# Eternity Delay

Overview, Features, and how to use the Eternity Delay


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# Overview

Basic overview and features of the JET Eternity Delay

Overview

# Description

Introducing the Eternity Delay- our most sophisticated design to date.

The Eternity Delay is engineered with six studio-grade algorithms, six onboard presets (127 with MIDI), full MIDI control over every knob, switch, algorithm, preset, and bpm with MIDI clock. Additionally, it features a live mode, preset mode, and kill-dry mode. It also boasts the world's most advanced tap tempo and stereo analog dry thru.

We've included Junior (JET's) favorite algorithm into the Eternity Delay and named it, JET's Signature Rhythm Delay (JRD). The JRD is a slapback & analog dual delay algorithm. This algorithm is not commonly found in other delay pedals, but Junior has used it extensively to create massive sounding rhythm and lead sounds.

The Eternity Delay features an upgrade to the standard tap tempo. The Eternity tap tempo averages the BPM based on the number of taps received. This results in extreme accuracy when MIDI clock isn't available. The tap tempo rate LED automatically syncs itself to the BPM and flashes on the downbeat of each ¼ note, solving the problem of flashing LEDs that appear to be out of tempo.

**Features At A Glance**:

- 6 Studio grade algorithms:
  - Tape
  - Digital
  - Analog
  - Dual Delay
  - ESD (Echo | Slap | Doubler)
  - JET Signature - Slap/Analog Dual

- 6 Onboard presets:
  - Up to 127 presets via MIDI
  - Rotate the knobs in Preset Mode to see the saved position of each knob
  - Quickly edit and save any preset by adjusting the knobs then holding the Bypass switch for 3 seconds
- Full MIDI control over every knob, switch, algorithm, preset, bpm (via midi clock), etc.
- Stereo Analog Dry Thru
- Live Mode, Preset Mode and Kill Dry Mode
  - Quickly jump between two different delays
  - Any preset can be queued up while in Live Mode without affecting your sound
- The world’s most advanced dedicated tap tempo switch:
  - Tap tempo range is from approx. 60 to 160 BPM

    - Tap tempo will average the BPM’s based on the number of taps received, resulting in extreme accuracy when MIDI clock isn’t available
    - Tap tempo rate LED will automatically sync itself to BPM and flashes on the down beat of each ¼ note. No more annoying flashing LED’s that appear to be out of tempo with the song.
- Selectable subdivision rate switch, select between quarter, dotted eight, and eight note subdivisions.
- Use the Eternity in any rig
    - Mono in / Mono out
    - Mono in / Stereo out
    - Stereo in / Stereo out
    - Stereo in / Mono out (sums to Mono)
    - Kill Dry Mode
- User adjustable Global Settings
    - Don’t want to cycle through all 6 preset locations? Easy, define the number of onboard presets available within the Global Settings.
    - Define which preset and algorithm loads at startup
    - Assign the Eternity to any MIDI channel 1 thru 16
    - Enable/Disable Kill Dry Mode
- Power via 9v (Negative Tip) power supply (pwr supply not included)
- Current Draw: 250mA
- Enclosure Dimensions: 4.82" x 2.62" x 1.425"

# Algorithms

The Eternity has 6 studio grade algorithms to choose from. Below details the sounds for each algorithm.

## Tape Delay

Designed to emulate tape machine delay’s. With sonic characteristics of warm tube saturated repeats, each repeat gets progressively darker and the speed of the tape reels can fluctuate, causing artifacts such as wow and flutter. A brand new tape machine will have minor artifacts affecting the delay repeats. However as it ages, these characteristics tend to be more distinct and the delay repeats will represent more of these artifacts. Cntrl1 will emulate the tape age, fully counter-clockwise is like a brand new tape machine. As its rotated clockwise, each repeat gets darker and the wow & flutter becomes more noticeable.

## Digital Delay

Bright & clean delay repeats. The Cntrl 1 knob adds some character/grit to your repeats for a less pristine delay sound. The character/grit is input sensitive, play harder and this will be more noticeable or play softer for less character/grit.

## Analog Delay

Designed to emulate the old bucket brigade analog delay’s. Analog delay’s will have signal degradation on each repeat causing each successive repeat to roll off some high frequency’s. The Cntrl 1 knob, when set fully counter-clockwise, is a simple and straightforward Analog delay. When rotated clockwise, the Cntrl 1 knobs adds modulation to the repeats of the delay. The rate and depth of the modulation is fixed, think of the Cntrl 1 knob as a volume knob for the modulation.

