls the volume of the voice.

LEVEL: Sets the amount of pre-VCA amplification. A higher value produces a warmer, more distorted sound. A lower value produces a more clean sound. This also works in conjunction with the VCF, where a lower value allows a sharper resonance sound to pass through.

ENV MODE: There are four VCA envelope modes to select from
- Env: The VCA is controlled by the envelope, where the volume follows the envelope curve
- Gate: the VCA only passes sound through when a note is played. As soon as the note is released the sound will stop
- Dyn.Env: The VCA is controlled by the envelope but also affected by the dynamics
- Dyn.Gate: The VCA is gated to the note as described above but also affected by the dynamics of the played note.

PITCH
The pitch section affects how the frequency of the DCO is handled for the playing voice.

BEND: Pitch bend, allows the pitch the be bended up and down to the amount of semi-tones selected by the Bender Range control.
MOD: The amount of pitch modulation by the LFO

RANGE: Selects the octave range of the DCO from 4' (highest) to 32' (lowest). The standard octave is 8'.

ENV MODE:
- Env: The pitch is modulated by the envelope
- -Env: The pitch is modulated by the inverted envelope
- Dyn.Env: The pitch is modulated by the envelope but also affected by the dynamics of the played note
- -Dyn.Env: The pitch is modulated by the negative envelope but also affected by the dynamics of the played note

ENV: Sets amount of envelope modulation that affects the DCO frequency via the envelope
LFO: Sets the amount of LFO modulation of the pitch
BENDER RANGE: Sets the amount of modulation the pitch bend control has over the DCO which can be 0 (zero) to 12 (one octave) semi-tones.
PORTA TIME: Sets the rate of portamento

POLY
- On: When activated ReDominator uses a maximum of 16 voices to play polyphonically.
- Off: ReDominator will act as a monophonic synth with only one voice

PORTA
The portamento section functions differently depending on the POLY mode.
When POLY is On:
- If PORTA is On then a voice will glide to its newly assigned pitch
- If PORTA is Off then no portamento will occur
When POLY is Off (Monophonic mode):
- If PORTA is On the voice will always glide to the new pitch (even if no keys are held down). The envelope will retrigger only when all keys are released before playing a new note (commonly referred to as legato)
- If PORTA is Off: The voice will glide to the new pitch only if a new note is played before the previous one is released. The envelope will retrigger whenever a new note is played

ENV
The envelope in ReDominator has an unique 8-parameter control which opens up a lot of possibilities to shape the sound over time.
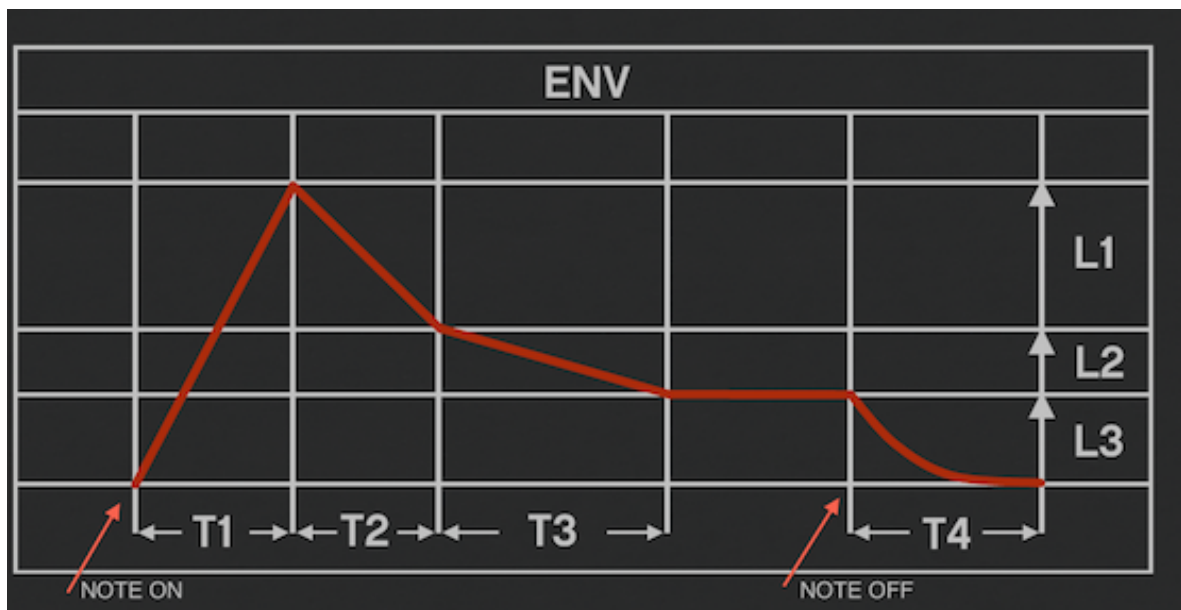
- T1: Controls the time from playing a new note (Note On) until the envelope reaches the level L1
- L1: The level reached after playing a new note (the envelope increases linearly to this level)
- T2: The time needed to reach level L2
- L2: The envelope changes in linearly to this level
- T3: The time needed to reach level L3
- L3: The envelope changes exponentially to this level. This is the level held by the note until the note is released.
- T4: The amount of time for the envelope to reach zero after the note is released (Note Off)

