

EchoBoy

The Ultimate Echo Machine

User's Guide

Version 5 : For Mac and Windows



THE BASICS / Pg. 4

A Detailed History of Echo (and EchoBoy)..... pg. 5

THE ECHOBOY CONTROL PANEL / Pg. 8

Common Controls	pg. 8
Saturation	pg. 8
Input and Output Level	pg. 9
Echo Styles	pg. 9
Mix	pg. 13
Feedback	pg. 13
Prime Numbers	pg. 13
Low Cut / High Cut	pg. 14
Tweak Button	pg. 14
Tap Tempo	pg. 14
MIDI Toggle Switch	pg. 14
Groove	pg. 14
Feel	pg. 15
Mode	pg. 15

SINGLE ECHO MODE / Pg. 16

Echo Time	pg. 16
Note, Dot, and Trip Buttons	pg. 17
Single Echo Mode Tweak Menu	pg. 18
Width	pg. 18
L/R Offset	pg. 18
Accent	pg. 19

DUAL ECHO MODE / Pg. 20

Dual Echo Mode Tweak Menu	pg. 21
Balance	pg. 21
Width / L/R Offset	pg. 21
Accent 1 / Accent 2	pg. 21
FB Mix	pg. 22
FB Bal	pg. 22

PING PONG ECHO MODE / Pg. 23

Ping Pong Echo Mode Tweak Menu	pg. 24
--------------------------------------	--------

RHYTHM ECHO MODE / Pg. 25

Working in Rhythm Echo Mode	pg. 25
Shape	pg. 26
Creating Custom Rhythm Patterns	pg. 28
Adding / Deleting an Echo	pg. 28
Adjust Echo Volume / Moving an Echo	pg. 28
Adjusting an Echo Between Grid Lines	pg. 29
The “One” Echo	pg. 29
Saving Echo Patterns	pg. 30
Repeats	pg. 30
Rhythm Echo Tweak Menu	pg. 31
Pan Shape	pg. 31
Accent/Warp	pg. 31
Rhythm Grid	pg. 32
Length	pg. 32

THE STYLE EDITOR / Pg. 33

EQ	pg. 33
Gain / Decay	pg. 34
Diffusion	pg. 35
Size	pg. 35
Loop / Post Switch	pg. 35

Wobble	pg. 36
Wobble Rate	pg. 36
Wobble Shape	pg. 36
FB / Out Toggle Switches	pg. 37
Sync	pg. 37
Saturation	pg. 38

ADDITIONAL INFORMATION / Pg. 39

Support / Contact.....	pg. 39
------------------------	--------



Figure 1: EchoBoy Main Control Panel and Style Edit Menu

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. 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.

EchoBoy provides the necessary controls and parameters to emulate virtually any classic or contemporary delay device. Our main goal was to provide you with not only versatile but exceptional sound: one that is truly musical, harmonically rich and with real character. Though it can do that “input-sounds-like-output” thing, it excels at providing an incredibly wide range of unique and analog sounding delays, each with a unique and palpable character. It has a plethora of controls allowing you to bring the kind of anomalies and character that were inherent in tape and analog devices to your projects without a warehouse full of expensive (and temperamental) hardware. You can get as tame or as wild as you want with EchoBoy. Additionally, the included Rhythm Mode provides for some truly new approaches to multi-tap delays.

Sun Ra once said, “space is the place”. We’re confident that EchoBoy will take you to spaces and places unexplored previously. EchoBoy has a lot to offer under the hood, and if you’re new to the plug-in please do browse this manual at least once, as there are a wealth of controls and options found inside. Enjoy!



Figure 2: EchoBoy Main Control Panel (Single Echo Mode)

COMMON CONTROLS

While the layout of EchoBoy's Main Control Panel varies based on the Echo Mode currently selected, many common controls are shared in all modes. EchoBoy features four Echo Modes: Single Echo (shown above), Dual Echo, Ping Pong, and Rhythm Echo. We'll discuss each Mode in detail, but to start off we'll concentrate on the common controls that we will find in every mode.

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 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.

SATURATION (continued)

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. Or, when the style is set to “Limited”, the saturation control functions more like a limiter threshold, and will add increasing amounts of a very cool pumping limiter effect.

INPUT AND OUTPUT LEVEL

The Input and Output level controls are used to either boost or attenuate the input or output of EchoBoy. EchoBoy’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 3: Output LED indicating maximum signal level

ECHO STYLES

Echo Styles, found in the “Style” menu underneath the Input/Output controls, make it easy to radically change the echo tone and quality to suit your project. Within the style menu you’ll find a staggering amount of 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 Echoplex and Roland Space Echo), along with classic stomp boxes, rack units, and other assorted delay/chorus effects, EchoBoy has it all! To change the Echo Style, simply click on the Style display window.

ECHO STYLES (continued)

The following Styles are included in EchoBoy:

Master Tape

Subtle tape compression and distortion, modeled after the Ampex ATR-102 we have in our lab, running at 30 ips. High-Fidelity, but smooth and musically pleasing, saturates very nicely.

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.

EchoPlex

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

Space Echo

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 utilizing the 'Feedback' control.

Tube Tape

Modeled after a modern tape echo. Lot's of high mids and distortion.

Cheap Tape

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

Memory Man

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

DM-2

THE guitar echo sound, modeled after the classic Boss DM-2 guitar pedal. Produced from 1981-84, the DM-2 is the quintessential bucket-brigade delay. Warm, resonant, punchy, but clean.

