PIGTRONIX™

Echolution 2 / Echolution 2 Deluxe

User's Guide

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Pigtronix Echolution 2 represents a unique marriage of analog tone shaping and DSP processing designed to deliver the ultimate delay pedal experience. Echolution 2 achieves the ambient richness of the finest tape echo units by using 100% analog Class-A, discrete transistor limiters as well as non-linear tape emulator stages and filters to massage the audio coming through the delay line. Fully capable of handling instrument and line level sound sources, the Echolution 2 delivers low-noise, high-headroom delay processing with any amp, mixer or DAW rig.

Echolution 2 uses a 24-bit, variable clock, multi-tap delay line where both the read and write heads are simultaneously modulated by a multi-waveform LFO. Changing the delay time results in the smooth pitch bending of an analog delay system but with a Pigtronix twist that allows drastic delay time changes to create musically related octave intervals. The resulting echoes are then processed through an array of filters and special effects, which can be manipulated via assignable expression pedal routing as well as envelope control for each knob. Every feature and algorithm on the E2 can be run simultaneously, in any combination, and all functions of the Echolution 2 are MIDI controllable.

Accessing and navigating the vast palette of sounds available within the Echolution 2 is easy. Since the pedal is completely programmable, any sound that has been designed using the Echolution 2 or Echolution 2 Deluxe pedal can be saved to the unit itself and exported for sharing with friends and other musicians. A dedicated PC/MAC application handles preset management as well as firmware upgrades and also provides Echolution 2 users with real time access to the sounds and advanced editing functionality of the Echolution 2 Deluxe. Please take a moment to download this application from: www.pigtronix.com/E2application.

Jacks

Power - 18VDC (2.1mm neg. tip) *100mA or higher is required.*

Input 1 - Connect instrument here
Input 2 - Connect instrument here

Note: When only one of the two audio inputs is connected, that single input will be processed in stereo.

Output 1 - Connect amplifier, mixer, DAW here
Output 2 - Connect amplifier, mixer, DAW here

MIDI IN - Accepts MIDI preset change, MIDI CC inputs (see MIDI map) for all functions as well as MIDI beat clock to set the delay time. When a MIDI signal is present, the red MIDI LED in the upper left corner will illuminate.

EXP - TRS expression pedal goes here. Use a low-impedance foot controller.
(Wiper = tip, Toe = ring, Heel = Sleeve.)

REMOTE - E2R or compatible TRS momentary remote switch goes here.
Jump = tip, Freeze = ring, Common = Sleeve

MIDI OUT - Sends out MIDI beat clock that is exactly 4x the value of the current delay time setting.

Footswitches

Tap Tempo (Preset) - Tap on this switch to set the delay time. When a new delay time is set by the Tap Tempo switch, it will override the manual delay time knob.

A LONG PRESS of the Tap Tempo switch enters PRESET SELECT mode. Once you have entered the PRESET SELECT mode, the green preset digit will blink. A SHORT PRESS on the tap tempo switch will move up one preset and a LONG PRESS will move down one preset. Once the desired preset is queued, pressing the ENGAGE foot switch will activate it.

During the preset select process, the previously chosen preset remains active. The newly selected preset is not actually loaded until you press the Engage footswitch.

Engage - Turns the effect on and off.

The engage footswitch is also used to load presets once you have entered PRESET SELECT mode. When the Engage switch is used to load a preset, the bypass status of the effect will not change.

Factory Reset
Holding down both footswitches during power up will result in a factory reset, restoring all 60 original Echolution 2 presets.

WARNING: *Performing a factory reset will erase all custom preset data stored to the Echolution 2.*

Knobs

REPEATS - Sets the amount of feedback in the delay line.

TIME - Sets the delay time within the current delay time range setting. When the time knob is turned, it takes over from the tap tempo within the delay time range as set by the last tap tempo value.

MIX - Sets the audio output level of the delay line.

SPEED - Sets the LFO speed.

DEPTH - Sets the amount of LFO modulation that is fed to the delay line.

Presets

The **PRESET** knob is a rotary push button encoder that facilitates saving and loading of presets. A complete list of all 60 default presets can be found at the end of this manual.

On power up, the unit will load preset 0 in Bank 0. Turning the preset encoder clockwise scrolls through preset numbers 1-9 in Bank 0. Going beyond preset 9 in Bank 0 takes you into preset 0-9 of Bank 1 and so forth. The current Bank is indicated by the upper right light bar, where no lights indicates Bank 0, one light indicates Bank 1, two lights indicates Bank 2 etc…

Preset Loading
To Load a preset, turn the preset knob to select the desired number, the digit will flash. When you have arrived at the desired destination, push down the preset knob to load that preset.

