

# abl3

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## Computer Bassline

OPERATION MANUAL

VST / AU

This manual is under construction. If you want to help to improve it contact:

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# Introduction



AudioRealism Bass Line 3 (ABL3) is an emulation of a classic pattern based bass machine from 1982. The legendary silver box that is hallmark in electronic music has been recreated in ABL3 using analog modeling techniques to create a DSP-algorithm that accurately emulates every aspect of the original, from growling basses to hollow middles and beeping highs with metal rattling accents. Patterns are composed in a fashion similar to the original using the integrated step sequencer with easy to use manipulation functions such as transpose and randomization.

## History

ABL1 was released in 2003 and became quickly one of the most popular 303 emulations as a VST plug-in. ABL2 improved on that and was released 2007. ABL3 is the latest version of our 303 emulation platform.

The ABL3 engine is a complete rewrite and has been in development for many years with the single goal of making the most authentic 303 emulation possible. With ABL3 we hope it will set a new benchmark in analog emulation.

## Features

- Extremely authentic 303 emulation
- Ultra natural knob response, scaled to match the original 303 precisely
- Host hard sync
- Resizable GUI
- Classic edit view
- Pattern edit view
- Real time randomizer
- Wave analyzer (for automatically transcribing 303 patterns)
- Setup screen with several emulation tweakables

- Step record function (via Midi)
- Vibrato effect by setting Up+Down on a step

# Panel Overview

The front panel is divided into three sections.

1. Control section
2. Synth section
3. Pattern section



## 1. Control section

### Pattern Mode



The Pattern selector defines which one of the 5 views should be displayed in the display section. These modes are: Classic, Pattern, Wave, Random and Setup. Each mode is described in a section below.

### Patch display

**140 BPM | Pattern | Host Sync**

The Patch display shows various information about the state that ABL3 is running in.

In normal mode this area will display the current host tempo, MIDI mode and Sync mode

Shift+Click Pattern to change to Note mode (or vice versa).

Shift+Click Host Sync to change to Midi Trigger mode (or vice versa).

Note: The tempo cannot be changed, as ABL3 always matches the host tempo.

Clicking the Patch display will open up a menu with these options:

- Load Pattern - Load one or several patterns from a file selector. If multiple patterns are chosen then they will be loaded into consecutive pattern slots.
- Save Pattern - Saves the current pattern.
- Undo - Allows Undo for certain operations, for instance clearing a pattern. This option is grayed out if not available.
- MIDI Mode: Show or selects the current MIDI Mode (Pattern or Note).
- Sync Mode: Show or selects the current Sync Mode (Host or Midi Trigger).
- MIDI Learn: Activates MIDI Learn. In this mode touch a parameter such as Cutoff and then touch the midi controller you wish to assign to that parameter.
- Reset MIDI Learn: Clears the MIDI control map. This can be useful in situations where a controller has been accidentally set and needs to be cleared.
- MIDI Output: Activates MIDI Output from ABL3. Note: This only works in the VST version of ABL3 and only with certain hosts (such as Ableton). Please refer to your host's documentation to learn whether it supports MIDI from plug-ins.
- License info: Display the license dialog where the registration code can be entered to authorize ABL3. ABL3 can also be de-authorized here if the license has been sold or if it has been in use for a temporary session.
  
- Import technoBox2 Patterns: ABL3 supports pattern import from technoBox2 (iOS application) or from Rebirth 338.
- Export Reason .repatch: For Reason users that wish to use the Pattern analyzer a ABL3 RE patch can be exported.
- Export Pattern as MIDI: The current selected pattern can be exported as a .mid file. This file can then be loaded into the host for further editing. When ABL3 is set to Note mode it can play back this MIDI file. **Note:** MIDI file export may not always create a pattern that sounds identical to the internal pattern sequencer of ABL3 due to differences in the way the internal patterns are handled specific to the 303. An exported pattern is also padded to be a multiple of 16 steps (one bar long).
- Small GUI Size: Sets the GUI size to small.
- Default GUI Size: Sets the GUI size to default (30% larger than small).
- Large GUI Size: Sets the GUI size to large. **Note:** On some platforms performance may suffer running ABL3 at the largest size. If this is the case, please use one of the smaller sizes. The GUI can also be resizing by dragging the lower right corner of the window.