TelRay

Modeled after the Adineko (pronounced "add-an-echo") oil-can delay from 1960s California based manufacturer Tel-Ray (later to become Morley). Operating off a mechanism consisting of a magnetic brush head, a rotating insulated belt around a can, and lots of dielectric oil sloshing about, the Tel-Ray produces a dark and warbling/wavering echo.

Binsonette

Another Soundtoys original. This is a wonderful warbly, compressed echo sound, modeled from several Binson Echo-Rec and Echo-Rec II units in the Soundtoys lab. The Echo-Rec was used most notably by Pink Floyd and is absolutely perfect for guitar and keys.

ECHO STYLES (continued)

Telephone

The narrowband telephone-effect. This is great on vocals as you might imagine.

AM Radio

Models the compressed medium bandwidth of AM radio.

FM Radio

Ultra-compressed and loud sounding, like a morning show DJ.

Shortwave

An exaggerated long-distance radio sound, very narrow and staccato. A cool effect on vocals or generated noises.

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.

Digital Delay

For as much as we wax romantically about the sound of analog, sometimes you do need the hyper-accurate representation digital offers. Here's where this style comes into play. Just clean and clear digital delay.

Analog Delay

Warm and lightly distorted. Very reminiscent of vintage rack mount delay processors of the 1970s-80s.

Digital Chorus

The '80s chorus sound, present and clear but compromised by the limitations of digital processing power in just the right way to allow the chorus effect to play nicely with the source audio.

Analog Chorus

A great all-around warm chorus, great for just about any source.

CE-1 Chorus

The world-famous warm chorus of the 1970s BOSS CE-1 Chorus Ensemble pedal. This is absolutely beautiful on guitar tracks.

Vibrato

True pitch vibrato, great on keys and guitar.

Saturated

Exaggerated tape distortion, well-suited for vocal or drum tracks.

Fat

Super-warm distorted echoes. Fantastic on guitar or any source that would benefit from a thick bed of echo surrounding it.

ECHO STYLES (continued)

Distressed

Highly compressed and distorted echoes.

Limited

This setting has a built-in limiter, great when coupled with high feedback settings.

Distorted

Distortion, and lots of it!

Queeked

An odd but very cool multi-band compression echo, very effect-laden sound.

Ambient

Distortion and diffusion together. Great for long feedback loops and solo instruments.

Diffused

Great for creating ambient reverb-like echo effects.

Splattered

Highly reflective reverb effect.

Verbed

Echo with a cheap verb chaser afterwards, very responsive to the Feedback and Saturation controls.

Additionally, EchoBoy features a Style Editor which allows you to dig even deeper and create your own custom Echo Styles. The Style Editor can be accessed by pressing the Style Edit Button and the controls are covered in depth starting on page 33.

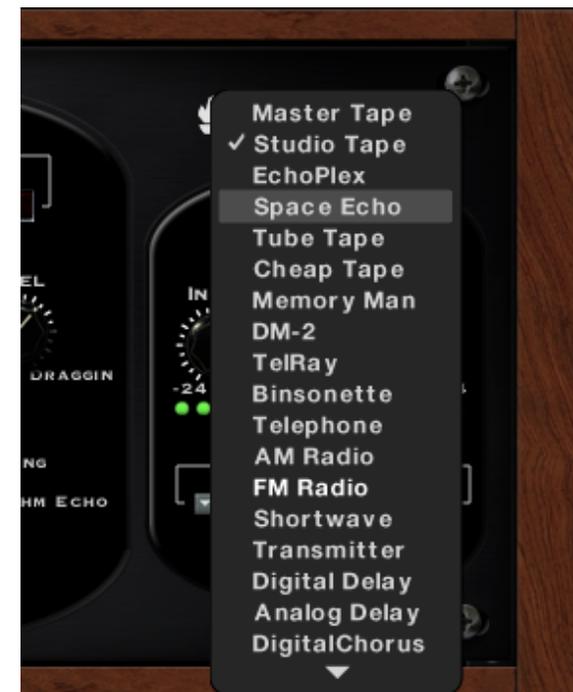


Figure 4: The Echo Style Menu

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 in-line you'll likely want to use Mix to define the balance of dry to delay. If you are using EchoBoy 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!

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 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 significantly, so please be careful when turning up the Feedback knob at high volumes.

PRIME NUMBERS

When the Prime Numbers switch is in the up position, delay repeats are slightly altered in time in a very special way to minimize resonance effects. This is most noticeable in 'Dual Mode or Rhythm Mode. The Prime Numbers switch is especially useful when you are using short delay times with feedback, when chorusing, flanging, or creating reverb-like effects. It keeps the repeating echoes from building up resonance that often occurs when every repeat is at exactly the same time interval.

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.

TWEAK BUTTON

Each Echo Mode found in EchoBoy features an additional, slide-out Tweak Menu giving you access to advanced controls that allow you to completely customize every aspect of your echo effects. Tweak Menu controls are covered in detail with their respective Echo Modes beginning on page 16.

TAP TEMPO

Tap Tempo does what it says; start tapping on the grey button and it will determine the BPM tempo of your tapping. This control is useful not only in determining the tempo for live tracks not recorded to a click track but also for finding the appropriate “feel” for your echoes. Even on material that has been strictly aligned to grid, often times allowing echo effects to deviate from the grid adds a more organic feel to a track.

MIDI TOGGLE SWITCH

When the MIDI Toggle Switch (located below the Tap Tempo display) is in the down (off) position, the rate of echo effects is determined by a manually entered or triggered value. When the MIDI switch is engaged, the incoming MIDI clock takes over as the master rate control.