Preset Saving
To Save a preset you have created, push and HOLD the preset knob for 1 second, until the digit begins flashing. Turn the preset knob to select the preset number where you want to save the sound and then push down and HOLD the preset knob for 1 second to finalize the save.

The decimal point will illuminate to indicate that preset is present in any given number/bank. When changes have been made but not saved, the decimal point will flash. If you want to keep your changes, simply follow the save process explained above without changing the selected bank.

Preset Copy
To Copy a preset from one bank to another simply initiate the save process as explained above and save to any slot you wish.

Preset Select using the on-board Footswitches
Hold TAP TEMPO to enter PRESET SELECT mode. The preset digit will begin blinking. A SHORT PRESS on the Tap Tempo switch moves up one preset. A LONG PRESS moves down one preset. Pressing ENGAGE activates the chosen preset. When pressing the ENGAGE switch to activate a new preset, the BYPASS status will not change.

E2R Remote Switch

Preset Load using the optional E2R Remote Switch

SHORT PRESS on the left footswitch of the E2R will instantly load preset 1 in the current bank.

SHORT PRESS on the left footswitch again will instantly load preset 2 in the current bank.

LONG PRESS on the left footswitch moves up one bank (indicated by upper right light bar).

SHORT PRESS on the right footswitch of the E2R will instantly load preset 3 in the current bank.

SHORT PRESS on the right footswitch again will instantly load preset 4 in the current bank.

LONG PRESS on the right footswitch moves down bank (indicated by upper right light bar).

The Echolution 2 remote switch port can be set up to work in two different ways. When it is shipped from the factory, the Echolution 2 is programmed so that the Remote instantly switches between the top four presets in each bank as detailed above, regardless of the ENGAGE status.

To enable the JUMP and FREEZE functions of the Remote, power up the Echolution 2 pedal while holding the TAP TEMPO footswitch.

When JUMP and FREEZE are enabled, the E2R remote will only allow you to switch between presets instantly while the Echolution 2 is bypassed.

Once the JUMP and FREEZE remote functions are enabled, the Echolution 2 will remember this preference after it is powered down. To disable JUMP and FREEZE and restore the preference for instant preset access, simply power up the Echolution 2 while holding the TAP TEMPO switch.

Touch Switches

The only difference between the Echolution and Echolution 2 Deluxe is the presence of 8 touch switches and 30 LEDs on the deluxe model. The features controlled by the touch switches found on the Echolution 2 Deluxe can be accessed using the standard model of the Echolution 2 via the PC/MAC Application.

Filter

SHORT PRESS cycles between:

LP (Low Pass Filter)
TAPE (Analog Tape emulator)
COMB (All Pass Comb Filter)
SWEEP (Resonant Sweep)
LP + SWEEP
TAPE + SWEEP
COMB + SWEEP
NO FILTER

When SWEEP is active, the filters are swept at a rate determined by the LFO SPEED knob. Try using the LFO SYNC to TAP function for some incredible synchronized delay / filter effects.

LONG PRESS turns on the CRUSH filter. This is a proprietary bitcrusher/destruction filter that smashes the audio in the delay line according to how loud the input signal is.

Multi-Taps

SHORT PRESS cycles through all available options:

1 - delay output matches the tap tempo / delay time
¾ - delay output is ¾ of the tap tempo / delay time value
⅔ - delay output is ⅔ of the tap tempo / delay time value
½ - delay output is ½ of the tap tempo / delay time value
PHI - delay output is 0.382 of the tap tempo / delay time value... this signature feature creates rhythmic echo patterns based on the mathematics of the Golden Ratio.

LONG PRESS 'locks' the currently selected tap option and adds a second tap. The locked tap remains at the previously chosen value and the second tap will now move with each SHORT PRESS, cycling through the available remaining options.

When two taps are active a LONG PRESS gets rid of the second tap and 'unlocks' the first tap.

Delay Line i/o
UPPER BUTTON

SHORT PRESS cycles between:

TRAILS - old echos "spill over" after bypass for smooth transitions.

LISTEN - echo material is recorded (although not heard) while in bypass.

NORMAL- normal bypass (no LEDs lit up).