The Patch menu also lists patterns in the current directory.

## Pattern Selector



The Pattern selector sets which pattern which should be displayed and edited in the pattern section.



The play arrow displays if the internal pattern sequencer is running or not. This is also a handy shortcut to playing or stopping a pattern.



Click the digits and drag up and down to change the pattern. Note: The pattern can also be changed via MIDI.

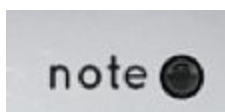


The Pattern lock symbol has two functions: When locked ABL3 will ignore and pattern change messages via MIDI. This is a good way to ensure that a pattern will not be changed. When Pattern is locked, the current parameters such as Cutoff and Resonance will also be unchanged when loading a new pattern with other settings into this slot.



These buttons allow incrementing or decrementing the current pattern by one. Holding down this button in either direction will auto repeat to scroll through patterns.

## Note indicator



The Note indicator will flash when ABL3 receives MIDI. It does not flash when ABL3 is played from its internal pattern sequencer.

## 2. Synth section

The Synth section is comprised of 7 controls: Waveform, Tuning, Cutoff, Resonance, Env Mod, Decay and Accent.

### **Waveform**

The waveform can be set to sawtooth or square wave. These waveforms are modeled on the original 303 and have a rather unique character; For instance, the pulsewidth of the square wave varies with the frequency of the oscillator.

### **Tuning**

The tuning can be set between -12 and +12 semitones.

### **Cutoff**

The basic cutoff frequency of the filter is set with this control.

### **Resonance**

The Resonance control sets the amount of feedback in the filter. A low resonance setting produces a more bass like sound while more resonance produces a more 'electronic' type of sound.

### **Env Mod**

Env Mod (Envelope Modulation) controls how much the envelope modulates the cutoff frequency. One unique feature of the 303 is the way the envelope modulates the cutoff both positively and negatively, which may result in a filter frequency lower than the Cutoff knob setting.

### **Decay**

The Decay knob sets the decay time of the envelope for the filter.

### **Accent**

The Accent knob sets the amount of effect applied to certain steps or notes that are played accented (with a velocity 100 or greater, or the Accent button engaged). The accent effect modulates several parameters in the sound at once; For example, the volume, cutoff frequency and decay time of the envelope.

### **Volume**

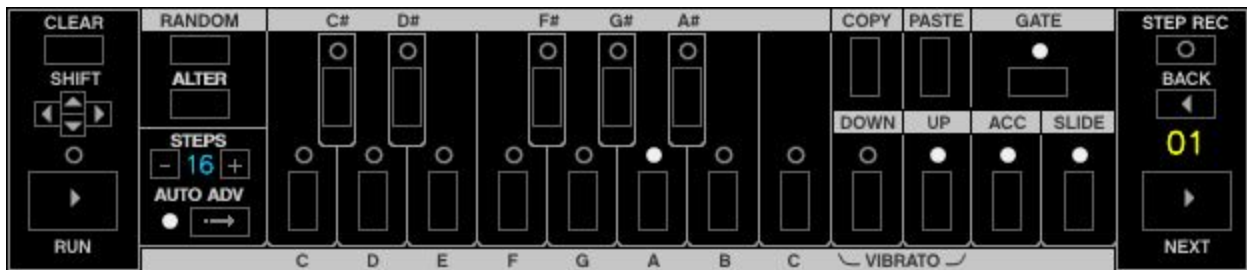
The volume control can be set from completely silent (0% = -Inf dB) to very loud (100% = 9dB). At higher settings clipping may occur so care must be taken with values over 0 dB.

