EchoBoy Jr.

Analog Echo Processor

User's Guide

Version 5 : For Mac and Windows

soundtoys

CONTENTS

THE BASICS / Pg. 4

A Detailed History of Echo (and EchoBoy)..... pg. 4

THE ECHOBOY JR. CONTROL PANEL / Pg. 6

Mix ..... pg. 6
Echo Time ..... pg. 6
Feedback ..... pg. 7
Note, Dot, and Trip Buttons ..... pg. 7
Stereo Mode ..... pg. 8
Glide ..... pg. 8
Echo Styles ..... pg. 8
Low Cut / High Cut ..... pg. 9
Input and Output Level ..... pg. 10
Saturation ..... pg. 10

ADDITIONAL INFORMATION / Pg. 11

Support / Contact ..... pg. 11

THE BASICS - A DETAILED HISTORY OF ECHO (AND ECHOBOY)

Delay and echo comprise the oldest and most commonly used effects in the history of recorded audio. Think about that classic double tracked effect on Elvis' voice, the slap echo in '60s surf music, those cheesy '50s sci-fi movie sound tracks, Pink Floyd, The Beatles etc. They all used delay and echo extensively, as has most of the music recorded in the last 30 or 40 years. Delay and Echo remain essential to today's modern music maker.

In the early days, all delay effects were based on some type of tape delay. Studios would often have a number of top quality tape machines attached to variable speed controls to be used as a delay device. The signal was fed to the input of the machine and the output of the tape was monitored off the playback head. The space between the record head and the playback head along with the speed of the tape determined the delay time.

The way it worked was like this: slow the tape down and the time it took for the signal to get on to the tape and then be picked up by the playback head increased and thus the delay time increased. Speed the tape up and the opposite happened, the delay time got shorter. This provided early engineers with the ability to create variable length, short "slap back" delays. If you took the output of the playback head and fed it back into the input of the tape machine via a mixer you were able to create repeating delays and echoes. The speed of the tape machine determined the delay time and the amount of the tape output fed back into the input determined the number of repeats in the echo.

Now, when you shove a lot of signal onto analog tape the signal has a tendency to saturate and impart a very natural compression that is fat, warm and crunchy. In addition to the compression, tape also adds a very characteristic type of distortion that is pleasing to the ear. This is especially true in the upper frequencies and bottom end. It's kind of like the concept behind the "loudness" button you find on cheap stereos that hypes the high and low end, except with tape it actually does sound full, rich, punchy, crunchy, fat, and all around amazing.

With tape being a fully analog and non-linear medium, the sound of the echo would change quite drastically depending on how hard you "hit" the tape, how fast or slow the tape was moving, any EQ in the audio path etc. In addition, the sound of the individual repeats would also change drastically each time they were fed back from the playback head with increasing amount of distortion, noise, wobble from the tape machine and loss of high end. They weren't "accurate" to the original sound, but they sure sounded GOOD! In fact one of the things engineers still drool over is the sound of a high quality tape machine being hit hard with gobs of signal and used as a delay. This is especially true for vocals with that classic "vocal slap" being one of the most common tricks of the trade.

As technology progressed self contained tape echo machines like the original tube Echoplex (followed by the transistor Echoplex) appeared along with other tape echo devices like the WEM Copycat, Roland RE-201 Space Echo and the like. There were also "platter" devices such as the Binson Echorec that recorded signal to a magnetic spinning disc that had a variable playback speed and head. All of these tape-based units provided a warm, fully analog sound in a relatively compact unit with

integrated control of echo time, feedback, mixing and sometime EQ. In addition, some units provided more than one playback head, allowing for various types of echo patterns.

Fast forward to the late '70s and solid state echo devices started to appear based on what are known as "bucket brigade" analog delay chips. These chips would grab a tiny piece of analog audio (no digital conversion here) and move the snippet of sound from one "bucket" in the chip to the next at a particular rate. Put a number of these chips together with input control, feedback, and mixing options (along with a clock and bunch of other circuits), and analog delays were born.

The problem, or great thing about analog delays (depending on how you look at it) was that analog delays had in most cases severely limited bandwidth with the top end lopped off around 2k (or lower), limited low end, noise, and grunge. The output of an analog delay for sure sounded a lot different than the input signal even in the top end units like the amazing Marshall Time Modulator. But these devices did not need to have their tapes changed, heads cleaned or have their motors wear out. They could be run on batteries and put into little pedals so that every Tom, Dick and David Gilmour could have multiple echoes at their feet. A few higher end units were made like the previously mentioned Marshall Time Modulator and the MXR Flanger Doubler, which became staples in studios for a short period of time. As mentioned, they had some funky side effects, but often times those analog anomalies comprised a large part of their individual character.