KEY FOLLOW:
The envelope times can be scaled to follow the keyboard. At the minimum value (zero) there is no keyboard scaling of the envelope. At maximum there is full keyboard scaling which produces longer envelope times at lower notes and faster times at higher notes.

MASTER

The master section is common to all voices in ReDominator. All voices are fed to the chorus which converts the audio into a stereo signal and then through the volume control.

CHORUS On/Off: Selects whether the chorus is on or off.
CHORUS Rate: The chorus rate can be set from very slow to very rapid. At the minimum setting the chorus will almost appear to be stopped. This can be used to create some interesting effects.

VOLUME: The master volume control of the output. At higher settings this may cause clipping or distortion. The overall output volume also depends on the VCA Level and any CV controlling the VCA.

Back Panel

The back panel has several CV inputs and outputs which can be used to extend the control of ReDominator. There are also performance settings for aftertouch.

Each CV input (except CV/Gate) has a trim knob that allows the amount CV to be scaled.

SEQUENCER CONTROL
CV/Gate CV inputs allow ReDominator to be controlled by any device that outputs CV/Gate such as Matrix or RPG-8

CV OUT
+ENV: The envelope CV output
-ENV: The inverted envelope CV output
LFO: The LFO CV output

AFTERTOUCH
Aftertouch allows ReDominator to respond to keyboard pressure (also known as aftertouch)
DCO: The amount of LFO pitch modulation response to aftertouch
VCF: The amount of VCF frequency modulation response to aftertouch
VCA: The amount of VCA volume modulation response to aftertouch

AUDIO IN
ReDominator's audio input allows external signals to be processed through the VCF. The input is mixed with the DCO and fed to the VCF.

NOTE: Feeding ReDominator's output back to the input is generally not a good idea and may produce nasty clicks or DC offsets!

AUDIO OUT
Left/Right: Standard audio stereo outputs. ReDominator may be used in mono by

using either the left or right output.

LFO CV IN
LFO RATE: The rate of the LFO can be controlled by CV
LFO DELAY: The delay of the LFO can be controlled by CV

DCO CV IN
PITCH: The pitch of the DCO can be controlled via CV
ENV AMT: The envelope modulation amount can be controlled via CV
LFO AMT: The LFO modulation amount can be controlled via CV
PWM: The PWM can be controlled by CV
PWM RATE: The PWM Rate can be controlled by CV

VCF CV IN
FREQ: The cutoff frequency of the VCF can be controlled via CV
RESO: The resonance amount can be controlled via CV
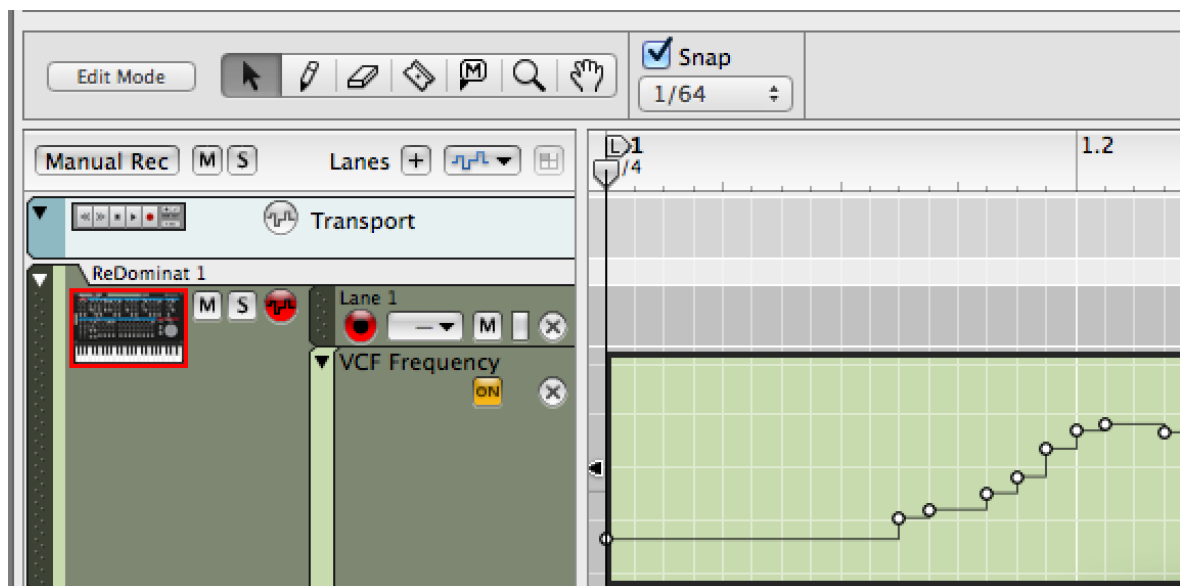ENV AMT: The envelope modulation amount can be controlled via CV
LFO AMT: The LFO modulation amount can be controlled via CV