### 3. Classic View

The Classic View is used to display, program and edit patterns that are played via ABL3's internal sequencer. It is also possible to generate random patterns or step record a pattern via MIDI.

Most functions in the pattern section only affect the steps up to the number of steps selected.

The Pattern section displays only one step (indicated by the yellow number on the right) of the pattern at once. The LEDs display the programmed info on that step: pitch, gate, down, up, accent and slide.



#### Clear button

Clears the pattern (up to the number of steps). All steps are set to C with Gate On.

Clicking on Clear while pressing shift on your keyboard will clear the pattern and set all gates to off.

#### Shift buttons

The pattern can be shifted left or right. This function works cyclically so any step shifted off the first step will appear on the last step.

The pattern can also be transposed up and down. Any notes that are transposed out of range will cycle and appear at the bottom or highest octave.

**Note:** When transposing, the Up and Down step modifiers are not affected. If you wish to transpose down, and the lowest note cannot be shifted and appears at the highest octave, consider instead using the Tuning knob to set the whole tuning one octave lower and transpose the pattern up the desired number of steps.

## **Run button**

The Run button plays or stops playing a pattern via the internal sequencer. This can be used for quickly previewing a pattern.

The Run LED indicator will always be lit when a pattern is being played.

## **Back button**

The Back button causes the step indicator to be decreased by one. If the step indicator is on the first step then it will jump to the last step in the pattern.

## **Next button**

The Next button causes the step indicator to be increased by one. If the step indicator is on the last step then it will jump to first step in the pattern.

## **Random button**

The Random button causes steps in the pattern to be randomized. This affects pitch, down, up, slide and accent.

## **Alter button**

The Alter button causes the order of the steps in the pattern to be randomized. It does not change any of the steps themselves, just the order of them in the pattern. This can be particularly useful for creating variations of patterns or creating pattern in specific scale.

Clicking Alter while pressing shift on your keyboard creates another variation of altering patterns.

## **Steps indicator**

The Steps indicator shows the pattern length to be edited (the number of steps in the pattern). The number of steps can be 1 up to 64. The number of steps can be increased and decreased by pressing the + and - buttons. It is also possible to click and drag the Step indicator to quickly scroll to the desired number.



## **Auto Adv button**

Auto Adv stands for Auto Advance. With Auto Advance on, the Steps indicator will automatically advance to the next step when entering a pitch (C, C# ,D etc). This can be useful for quickly programming scales and modifying patterns.

Turning Auto Advance off and on again will cause the Step indicator to go the first step. This can be handy shortcut to quickly return to the first step of a pattern by double clicking this control.

## **Copy button**

The Copy button copies the current selected pattern into the copy buffer.

## **Paste button**

The Paste button pastes the copy buffer to the current selected pattern.

## **Pitch buttons**

The Pitch buttons set a pitch on the current step set by the Step indicator. The pitch buttons cover a full octave plus one extra C high. Which pitch is entered on the step is indicated by the Pitch LEDs.

**Note:** *When Auto Adv (auto advance step) is turned Off, extra octaves can be reached by clicking a note multiple times:*

- *White dot indicates the normal untransposed octave*
- *Red dot indicates extended octave +1*
- *Yellow dot indicates extended octave +2*

*This is also useful when using the vibrato which normally would only would affect the standard 303 octave (as it uses both Up+Down to activate vibrato, resulting in a non transposed pitch).*

## **Down button and indicator**

When Down is activated the step is transposed one octave down.

## **Up button and indicator**

When Up is activated the step is transposed one octave up.

## **Accent button and indicator**

When Accent is activated the sequencer will play this step with accent.

## **Slide button and indicator**

When Slide is activated the sequencer will tie the step to the previous step via a smooth glide.

## **Vibrato effect**

When both the Down and Up buttons are activated on a step the Vibrato effect is applied. The Vibrato effect works much like a delayed LFO on the pitch. Tying multiple steps together with slide enhances this effect.

## **Gate button and indicator**

When the Gate button is activated the note for that step is sounded. If Gate is off then the note will not be played.