Other classic analog delays like the Electro-Harmonix Deluxe Memory Man (think Andy Summers of the Police), MXR Analog Delay, and the up-and-coming Boss and Ibanez units provided instrumentalists individual control over their delay sound in compact analog delay pedals. To this day there are still many manufacturers making analog delay devices for their characteristic sound, limited frequency response and less than crispy fidelity. They provide great echo that is warm and not overpowering, and found all over top end guitar pedal boards.

Next came the digital revolution and everything changed. Digital delays were all the rage with every manufacturer vying for a slice of the market. Some sounded REALLY bad with a very brittle, grainy sound. However others like the Lexicon Prime Time and PCM 41 / 42 sounded amazing and are still in high demand for the quality and character of the sound. The sound of these units was not exactly true to life. In fact they had quite a bit of compression and pre/de-emphasis that altered the sound of the signal but they provided some of the best sounding, warm (again), clear, and full sounding delays that money could buy. Other units from TC and AMS in particular were also quite popular but they tended to have a more "high fidelity" sound. You'll still find all of these units all over top studios.

As for creating a good sounding delay, what the musical world has learned is that echoes sound better when the repeat does NOT sound exactly like the input signal. Of course there are times when you DO want the delay to sound exactly like the input but in many cases the best sounding effect is when there are analog-like anomalies in the delay and echo along with limited frequency response. This is especially true on things like vocals and to this day many top artists still use tape

slap or specific delay devices like the PCM 42 each of which have a less than linear or flat response. The bottom line is they just SOUND really good.

Which brings us to EchoBoy and EchoBoy Jr.. EchoBoy was designed from the beginning to provide not just another delay plug-in, but one offering complete control and the tonal options from a wide range of delay/echo devices. Since its initial release in 2006, EchoBoy has become the go-to delay tool for a staggering number of studios and producers world-wide. We went to great lengths in designing EchoBoy to accurately reflect the sound of a wealth of classic devices that have stood the test of time. We are pleased beyond words that our own creation has become one of those devices as well.

We designed EchoBoy Jr. as a simplified version of EchoBoy that still provides the necessary controls and parameters to emulate many classic and contemporary delay devices. Our main goal was to strip away the complex tweak options in EchoBoy and provide you with a delay that is simple to use but still offers the exceptional sound that EchoBoy has become known for.

Sun Ra once said, "space is the place". We're confident that EchoBoy Jr. will take you to spaces and places unexplored previously. Enjoy!

THE ECHOBOY JR. CONTROL PANEL



Figure 1: EchoBoy Jr. Main Control Panel

MIX

The Mix knob defines the mix balance between dry signal and delayed signal. At 12 o'clock the mix balance is 50/50. As the control is increased beyond 12 o' clock the level of dry signal is decreased until you have just delay. If you are using EchoBoy Jr. in-line you'll likely want to use Mix to define the balance of dry to delay. If you are using EchoBoy Jr. in a mix bus you will likely want to set the mix to 100 wet and use the send return levels to define mix of the delayed signal. The Mix control provides another means of controlling the relative level of effect to dry. This allows you to balance individual delay presets and even out possible amplitude anomalies. Add your echo and mix to taste!

ECHO TIME

The Echo Time knob is used to control the amount of time between your original sound and the echo output, and also the amount of time between echo 'repeats'.

Echo Time can be adjusted in several different ways. The first way is the most obvious: turning the knob. When adjusted, the control's current setting will be displayed in the LCD-style readout above the series of red colored buttons. You will notice that there are are four options listed for those buttons: Time, Note, Dot, and Trip. These options correspond to how the Echo Time is measured. With Time selected, we are measuring

ECHO TIME (continued)

time in milliseconds (ms) and values in the LCD-style display will read as such. This is the second way to enter Echo Time values: typing them in using the old-school looking LCD-style display.

Keep in mind that a millisecond is one one-thousandth of a second (or a very, very short time!). 500 milliseconds is half of a second, which is 1 beat at 120 BPM. Very short delay times (0 to 10 milliseconds) can produce some really cool flanging effects, and slightly longer times (10-50 milliseconds) can be used to produce chorus and doubling effects. Slapback echoes are usually in the 100 - 200 millisecond range.