GROOVE

The Groove control allows you to impart a ‘groove’ feel with EchoBoy in one of two flavors: Shuffle and Swing. Setting the knob straight up at 12 o’clock is the ‘zero’ setting and no Shuffle or Swing feel will be

GROOVE (continued)

imparted on the echo pattern. Groove control adjustments create shift either forwards or backwards to the “even” beats towards a triplet type groove.

As you turn the knob counter-clockwise towards “Shuffle”, an increasing amount of shuffle feel will be added to the echo rhythm. As you turn the knob clockwise from the center “0” setting an increasing amount of swing feel will be imparted on the tremolo sound. The amount of Shuffle or Swing dialed in with the knob will be relative to the currently set Rhythm. Groove settings are imparted on the signal regardless of the type of modulation used, the rate, or the rhythm setting.

FEEL

The Feel knob is similar to the Groove control but in this case shifts your whole delay output in relation to the beat, not just the groove of the pattern. The Feel control is like being able to control how echoes play in relation to the “pocket”; should they relax slightly behind the beat or propel the movement forward, slightly rushing the tempo?

By turning the control counter-clockwise an increasing amount of delay is imparted on both left and right channels before echoes are heard, similar to pre-delay in reverb. We called this one Draggin’ because it has the effect of sliding behind the downbeat. As the control is increased, delay is added the effect will fall further and further behind the downbeat.

On the other end of the spectrum is Rushin’. Instead of sliding the modulation behind the beat it begins to move it ahead of the beat. This is kind of like adding a negative pre-delay. As you turn the knob further towards the maximum value, echoes will be moving increasingly ahead of the beat.

MODE

The Mode Selector switch allows you to change between EchoBoy’s four Echo Modes. When a mode is changed you will notice that the control layout of EchoBoy changes accordingly.



Figure 5: EchoBoy Main Control Panel (Single Echo Mode)

SINGLE ECHO MODE

Single Echo Mode is actually our favorite Mode in EchoBoy to work with. It is simple to use, easy to understand, and capable of creating both classic echo styles as well as customized echoes. Single Echo Mode sounds great on a wide variety of material and contains all the tools needed to fine-tune your echoes to the source material. Single Echo Mode is comprised of all of the common controls we referred to in the last section, but there are two additional elements we will discuss here: the Echo Time control and the slide-out Tweak Menu.

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 below the series of beige colored buttons. You will notice that there are four options listed for those buttons: Time, Note, Dot, and Trip. These options corre-

ECHO TIME (continued)

spond to how the Echo Time is measured. With Time selected, we are measuring 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. The Echo Time control also reacts like in hardware - when you turn the the Echo Time knob in real-time, the pitch will audibly change just like in an old analog delay box. Automating the Echo Time control can result in some very cool pitch slide transition effects.

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. Slap-back echoes are usually in the 100 - 200 millisecond range. The maximum echo time depends on the specific Echo Mode in use.

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 tempo (either user defined or MIDI sync).

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 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. When programming Echo Time using one of the Note settings, EchoBoy will smoothly crossfade to any new note values.



Figure 6: Single Echo Mode Tweak Menu

SINGLE ECHO MODE TWEAK MENU

Single Echo Mode's slide-out Tweak Menu adds three additional parameters to control: Width, L/R Offset, and Accent. All three of these options can very very helpful in fine-tuning your echo effects in relation to the source material.

WIDTH

The Width parameter controls the stereo spread of EchoBoy's output. When set to its minimum value (or off), the delay time for the left and right channel is exactly the same and the delay will appear panned center in the stereo field. As the Width control is turned up, the stereo image will get wider and wider. As this width control is turned past the 3 o'clock position, "out of phase" information is used that can move the delay signal outside the speakers in a pseudo-super-stereo spread. The stereo effect created by EchoBoy is a function of the L/R Offset

parameter described below, and the Diffusion and Wobble parameters, which can be found on the Style Edit page. Suffice it to say that different Echo Styles will have different flavors of stereo imaging. Dialing in a little extra Width with this control can really fatten up the delay signal, creating a fuller and richer effect.

L/R OFFSET

The L/R Offset is also used to control the stereo imaging of EchoBoy, but by adding a small delay difference between left and right channels. This parameter is adjusted in milliseconds, and has a maximum value of 25 ms (default is 8ms). Smaller settings will produce a tighter rhythmic feel, but may introduce phasing effects. Larger settings will tend to produce less phasing problems, but will produce a looser rhythmic feel. In order to hear the effect, the Width control must be turned up.

ACCENT

The Accent knob does for amplitude what the Groove knob does for timing. By turning up the Accent, delay repeats will alternate between louder and softer, producing a more dynamic and musical echo effect.

To hear the effect of the Accent control, turn up the feedback so that you can hear lots of repeats, and choose a note value like 1/8th or 1/16th. The Accent knob is bipolar, so that at 12 o'clock or straight up, the Accent knob has no effect.

As you turn the Accent knob to the right, or clockwise, you will notice that the volume of each repeat will alternate between loud and soft. This will emphasize the 1st, 3rd, 5th, etc. of the echo pattern. This will produce a strongly accented musical feel. Turning the knob in the other direction, or counter-clockwise will have the opposite effect, emphasizing the 'off-the-beat' repeats, resulting in a more syncopated feel. In this case the 2nd, 4th, 6th, etc. will be emphasized, and the repeats that land on the beat will be quieter.