LONG PRESS turns on DRY KILL - this cuts out the analog clean signal from the mix. DRY KILL is useful for special effects or when using a parallel effects loop on an amp or when adding delay to a full mix.

Delay Line Special Functions
LOWER BUTTON

SHORT PRESS turns on REVERSE

LONG PRESS turns on DUCK

LFO Waveforms

SHORT PRESS cycles between:

Triangle
Square
Ramp
Random (Sample & Hold)
Super Triangle
Super Square
Super Ramp
Super Random

The "Super" version of each waveform has 4 additional LFOs superimposed onto the original LFO waveform.

LONG PRESS turns on LFO SYNC - this synchronizes the LFO to the Delay Time as set by the delay time knob, tap tempo or MIDI beat clock. When LFO Sync is turned on, the LFO SPEED knob determines the LFO Speed to Delay Time ratio with minimum being 1:4 and maximum being 4:1 for six possible values (1:4, 1:3, 1:2, 2:1, 3:1, 4:1)

Expression Control

SHORT PRESS cycles between EXP control of:

R - Delay Repeats
T - Delay Time
M - Delay Mix
S - LFO speed
D - LFO depth

LONG PRESS turns on ENV MAP to EXP - this sums the internal envelope follower with the current expression pedal or on-board knob value for the chosen parameter, allowing touch sensitive control over every knob.

When using the ENV MAP to EXP function, the position of the expression pedal or onboard knob will be summed with the envelope voltage.

Delay Time Ranges
UPPER BUTTON
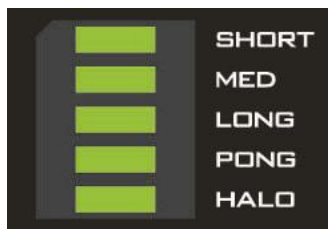
SHORT PRESS cycles between:

Short - 10ms → 100ms
Medium - 100ms → 1sec
Long - 1sec → 10sec.

LONG PRESS turns OFF the delay line. This allows the filters and modulation sections to be used with no delay.

Special Effects
LOWER BUTTON

SHORT PRESS turns on PING PONG. With one tap running, the echo bounces from left to right. With two taps running, each tap is assigned to one side and they swap sides on every repeat. We recommend that PING PONG be used only when both outputs are used in stereo.

LONG PRESS turn on HALO. This causes the echoes to cascade up in octaves on each repeat.

Factory Presets List

BANK #0 - Echolution 2 Core Sounds
0) Echolution 2 Basic
1) Tape Slap
2) Dotted Eigth Mod
3) Golden Stereo Wash
4) Sample and Hold
5) Halo Sync
6) Angels
7) DUB WARS
8) hey you... DUCK
9) tape REVERSE

BANK #1 - Echolution 2 Signature Sounds
10) Dark Mod Delay
11) Tape Warble
12) Comb Filter
13) Sync Sweep Filter
14) LP Sweep Sync
15) Stereo Tape Sweep
16) Comb Saw Sweep
17) 4 Lou (Reed)
18) Loveless Heart
19) Stereo Strobe

BANK #2 - Classic Delays

20) Memory Mod Delay
21) PCM42 Sq. Mod
22) Space Echo
23) 2290 Duck Pong
24) DL4 Sweep
25) SDD3000
26) Big Green Analogue
27) Echoplex
28) Shimmer
29) Crystal

BANK #3 - Modulation Effects

30) Super LFO Chorus
31) DynaFlanger
32) Doubler
33) Dimension Chorus
34) Vibrato
35) Flanger
36) ResoFlange
37) Sweeper Mod
38) Envelope Rotary Chirp
39) Halo Chorus Sweep

BANK #4 - Special Effects

40) LP Halo
41) Stereo Halo Sweep
42) Swell
43) Pure Crush
44) DynaCrush
45) Acid Head
46) LFO Low Pass
47) Phaser
48) Feedback Synth
49) ResoSynth

BANK #5 - Multi-Tap Rhythms

50) 1 + 3/4
51) 1 +2/3
52) 1 + PHI
53) 3/4 + 2/3
54) 3/4 + 1/2
55) 1/2 + PHI
56) 1 + 1/2 PONG
57) 1 + 3/4 PONG
58) 1/2 + PHI PONG
59) 1 + PHI PONG

MIDI

Every function of the Echolution 2 can be controlled via MIDI.