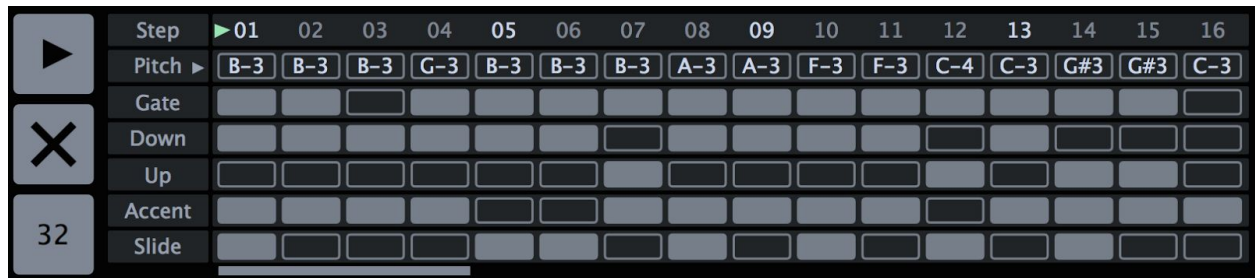
## **Step Rec**

Step Rec stands for Step Recording. This is a useful function for entering patterns via a MIDI keyboard.

The Step Rec LED will flash when it is in record mode.

- Accented notes are entered by playing a note with velocity 100 or higher.
- Tied or glided notes (Slides) are entered by holding the first note and playing another note.
- Enter a rest by pressing Next in the pattern section.
- Tied notes can be entered by holding the MIDI note and pressing Next
- In case of a mistake use the Back button to go to a previous step and continue entering notes.

# Pattern View

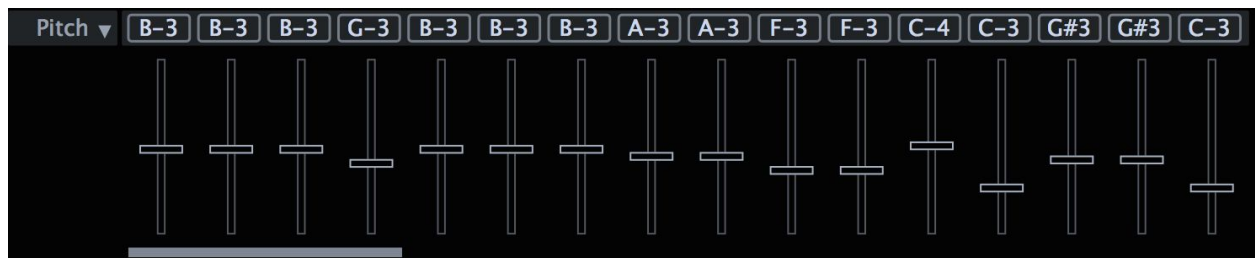


The Pattern view allows to display 16 steps of the pattern at once, making it easy to overview and edit the pattern. The buttons on the left are Play, Clear and Number of Steps.

The Pattern view is divided into a number of lanes: Step, Pitch, Gate, Down, Up, Accent and Slide. Each lane is divided into a number of cells. For pitch, these can be clicked and dragged up and down to change the pitch of a step. For the other lanes such as Gate a simple click will turn that cell on or off.

It is possible to transpose all cells at the same time by Shift+Clicking a cell and dragging the mouse.

Clicking the small arrow in the Pitch lane will expand this lane to reveal sliders which help see which pitch a step is set to.



Drag these sliders up and down to change the pitch for a step. Shift+Click allows “drawing” to multiple sliders.

The scrollbar at the bottom can be used to select which 16 steps in the pattern that should be viewed.

# Wave View

The Wave analyzer allows loading a section of audio where ABL3 can attempt to transcribe this audio into a pattern automatically. This is useful for quickly transferring patterns from a real 303 or an x0xb0x. In order for this to work, the pattern needs to be recorded with certain settings. These are described in the Help section.