FEEDBACK

The Feedback knob allows you to feed a variable amount of the delay back into the input to create multiple repeating echoes. Increasing the Feedback increases the number of repeats. Depending on the Style selected this allows you to create tape-like echoes that decay over time, multiple repeats and unique rhythmic effects based on the Echo Mode selected. Note that setting the Feedback value too high or near maximum can easily drive EchoBoy Jr. into "runaway" mode. The feedback control allows for the kind of self-oscillation achievable in units like the RE-201 Space Echo. At higher settings things can get pretty wild very quickly. High settings on the Feedback control can boost the output level from EchoBoy Jr. significantly, so please be careful when turning up the Feedback knob at high volumes.

NOTE, DOT, AND TRIP BUTTONS

Unlike the Time button which is based on fixed time values, the Note, Dot, and Trip options create echo patterns based on the current session tempo. When in these note-based modes, EchoBoy Jr. will automatically sync to your DAW's tempo.

You will notice that the display window features up/down menu arrows, which is the third method for selecting Echo Time. Browsing the menu is particularly helpful as it allows you to test different rhythmic divisions based on the current tempo.

The Note, Dot, and Trip options range from 1/2 note all the way to 1/64 note. This is a very intuitive and musical way to adjust echo time. Just dial in the note value you want to hear – 1/16th note, 1/8th note, 1/4 note, etc. and EchoBoy Jr. will lock right in to your groove. You can also choose dotted or triplet versions of musical note values by using the "Dot" and "Trip" buttons.



Figure 2: EchoBoy Jr. Echo Time selection

THE ECHOBOY JR. CONTROL PANEL

STEREO MODE

The three radio buttons on the left side of the plug-in allow you to control the stereo image of EchoBoy Jr's repeats. The default stereo mode in EchoBoy Jr. is Normal. In Normal mode, EchoBoy Jr. will produce a centered somewhat narrow sounding repeat. In Wide mode, a slight delay is introduced between the left and right channels which produces in a much wider stereo image. In Ping Pong mode, each sucessive repeat will bounce back and forth between the left and right output channels.

GLIDE

The Glide button controls what happens when you adjust the delay time as audio is passing through EchoBoy Jr. With Glide set to ON, EchoBoy Jr. will behave like an old tape machine or analog delay would, and the pitch of the audio passing through EchoBoy Jr. will be shifted as the delay time is adjusted. With Glide set to off, delay times can be adjusted in real-time without changing the pitch of the echo.

There are potentially creative and utilitarian applications for both modes. With Glide on, switching between different note values can create some very cool pitch jumps. With Glide off, it can be much easier to dial in a delay time when the Feedback is up, due to the fact that the changes you make will not cause any pitch shifting artifacts to be fed back.

ECHO STYLES

Echo Styles, found in the center section of the plug-in, make it easy to radically change the echo tone and quality to suit your project. You'll find seven different echo sounds, modeled from a vast collection of hardware units at the Soundtoys lab. From the subtle warmth of high-end studio tape echo, to the lo-fi warbly sound of classic tape echo boxes (like the Roland Space Echo), along with classic stomp boxes, and some custom Soundtoys-designed styles, EchoBoy Jr. has a lot of tonal options! To change the Echo Style, turn the Style knob to the style of your choice, or simply click the name of the style you would like to select.



Figure 3: EchoBoy Jr. Style Selection

ECHO STYLES (continued)

The following Styles are included in EchoBoy Jr:

Studio Tape
Subtle distortion and high frequency compression modeled after the ATR-102 running at 15 ips, typical of the sound of tracking to studio tape.

Plex
One of the true classics. This style is modeled after the EchoPlex EP-3 solid state tape echo.

Space
One of our favorites, modeled after the Roland RE-201 Space Echo we have here in the lab. Warm and gritty, the RE-201 is a staple sound of dub and reggae, but sounds phenomenal on a wide variety of sources. True to the unit's original character, the unique self-oscillation of the Space Echo is achievable in EchoBoy Jr. utilizing the 'Feedback' control.

Cheap Tape
A Soundtoys original, modeled after the characteristics of a variety of vintage consumer-grade tape stock. Bright and very compressed sounding.