This can add considerable animation and dynamics to repeating delays and is especially cool when the repeats are tempo synced and when you add shuffle or swing with the Groove control on the main Control Panel.



Figure 7: EchoBoy's Main Control Panel in Dual Echo Mode

DUAL ECHO MODE

Dual Echo Mode's controls are similar to that of Single Echo Mode - except that you now get two independent echo channels. The Echo 1 section controls the left channel echo, and the Echo 2 section controls the right channel echo.

So, in Dual Echo Mode you can have one channel free-wheeling (based on time, not Bob Dylan) and not synced to tempo while the other channel is and set to a specific note value of your choosing. This allows you to create all sorts of different creative delay combinations.

Dual Echo Mode is also a wonderful tool for creating very large echo soundscapes as the left and right channels differ.

Keep in mind that the other controls - Feedback, High Cut, Saturation and the like affect both channels the same, regardless of whether the input is mono or stereo.

Dual Echo Mode uses the same controls as Single Echo Mode but with the addition of a second Echo Time control. Echo 1 and 2's operation is identical to that of the previously described Echo Time control (pg. 16).



Figure 8: Dual Echo Mode Tweak Menu

DUAL ECHO MODE TWEAK MENU

Dual Echo Mode's slide-out Tweak Menu builds upon the features found in the Single Echo Mode Tweak Menu, but adds in controls for the balance between delay lines, individual Accent controls, as well as Feedback parameters.

BALANCE

The Balance control is very simple: it gives you control over the relative loudness of the left and right channels. Turn the knob to the left to make the left channel louder. Turn it to the right to make the Right channel louder.

WIDTH / L/R OFFSET

These two controls operate in the same manner as in Single Echo Mode. They are described in detail back on page 18.

ACCENT 1 / ACCENT 2

Just like in Single Echo Mode, by turning up the Accent control, delay repeats will alternate between louder and softer, producing a more dynamic and musical echo effect. The Accent knob is bipolar, so that at 12 o'clock or straight up, the Accent knob has no effect.

As you turn the Accent knob to the right you will notice that the volume of each repeat will alternate between loud and soft. This will emphasize the 1st, 3rd, 5th, etc. of the echo pattern. This will produce a strongly accented musical feel. Turning the knob in the other direction, or counter-clockwise will have the opposite effect, emphasizing the 'off-the-beat'

ACCENT 1 / ACCENT 2 (continued)

repeats, resulting in a more syncopated feel. In this case the 2nd, 4th, 6th, etc. will be emphasized, and the repeats that land on the beat will be quieter.

This can add considerable animation and dynamics to repeating delays and is especially cool when the repeats are tempo synced and when you add shuffle or swing with the Groove control on the main Control Panel.

FB MIX

Normally, the two echo channels in Dual Echo mode are completely independent. The Feedback Mix control allows some of the output of Echo 1 to feedback into Echo2, and vice-versa. As you increase the value of the Feedback Mix knob, an increasing amount of Echo 1 will be fed into Echo 2 and an increasing amount of Echo 2 is fed into Echo 1.

At the zero position (12 o'clock), equal amounts of Echo 1 and Echo 2 will be fed into both channels. This is a great way to get dense, reverb-like echo sounds. At the maximum setting, Echo 1 will get all of its feedback from Echo 2, and vice-versa. This is referred to as "cross" mixing and provides for some really unique cross-pollinated and syncopated delay sounds, depending on the settings for the two Echo channels.

Keep in mind that the front panel Feedback knob has to be turned up some to hear the effect of FB Mix.

FB BAL

Turning up the Feedback knob in Dual Echo Mode will normally affect Echo 1 and Echo 2 equally. To get more feedback in the right channel, turn the FB Bal (Feedback Balance) control to the right (clockwise). To get more feedback in the left channel, turn the knob to the left (counter-clockwise).

This can be especially useful when Echo 1 and Echo 2 are set to different times, as the feedback of one side may "appear" louder than the other side. This control allows you better tailor and adjust the balance and stereo image of the echo feedback. Like the Feedback Mix control, this knob will only have an effect when the front panel Feedback knob has been turned up.



Figure 9: EchoBoy's Main Control Panel in Ping-Pong Echo Mode

PING PONG ECHO MODE

Ping Pong mode is used to create an Echo that bounces back and forth between the left and right output channels. The control panel is nearly identical to the Dual Echo mode, however the effect is very different.

It is important to keep in mind that the initial echo will ALWAYS appear in the left "Ping" channel with the initial repeat determined by the echo time set for Ping, be it in milliseconds or notes. The second echo will always appear in the right "Pong" channel and it only appears based on the "Ping" time PLUS the "Pong" time.

Even if the Pong delay time is set *shorter* than Ping, you will always hear Ping *first* and then Pong.

As you turn up the Feedback control things can get really interesting as each successive repeat is predicated on the other side being heard. So, let's say Ping is 500 ms and Pong is 250 ms. If you play a note you will hear Ping 500 ms later, Pong 750 ms later (Ping + Pong) and Ping again at 1250 ms (Ping+Pong+Ping) then Pong again at 1500 ms (Ping + Pong + Ping + Pong) and so on and so on. So the delay repeats are relative to each other with each repeat of Ping showing up in the left channel and

PING PONG ECHO MODE (continued)

each Pong repeat showing up in the right channel, but only AFTER the other has been heard. However, keep in mind that the other controls - Feedback, High Cut, Saturation and the like DO affect both channels the same, regardless of whether the input is mono or stereo.