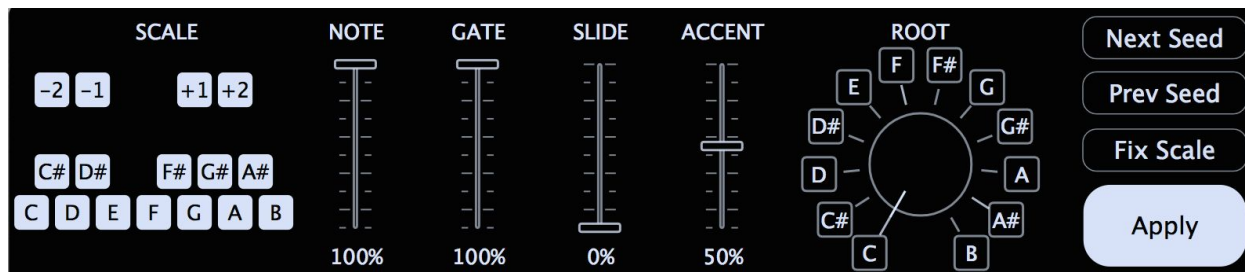
- Play Wave - Starts or stops the waveform playback.
- Play Pattern - Starts or stops the ABL3 pattern playback.
- Detect - Runs the detection after for example adjusting the left and right markers or adjusting the number of steps in the pattern.
- Load - Loads audio into the Wave analyzer.
- Steps - Sets the number of divisions (or steps) that the analyzer should operate on.

The left and right markers limit where the Analyzer should attempt to detect the audio. Adjust these so that the step markings line up with each note in the audio for best results.

The Wave analyzer can also produce interesting results on various kinds of other audio, for example drum loop or similar.

# Randomizer View

The Randomizer view offers an easy way to create interesting patterns. Simply set the parameters such as the Scale and the Note, Gate, Slide, Accent density, and a pattern will be generated in the selected Root when apply is activated. When apply is activated, the parameters can be adjusted in realtime to immediately hear the changes.

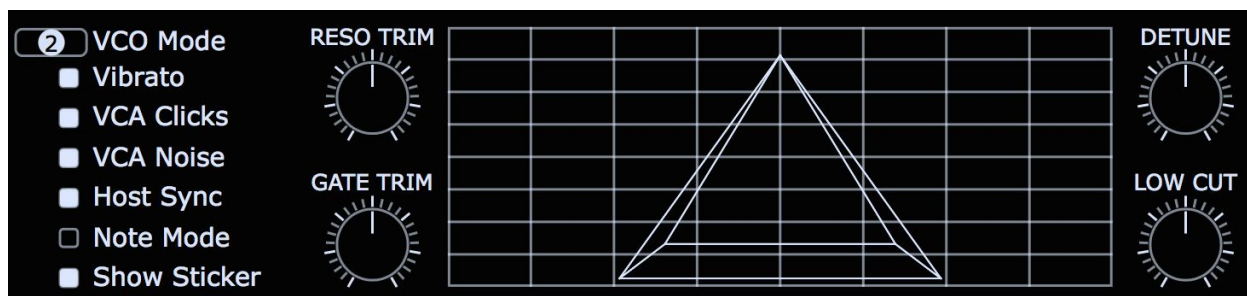


- Scale - The user custom scale can be set here, along with which octaves (-2, -1, +1, +2) relative to the Root the pitches should be generated.
- Note - Sets the amount of diversity the pattern should have, when this is at 0% pitches at the Root will be generated, and at 100% all notes from the Scale are equally likely to be selected for each step.
- Gate - The density of the number of gates in the generated pattern.
- Slide - The density of the number of slide in the generated pattern.
- Accent - The density of the number of accents in the generated pattern.
- Root - Set the root note of the scale to be generated.
- Next Seed - Generate a new pattern based on the same settings.
- Prev Seed - Go back to the previous generated pattern.
- Fix Scale - When this button is activated the pitches will be selected from the scale in order instead of randomly, this can be useful for generating arpeggios or debugging a scale.
- Apply - Activates the pattern generator. When switching to another view other than the Random View the Apply button will be deactivated. This is because editing the pattern in another view would be overwritten constantly if the Apply was still activated.