MASTER CV IN
VCA: The volume can be modulated via CV
Chorus Rate: The chorus rate can be controlled via CV

Automation and ReDominator

In order to maintain authenticity with the original Alpha Juno many of
ReDominator's parameters are in the range 0-127 (8-bit values) and stepped as
parameters. Reason can handle both linear and stepped parameters, however when
working with stepped parameters drawing automation results in a "stair-stepped"
curve rather than a smooth, linear one. For fine drawing of automation, set the Snap

divider to 1/64th in Reason. If finer or linear control is needed for a ReDominator parameter, drop the ReDominator instance into a Combinator and assign the chosen parameter to a rotary on the combinator (see below).
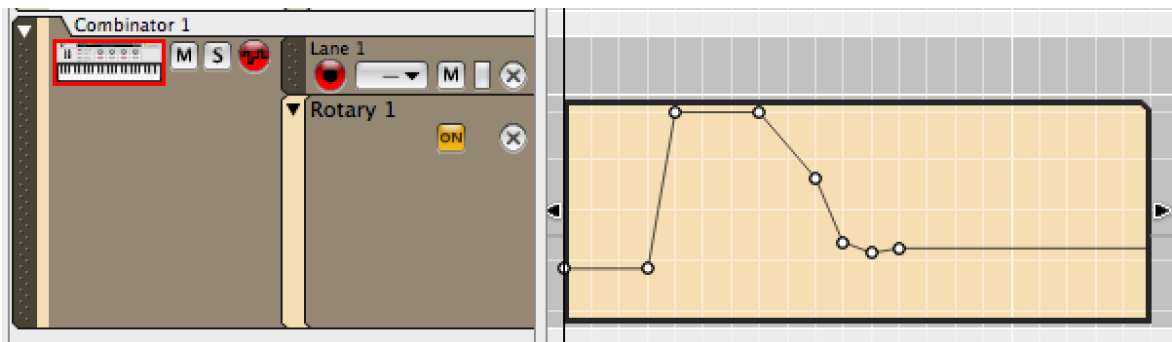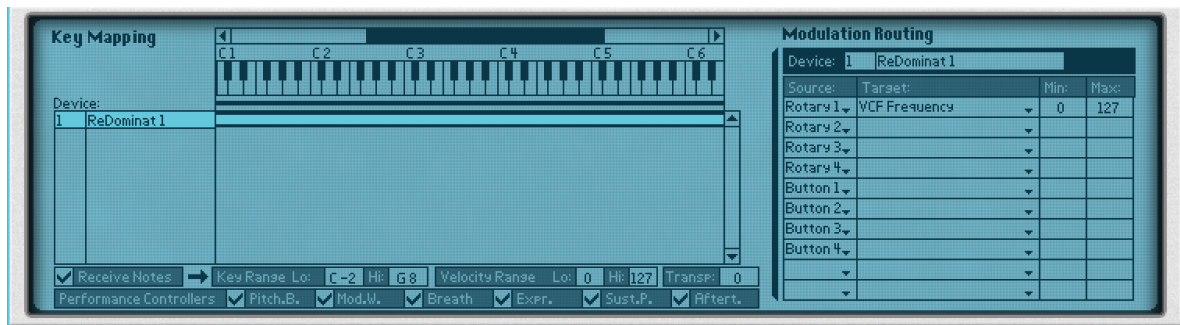
Credits

Programmed by Mike Janney
Thanks to: Yannick Bonnefoy, Rob Elster, Bonkhead, Craig Stainton, Jani Tourunen, LC123

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