You can get some truly wild results when Ping or Pong is set to a specific Note value with MIDI sync but the opposite is set to milliseconds. Setting both Ping and Pong to note values and syncing to MIDI clock can provide for some fantastically rhythmic delays.

Again keep in mind that Ping Pong is always stereo out, but that the input is always summed to Mono. This is true regardless of whether you are running on a mono or stereo insert.

PING PONG ECHO MODE TWEAK MENU

Well, while Ping Pong Mode may take a bit of explaining the Tweak Menu is pretty straight forward comparatively. The Tweak Menu in this Mode consists of just two controls: Width and Balance.

As previously described in the Single Echo Mode Tweak Menu (page 18) Width controls the stereo spread of EchoBoy's output. When set to the minimum, delays will appear panned center in the stereo field. As the Width control is turned up, the stereo image will get wider and wider. Once turned past the 3 o'clock position, "out of phase" information is used to create a "beyond the speakers" effect.

The Balance control also operates as in previously discussed modes, controlling the relative loudness of the left and right channels. Turn the knob to the left to make the left channel louder. Turn it to the right to make the right channel louder, it's that easy!



Figure 10: Ping-Pong Mode's Tweak Menu - Easy!



Figure 11: EchoBoy's Main Control Panel in Rhythm Echo Mode

RHYTHM ECHO MODE

Rhythm Echo Mode is where things really get interesting! In this mode, you can have up to sixteen echo outputs (also commonly referred to as taps), programmable in nearly any conceivable rhythm. This is analogous to having a tape echo with sixteen read heads.

EchoBoy's Rhythm Echo Mode is designed in a way to allow you to achieve some very cool results with a minimum amount of knob turning and tweaking. You can quickly create echo patterns with various time bases, numbers of repeats, and envelope shapes, which may

feel different at first if you have spent a lot of time with other, more traditional multi-tap delays. So let's get started with a primer on Rhythm Echo Mode's basics.

WORKING IN RHYTHM ECHO MODE

EchoBoy's Rhythm Mode is a lot like a pattern-based drum machine for echo, with each 'hit' corresponding to a discrete echo. You'll notice that

WORKING IN RHYTHM ECHO MODE (continued)

in Rhythm Echo Mode a new Rhythm Editor window appears between the Low and High Cut knobs. Using this Rhythm Editor, you can place echoes at any location on the grid (echoes will appear as bright green vertical bars), creating patterns for EchoBoy to play out. Echoes furthest to the left will be heard first, and echoes to the right will be heard last. The volume of each echo is represented by the height of each green echo bar. Taller echoes will be louder, and shorter echoes will be quieter. Turning up the feedback control will cause the pattern to repeat (and can even be driven into self-oscillation). Patterns can also be synced to MIDI for generating tempo-locked delay patterns.

You'll notice one more addition to the control panel besides the big Rhythm Editor grid; there's now an additional button labeled "PATT" allowing you to recall or save customized rhythm patterns. Soundtoys rhythm patterns can be shared between any Soundtoys plug-in with a rhythm mode.

The Rhythm Editor grid represents the full length of the echo pattern meaning you will only hear repeats that are visible on this display (by default 2 beats long). To make the echo pattern longer or shorter, you can adjust the pattern length in the Tweak Menu (which we will discuss starting on page 31).

SHAPE

The Shape control is exclusive to Rhythm Echo Mode and allows you to apply various amplitude shapes across all the echoes on the screen, providing a quick and easy way to manipulate the echo level. The Shape knob determines how much of the selected volume shape will be applied to the taps in the pattern.

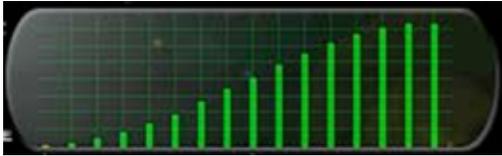
Shapes can be browsed using the LCD display with the small up/down arrows or selected from a menu using the larger down arrow on the right of the display. The choices available are:



Decay

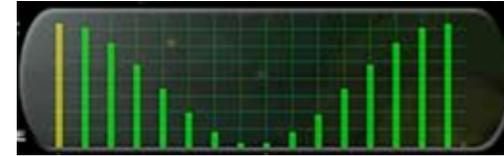
Successive echoes get progressively lower in volume moving from left to right. This is used to create a 'natural' echo decay pattern, and can be useful for creating reverb-like sounds.

SHAPE (continued)



Reverse

The opposite of Decay. Progressive echoes get louder. This is an often used effect, and can be used to make those classic '80s backwards echo sounds.



Fade

The opposite of Swell where the taps start loud and have a dip in the middle of the pattern.



Swell

The echo starts out low in volume, gets louder in the middle, and gets quieter again. Useful for rhythmic delays.



NonLin

A semi-random "cluster" pattern with multiple minor peaks and valleys. This is patterned after another '80s classic - the NonLinear setting from the high-end AMS RMX16 digital reverb box.

CREATING CUSTOM RHYTHM PATTERNS

The Rhythm Editor gives you a graphical view of each of the echoes, as well as a means of tweaking each individual echo. Simply click inside the grid window to set and adjust any of the (up to) 16 individual echoes (you can also option-click and command-click). Keep in mind the following while editing:

- Only the echoes that you can see in the window are the ones that you will hear.
- Each echo can be adjusted in two ways: time/placement and volume. Where it appears on the grid determines its “time” within a pattern and its “height” determines its volume. The taller the bar, the louder the echo.
- You cannot have two echoes at exactly the same place / time. If you try to move one of the echoes to a location where another tap already exists, EchoBoy will automatically move the echo back to its original location when you let go. EchoBoy will also not allow you to create two echoes in the same location as an existing one.
- Use the Feedback control to repeat full patterns, use the Repeats control to define the number of individual echoes that will repeat.