Note: If you accidentally overwrite a pattern the Undo function in the Pattern menu can be used.

# Setup View

The Setup view allows tweaking certain emulation parameters such as the maximum amount of resonance in the filter or the gate release time.



- VCO Mode - This selects the VCO model to be used.
  - Model 1 is a clean sounding model which sounds more similar to certain TB-303 clones rather than a real TB-303.
  - Model 2 is the default setting for ABL3 and is the most authentic model which includes a bit of grit and dirt to match the real TB-303 as closely as possible.
  - Model 3 is similar to Model 2 though slightly less dirty and less bottom end.
- Vibrato - This selects whether Up+Down on a step should activate vibrato or not.
- VCA Clicks - When on this gives an extra click in the attack of notes to help ABL3 cut through in a bit a little better.
- VCA Noise - This subtle effect attempts to model the characteristic noise that a TB-303 outputs when turning on and off the VCA gate.
- Host Sync - Selects between Host Sync or Midi Trigger modes.
- Note Mode - Selects between Note mode and Pattern mode.
- Show Sticker - The sticker can be hidden by turning this off.
  
- Reso Trim - Sets the maximum level of resonance. At the maximum setting the filter will have a sharper edges to it with full resonance setting.
- Gate Trim - This sets the VCA gate release time. A high setting will give a “tighter” feel to the pattern while a lower setting will give a “looser” feel. Can also be used for special effect. The default value of 50% is set to match the TB-303 as closely as possible.
- Detune - The tuning of the VCO across the octaves can be set here to help create “detuned” patterns. This setting only works when running ABL3’s internal pattern sequencer.
- Low Cut - This is an extra low cut filter that can help cut or add some bass to ABL3. At 50% it is matched to the original TB-303 with VCO Model 2, however this setting affects the VCO models in different ways.

# MIDI Modes

ABL3 has two MIDI Modes:

- Pattern Mode
- Note Mode

In Pattern mode the plug-in will play a sequence of notes, where each MIDI key corresponds to one of the 128 patterns that ABL3 can hold.

In Note mode ABL3 operates like a traditional synth where notes are played. In this mode accented notes are played with a MIDI velocity over 100. Slides can be achieved by overlapping two notes, for instance playing and holding one note and then playing another note over that one. **Note:** ABL3 does not respond to pitch bend information.

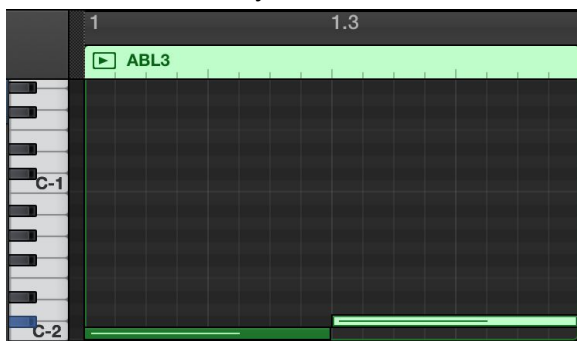
# Sync Modes

ABL3 has two Sync Modes:

- Host Sync
- MIDI Trigger

In Host Sync mode ABL3 will automatically keep in sync with the host and start playing as soon the host's transport is started. In this mode ABL3 does not need a MIDI track to start playing. ABL3 will also keep sync with the host when scrolling forward or back in the host's transport. The pattern to be played back can still be changed by a MIDI track if one is available.

In MIDI Trigger mode ABL3 will only play if it receives a MIDI note played from the host. In this mode it is necessary to create a MIDI track for ABL3 to trigger patterns.



Here for example ABL3 would play the first pattern (000) for 8 steps (or a half bar) and the second pattern (001) for 8 steps.