Memory
Warm low-bandwidth chorus echo, modeled after the Electro-Harmonix Memory Man delay pedal.

Ambient
A combination of the Distortion and Diffusion modes in EchoBoy. Great for long feedback loops and solo instruments.

Transmitter
Similar to a CB Radio type response, this sound is very distorted and resonant in mid-frequencies. Good for adding echo grit to synth sounds.

LOW CUT / HIGH CUT

The Low and High Cut controls are used to adjust the frequency content of the echoes based on the currently selected Echo Style.

While the High Cut knob provides for a "darkening" of the delay, the Low Cut is useful for attenuating bass frequencies or to create a desired tone for the delay. Both of these controls can be very beneficial in shaping delays and their sense of distance to blend better with the original signal. Most analog delays and tape echoes impart a certain amount of high frequency roll-off to the signal, and the High Cut control allows you to create that kind of effect. It is important to keep in mind that the effect of both controls will depend greatly on the Echo Style selected.

INPUT AND OUTPUT LEVEL

The Input and Output level controls are used to either boost or attenuate the input or output of EchoBoy Jr. EchoBoy Jr.'s Input and Output controls allow you to vary the tone of the input signal being sent to the echo circuit. You can keep it nice and clean or make it dirty and messy. These controls were designed to replicate the way true analog input sections respond on physical analog hardware (and they will sound very different depending on the setting of the Echo Style).

The LED-style indicators located beneath the Input and Output knobs provide a visual display of the input and output signal levels. The yellow LED indicates that the signal is 6dB below clipping. The red LED indicates maximum signal level, and possible audible clipping (which you may or may not wish to have as part of your sound).

It's important to note that the Input and Output level only affects the echo signal, leaving the dry signal unchanged.



Figure 4: LED's indicating Input and Output signal level

SATURATION

The Saturation control provides a quick and easy means of imparting tube or tape-like compression, emphasis, and subtle distortion on to the delay signal. Saturation is a unique parameter that allows EchoBoy Jr. to emulate many types of analog devices and different types of tape-based delays both high and low end.

The resulting effect from manipulating the Saturation control will depend on the current Echo Style setting. In some cases, the Saturation changes may seem fairly subtle.

For example, when using the "Studio Tape" echo style, increasing amounts of saturation will add odd harmonic distortion in the low and mid-range, and will cause a high frequency compression effect. This effect is especially nice on vocals, adding a bit of automatic de-essing on the echo during louder vocal passages.

SUPPORT INFORMATION

Now that you've taken the time to learn all about EchoBoy, have fun, experiment, and make greatness! If our plug-ins helped you take your production to the next level, let us know, we'd love to hear from you and what you were able to create with our software.

If along the way however you should run into any hiccups or anything unexpected, we offer free technical support for all registered users.

Our FAQ contains many helpful answers. you can find it at:

http://support.soundtoys.com

If you need further support you can find our Customer Support contact form at:

https://www.soundtoys.com/forms/support

You can also reach our support staff by e-mail at:

support@soundtoys.com

If neither of those options work for you, our office can be reached via telephone at:

1-800-COOL-EFX

Please have the following information available to help assist our support team:

- The product version and serial number
- The version number of your audio system (e.g ProTools 11.2.1, Cubase 8.0.5, Logic 10.2.0, Cakewalk Sonar X3)
- Your interface/hardware (e.g. Mbox Pro, Apogee Quartet, RME Fireface, etc.)
- Your computer and operating system info (e.g. MacPro OS X 10.9.5, Windows 7 SP1, Windows 8.1, etc.)
- A detailed description of the problem

CORPORATE CONTACT

Soundtoys, Inc.
PO Box 528
Burlington, VT 05402

Phone: 802-951-9700
Fax: 802-951-9799

Wave Mechanics, Soundtoys, Crystallizer, EchoBoy, EchoBoy Jr., FilterFreak, PhaseMistress, PitchDoctor, PurePitch, SoundBlender, Speed, Decapitator, PanMan, Tremolator, Devil-Loc, Radiator, MicroShift, PrimalTap, Sie-Q and their respective logos are all trademarks of Soundtoys, Inc.

All other trademarks are the property of their respective owners, which are in no way associated or affiliated with Soundtoys. These trademarks are used only for historical reference or to identify products whose sounds or tone were studied in the development of our plug-ins.

© 2016 Soundtoys Inc. All rights reserved.

soundtoys