ADDING / DELETING AN ECHO

To create a new echo (taking into consideration that all 16 echoes are not yet on the screen), simply click in the Rhythm Editor window. A new green bar will appear where ever you happen to click and the bar will automatically be placed on the nearest vertical grid line.

To delete an echo, press and hold the Option key and then click on one of the existing delay taps which will remove it.

ADJUST ECHO VOLUME / MOVING AN ECHO

If you click on an echo and hold the mouse down you can move the echo anywhere on the grid. You’ll notice that the echo will always jump to one of the grid lines. Keep in mind that you can select a finer grid like 1/32nd to adjust the location of the echoes in a more precise manner.

To adjust an echo’s volume, simply click on a echo and drag the cursor up or down and the bar will get longer or shorter depending on which direction you drag. Higher is louder and lower is softer.

ADJUSTING AN ECHO BETWEEN GRID LINES

Now, there just might be times when you'd want to place an echo in between the grid lines and NOT have it quantized at all, not even down to a 1/64th note. No problem! Just press and hold the command key (Shift key for Windows) and then click on an echo. You can now move the echo anywhere you like forward or backward on the grid and between the grid lines to get the echo exactly where you might like.

You will also notice that two sets of numbers appear next to the echo. The top set of numbers displays the location in fractions of a beat and the bottom number reads out the actual volume of the echo in dB. This allows you to set the echoes in front of or behind the beat in very precise locations.

THE "ONE" ECHO

Well, by now you probably noticed that the first tap in your pattern is yellow instead of green. So why is that?

We call this echo the "One". Any echo placed exactly at beat one (or 0 milliseconds in time mode) will appear this way. It will also NOT be heard unless the Feedback is turned up. If there is no Feedback, the "One" is the note that YOU play, which is the dry signal. The first echo to be heard in this case is actually the second echo in the pattern.

However, if you turn up the feedback the whole pattern WILL repeat and therefore the "One" WILL be heard as the pattern restarts on the "One". If you move it in time so that it is not at the start of the pattern, its color will change to green, indicating that it is no longer the "One", and you will now hear it as a discrete echo. If you don't want to hear the tap simply delete it or lower its volume. Note that if you do delete the "One" echo you can always restore it simply by clicking on the left edge of the grid.

SAVING ECHO PATTERNS

Once you've created an echo pattern that you really love, you can save the pattern by pressing the down triangle on the right side of the LCD menu display.

Select "Save", enter a name for your pattern and press "OK". Your custom pattern was just saved and will now appear in the preset list.

REPEATS

The Repeats control is used to define how many individual echo repeats you will hear, and is a very powerful control. You can select the number of repeats by turning the knob or by using the nudge buttons on the left side of the associated LCD display.

If you turn the number number of Repeats down below the number of echoes already shown in the Rhythm Editor, any echoes above that newly selected value will go away, and you will no longer hear them. Increasing the value of the Repeats control will cause those echoes to re-appear and be heard. If you increase the number of echoes, EchoBoy will automatically place a new tap at the next logical location based on the selected grid value.

While In Rhythm Echo Mode, specific numbers of echo repeats can be dialed in using the Repeats knob instead of using the Feedback control. This allows for control of both the volume level and the exact timing of each echo, giving you much more creative power.

So, to hear exactly four repeats at 1/16th intervals, dial in a note value of 1/16th, and set the Repeats knob to 4. You will see four green bars appear on the display, one for each echo repeat. For more or less repeats, simply adjust the Repeats value. Selecting the Dot/Trip buttons will create an echo pattern based on dotted or triplet notes. Selecting the 'Time' button will create an echo pattern in milliseconds (and you'll hear that cool analog pitch shift effect when adjusting the delay).

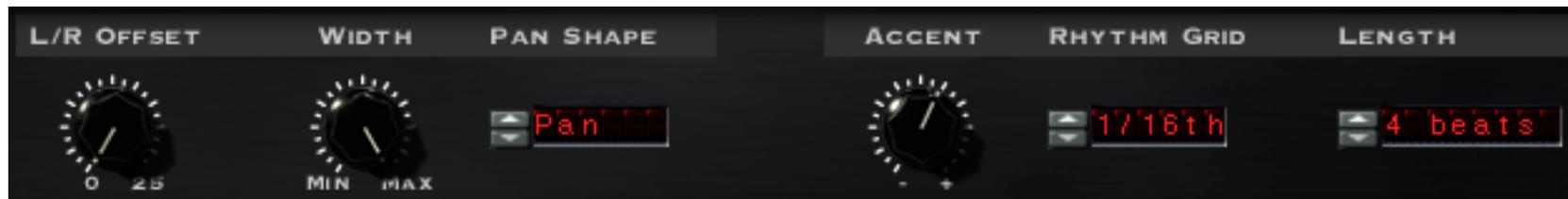


Figure 12: Rhythm Echo Mode's Tweak Menu

RHYTHM ECHO MODE TWEAK MENU

Rhythm Echo Mode's slide-out Tweak Menu adds new pattern specific tweaks along with some of the controls we have seen previously like L/R Offset and Width. If you need a refresher on these two controls, head on back to page 19.