Setting the E2 MIDI Channel:

1. Power up the E2 while holding the LFO button down.
2. Once the E2 has booted up, release the button.
3. Make your MIDI controller send a valid CC command to the E2 (see table below), on the desired MIDI Channel.
4. The E2 will pick the MIDI Channel of the first valid command it receives, and store this for future use. There is no need to repeat this procedure unless a different MIDI Channel is desired.

Supported MIDI commands:

To load a particular preset, simply send a program change command with the desired preset number. The E2 will load that number plus one as the preset. This is because many MIDI controllers send "PROGRAM CHANGE x-1" when you select program x. ie. The foot controller will send "PROGRAM CHANGE 00" when you select the footswitch corresponding to preset 1. If you want preset 00, send 127 as the program.

MIDI CC Map

<u>Knobs:</u>
 4 - Exp pedal input
12 - Repeats Knob
13 - Time Knob
14 - Mix Knob
15 - LFO Speed Knob
16 - Modulation Depth Knob

<u>Buttons:</u>
17 - Time Button
18 - SFX Button
19 - Taps Button
20 - Filter Button
21 - Bypass Button
22 - Ducking Button
23 - Listen Button
24 - LFO Mod Button
25 - Tap Tempo Footswitch
27 - Engage Footswitch
28 - Preset Save
29 - Jump Footswitch / Preset 1/2
30 - Freeze Footswitch / Preset 3/4

The Preset Save Command can be used to save a preset, after using other midi commands to change parameters.

Buttons can be controlled in two ways, to allow automated patches and also real time manual control.

Button Patch Control
Set the button value to "1" for a SHORT PRESS.
Set the button value to "2" for a LONG PRESS

This allows commands to be sent quickly to the E2 without worrying about timing, which makes automated control easy.

Manual Button Control via MIDI
This is convenient for manual control of the E2 through something like a foot controller, but would be very inconvenient for automated control.
Set the button to "127" to indicate that the button should change state from "unpressed" to "pressed".
Set the button to "0" to indicate that the button should change state from "pressed" to "unpressed".
The time between the above two messages decides if the press is a long or short press. This means that the controlling button on the MIDI controller behaves exactly as the equivalent button would on the E2 front panel.

Manual and Patch controls can be mixed as necessary.

Echolution 2 Application

A PC/MAC application has been developed to enable users to control every function of the Echolution 2 via USB.

The application also enables firmware updates and extensive preset management including the ablility to import, export and audition presets.

PLEASE take a moment to download the E2 Application from our website at:

www.pigtronix.com/E2application

Credits:

The Pigtronix design team spent 3 years designing the Echolution 2. The release of this flagship pedal marks the 10-year anniversary of the founding of Pigtronix. I believe it is the best pedal we have ever created. We would like to thank the following people for their help along the way:

Ray Heasman, Howard Davis, Ben Artes, Steve Turnidge, Sean Eisenheim and Daniel Fisher as well as Lisa Rickmers, Megan Leary, the Bethke and Koltai families, Aaron Reed, Dan Pavone, Kevin Griffin, Sean Fitzsimons, Brett Perdie, Thomas Elliot, Bruce Zinky and B-Dawg.

Ray Heasman, Ben Artes, Howard "Mick" Davis, Steve Turnidge and David Koltai designed the Pigtronix Echolution 2 during 2010 – 2013 in Port Jefferson, NY and Seattle, WA.

We hope you enjoy your new Echolution 2 pedal! As always, we welcome your input, and value customer feedback. Since this device is firmware updateable, we may be able to implement changes that address concerns or new features you may have in mind.

Contact us at (631) 331-PIGS (7447) or email:
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Please check our website, www.pigtronix.com for the latest information on new Pigtronix gear.

All the best,

Dave Koltai & Brian Bethke
Pigtronix

Pigtronix Limited Warranty:
Your Pigtronix effect pedal comes with a 1-year limited warranty on parts and workmanship. During the warranty period we will repair or replace, at our option, defective parts or pedals free of charge, and return them to the owner. Warranty service does not include damaged, modified, or misused pedals and such pedals will be subject to a standard repair charge.
What you must do: First, contact us directly via email and describe the problem to us. If the problem cannot be resolved we will have you send the pedal directly to us for servicing.
How to contact us for warranty service:
Email: tech@pigtronix.com
Phone: 631-331-PIGS (7447)
Warranty Limitations: This warranty does not cover defects resulting from improper or unreasonable use, accident, unauthorized tampering or modifications.

To validate your 1-year, limited warranty, please register your Echolution 2, **within 30 days of purchase**, on the web at:
www.pigtronix.com/warranty