PAN SHAPE

The Pan Shape LCD menu allows you to select from a number of preset Pan shapes for the echoes (or taps). The options are: Double, Center, Alt 1,2,3, Sweep L, Sweep R and Pan. Each of these patterns pan the taps into different preset positions and you'll hear the variations clearly when you move through the patterns. When the "Double" pan shape is selected, the number of taps is cut in half, from 16 to 8, and each tap becomes a stereo output, with independent modulation. This shape is amazing for creating really meaty, thick, rich chorus effects.

ACCENT / WARP

The Accent control works like in previous modes (page 19), allowing delay repeats to alternate between louder and softer, depending on the control's setting. The Accent control places emphasis on even taps when set to the right and odd taps when set to the left. When the "Time" button is selected the Accent control changes to "Warp": a completely different (and very unique) effect.

Warp creates a variable "time bias" or "time clustering" effect and moves/clusters all the taps in tandem towards the beginning of the pattern when turned to the left or towards the end of the pattern when turned to the right. You'll see how it changes the taps on-screen as you adjust the Warp control. Warp can be really useful along with the Shape control to create bouncing delay and robotic effects.

RHYTHM GRID

The Rhythm Grid selection menu makes it easy to change the scale of the Rhythm Editor grid without affecting echoes that are already in place. In other words this allows you to change the grid value (such as 1/32 notes) without it changing your previously placed 1/16 note pattern. The finer the setting of the Grid, the more precision you have in placing echoes.

However, any adjustments to previously placed echoes or newly created echoes *will* align to the new grid value.

LENGTH

This menu allows you to determine the overall length of the rhythm pattern from between 1 and 8 “beats”.

If you think of the pattern length as a musical measure, the number here defines how many beats there are per measure. For example, if you select “3 Beats” the pattern will repeat every third beat. This is like playing in 3/4 time. If you select “4 Beats” the pattern will be 4 beats long and it is like playing in 4/4 time, as it will take 4 “beats” to complete the pattern.



Figure 13: EchoBoy's Style Editor

THE STYLE EDITOR

The Style Editor is an extremely powerful and detailed tool; in fact, these control parameters were used to create the included style presets. The Style Editor allows you to create custom styles with just as much character as ours. Clicking on the Style Edit button in the main Control Panel (underneath the Style Menu and Input/Output controls) opens up the menu you see above (Figure 13).

EQ

The Style Edit Menu includes an extensive and versatile 3-band EQ section in the Style Edit menu that provides the means to truly tailor the overall tone and frequency content of the delays in both standard and unique ways.

There are three EQ sections: Low, Mid, and High. The High and Low EQ's are gentle shelving filters while the Mid EQ is a one band semi-parametric EQ. The EQ section affects both left and right channels of the delay and does not change the input signal.

GAIN / DECAY

The Gain and Decay controls make the EQ section truly dynamic. The Gain control is fairly self explanatory and serves as a boost or cut for the initial delay relating to the corresponding part of the frequency spectrum (Low, Mid, or High).

The Decay knob controls how the tone of the echo changes with successive echo repeats.

It is important to note that to hear the affect of the Decay parameter you need to have Feedback turned up. By setting the High Decay to a negative value (cut), successive echo repeats will get darker and darker. If High Decay is set to a positive value (boost), successive repeats will get brighter. The same applies to the Low and Mid bands.

This allows you to create subtle or radical dynamic tonal changes. For instance, you can have the high frequency dull progressively with each repeat, the mid section getting quickly more pronounced and the low end trailing off rapidly. Or, any one of a million different variations either positive or negative for each EQ band. A couple of things to keep in mind:

- You can set the direction and degree of change for each of the three bands independently and each will respond independently of the other bands.

- Decay can either increase or decrease the EQ depending on the direction of the control. Turning the Decay to the left will “EQ Out” whereas turning the knob to the right will boost the frequencies with each successive repeat.

- The Gain knob defines how the initial delay repeat will sound and the Decay knob defines what will happen with each subsequent repeat. So for instance, it is possible to set the High EQ Gain negative so the first repeat will sound dull and at the same time set the Decay control positive. This will cause each successive repeat to get brighter - or you could do the opposite. The same holds true for each of the other bands and the total effect is a combination of the Frequency, Gain, and Decay for all three EQ bands.

- The higher you set the Decay, the greater the increase/decrease in the EQ with each successive delay repeat. You can set it low with a lot of feedback so each repeat will just get a little brighter, or you could have medium Feedback and set the decay value higher (either direction) which will cause more significant and pronounced jumps in the EQ with each repeat.

These controls are invaluable when trying to mimic the frequency response change that occurs in various types of delay devices (tape, analog, digital etc). The changes can be very subtle or highly radical depending on how the various controls are set.

DIFFUSION

Diffusion is a common parameter found in reverbs that imparts a kind of “smear” and adds density to the reverb signal. It is what makes reverb sound dense and thick. The Diffusion parameter in EchoBoy is similar.

Each time the echo goes through the diffusion filter it becomes less distinct: a blurry or smeared sound. Higher control settings result in increased diffusion of sound. With short echo times, this can give you a kind of room reverb effect where the individual repeats meld into a cluster of short diffused and smeared delays.

At longer Echo Time settings, (and with feedback turned up) the diffused delays can create a kind of plate or hall reverb effect. When in Dual, Ping Pong, or Rhythm Mode the effect will sound more dense as you have more than one delay being diffused and each delay can be set to a different time.

While the Diffusion Amount control will soften echoes, it can at the same time, cause increased resonance. This is similar to the sound you get when you turn up the feedback on a Flanger; it will sound metallic and robot-like. Moderation will be needed to strike a balance between trying to impart a realistic reverb sound but keeping it from becoming too resonant and artificial sounding.

The resulting sound is also highly dependent on the setting of the

diffusion Size control, the Loop/Post Switch setting, the Echo Time setting, and the amount of echo Feedback - they are all highly interactive.

SIZE

The Size control adjusts the character of the diffusion effect. Smaller settings will produce more subtle diffusion effects, and even phasing at extremely small settings. Larger settings can produce more reverb-like effects. The best setting for the Size control will vary depending on your source material. You may find settings that sound really great with percussive input are just no good with sustained musical sounds, for example.

LOOP / POST SWITCH

The Loop/Post Switch defines where in the echo path the Diffusion filters are placed. In the down or “Post” position the echoes are diffused at the the end of the signal chain, and each echo repeat is equally diffused. In the up or “Loop” position, the diffusion is moved into the feedback loop of the echo, and each successive repeat will become increasingly diffused.

WOBBLE

We love the Wobble control, and know you will too! This parameter adds a 'vari-speed' effect to the echo - kind of like the wow from tape recorders and tape echo machines. This allows you to add a highly analog feel and unpredictability to repeating delay/echo sounds, as well as create some great chorus effects. These effects can range from subtle to radical. The main Wobble depth control defines how much pitch 'wobble' will be applied to the echo. At full counter clockwise, the wobble is off. As you turn up the control, you will hear greater amounts of pitch variation. At higher settings you will hear extreme modulation which will mangle and warp the sound in some wild and wonderful ways.

WOBBLE RATE

The Wobble Rate knob controls the speed of the Wobble pitch variation. At lower settings, the pitch will change (or wobble) slowly, and at higher settings the pitch will change rapidly. The wobble rate is best tuned to suit your taste and mood. The Wobble-related controls provide the means to add a significant amount of animation and "analog-ness" to the delay sounds allowing you to re-create the non-linearities and anomalies present in early delay devices.

WOBBLE SHAPE

You can also tweak the 'shape' of the wobble effect, using the LCD -style menu below the Rate and Sync knobs. Different shapes will produce different results, as follows:

Triangle - The pitch will ramp up and down repetitively.

Sine - Similar to the above, except smoother.

Square - Pitch will bounce between two values.

Random Walk - The pitch smoothly ramps between random values.

Random S/H - Pitch abruptly jumps from random value to random value. A sample and hold effect.

Both Random Walk and Random S/H are useful when you are looking to impart some analog feel and random modulation to your delay sound. With slow speeds and low Wobble depth you can re-create some of the sauntering randomness inherent in many vintage tape based delay units.

FB / OUT TOGGLE SWITCHES

The FB (Feedback) and Out toggle switches are used to select what parts of the signal receive the wobble effect.

With the FB switch engaged (in the up position with the LED indicator illuminated) wobble modulation is applied to both the initial echo as well as any echoes resulting from the Feedback control on the Main Control Panel.

The Out switch, when engaged, will apply the wobble modulation to the wet signal, leaving the dry unaffected. This can generate some truly wild results when set at higher levels, producing very resonant and pronounced effects.

SYNC

We know that the Wobble section has the capability to modulate the pitch of every echo path independently. What the Sync knob determines is if the various echo paths are all aligned and modulating in the same way (rate or phase) or not, depending on which way you turn the knob.

With the Sync control set at 12 o'clock the phase and rate of all the echo pitch variations will be identical for both left and right channels and for the feedback paths. As you turn the Sync knob to the left or counter-clockwise, the pitch variation will get more and more out of sync, with different echo paths wobbling at different rates.

Turning the knob to the right (clockwise), will leave the wobbling in sync, but will put the pitch variation out-of-phase for various echo paths. This means that when the right channel is being pitched up, the left will be pitched down.

Both types of modulation deviation are highly useful and can provide for some really great, rich sounding choruses, flanges and of course modulated delays. When using one of the random waveforms as described above, you can impart both subtle and radical random modulation to the EchoBoy delays and with careful tweaking it is likely that you will be able to recreate vintage sounds as well as craft new custom styles tailored specifically to your projects.

SATURATION

The Tweak Menu's saturation controls work in conjunction with the Saturation knob found on the main Control Panel. These two knobs allow saturation to be dialed in for either the just delay (the Decay Sat control) or for the total overall signal (the Out Sat control) independently. Saturation can add presence, fatness, definition, warmth and character to your echoes and can help them sit in the mix in a less (or more) obvious way.

Below both controls is an LCD-style menu defining the type of saturation - options are:

Clean - Well, a clean sound, with some limiting as saturation or levels are turned up.

Tape - High frequency compression and low-end distortion typical of high quality tape.

Warm - A more dramatic warm distortion.

Pump - A dramatic popping, pumping limiter effect.

Dirt - Grungy and dirty, a little harder edged.

Hard Limit - Hard limiting, will pump if you hit it hard.

Soft Limit - A fairly smooth limiter.

Warm Limit - Smooth and warm as you turn up the saturation and levels.

Bright Limit - A bright-sounding limiter that will enhance air and breathiness.

Note: If you are creating your own style preset be sure to set the front panel saturation knob to the default setting (12 o'clock, or straight up), and adjust the saturation levels using the controls found in the Tweak Menu.

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

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