## Dual Delay

This delay runs two different delay’s with different subdivisions in full stereo and in ping pong (L & R). Delay 1 is an analog delay which is set by the Subdivision switch and Delay 2 is a fixed dotted eight digital delay. The Mix knob controls the level of delay 1 and the Cntrl 1 knob controls the level of delay 2. The subdivision switch affects Delay 1 and is as follows:

- 1/4  Note Setting
  - Delay 1 will be set to a 1/4 note with Delay 2 set to a dotted 1/8 note
- Dotted 1/8  Note Setting
  - Delay 1 will be set to the Golden Ratio with Delay 2 set to a dotted 1/8 note
- 1/8 Note Setting
  - Delay 1 will be set to an 1/8 note with Delay 2 set to a dotted 1/8 note

## Echo | Slap | Doubler (ESD) Delay

This delay is actually three delay’s in one and the subdivision switch selects between the three different delay’s. The Echo delay is called up when the Subdivision switch is set to the 1/4 note position. Based on the tap tempo range (approx. 60 - 160 BPM) the Echo delay will range from 333 milliseconds to 125 milliseconds. When the subdivision switch is set to dotted 1/8, this calls call up the Slap delay. The tap tempo range will go from 125 milliseconds to 47 milliseconds. When the subdivision switch is set to the 1/8 note position, this calls call up the Doubler delay. The tap tempo range will go from 63 milliseconds to 23 milliseconds. The Cntrl 1 knob widens the stereo spread of the ESD delay, at fully counter-clockwise the stereo spread will be off and gets wider as its rotated clockwise.

## JET Signature Rhythm (JRD) Delay

This delay is not commonly found on other delay pedals however it is a sound that I (Junior “JET”) have used extensively for creating massive sounding rhythm & lead sounds. This delay is very similar to the Dual Delay however it is important to not have the delay’s ping pong back and forth. Delay 1 is an analog delay and the Subdivision switch, Mix, and Repeats knobs all control delay 1. Delay 2 is a fixed 100 millisecond Slapback delay and Cntrl 1 adjusts the overall volume of delay 2.

# Operating your Eternity Delay

How to use the Eternity Delay

# Global Settings

To enter the Global Settings, hold down the Bypass switch when power is first applied to the pedal. The Mix and Repeats LEDs will be glowing and cycling through various colors. Release the Bypass switch when the Mix and Repeats knobs turns either solid White or Red (if Kill Dry mode is enabled the LEDs will be Red). To save your settings and exit the Global Settings, hold down the Bypass Switch for 3 seconds. The Mix and Repeats LEDs will continue glowing and cycling through the various colors until your settings have been saved.

Below are the following features that can be adjusted within the Global Settings:

- Setting the MIDI Channel
  - Rotate the Cntrl1 knob, the Bypass LED will flash the number of times that corresponds to the MIDI Channel. If setting to MIDI Channel 4, the LED will flash 4 times with a 2 second pause and then repeat.
- Enable/Disable Kill Dry Mode
  - Short press the Tap switch, the Mix and Repeats knobs will change colors. If the LED colors are Red, then Kill Dry Mode is enabled. If the LED colors are White, then Kill Dry Mode is disabled.
- Load a Specific Preset Upon Start-Up
  - Rotate the Mix knob, the Mix LED will cycle through the Preset colors. Rotate until your desired Preset is illuminated.
- Load a Specific Algorithm Upon Start-Up
  - Rotate the Repeats knob, the Repeats LED will cycle through the Algorithm colors. Rotate until your desired Algorithm is illuminated.
- Limit the Number of Presets to Scroll Though
  - Rotate the Filter knob, the Tap LED will flash the number of times that corresponds to the maximum number of Presets available to scroll through. If setting to 3 Presets, the LED will flash 3 times with a 2 second pause and then repeat.

# Using the Pedal

Power the Eternity with a 9v DC negative tip power supply, one that is capable of handling up to 300mA of current. Upon powering the Eternity the Mix and Repeats knobs will glow indicating startup mode. Once the Tap LED begins to flash the Eternity is ready to use. Tap the Bypass switch to engage the pedal (Live Mode), the color of the Repeats knob indicates the active algorithm and the color of the Mix LED indicates the cue’d up Preset.

Hold the Bypass switch for 1 second and release to change algorithms.

- Light Blue | Tape Delay
- Green | Digital Delay
- Yellow | Analog Delay
- Red | Dual Delay
- Pink | ESD Delay (Echo, Slap, Doubler)
- White | JRD (JET Signature Rhythm Delay)

To engage Preset Mode, double tap the Bypass switch. This will quickly jump between the delay used in Live Mode to the delay stored in the cue’d up preset. To disengage Preset Mode and jump back to Live Mode, double tap the Bypass switch again.

To change presets, tap both the Tap switch and Bypass switch to cycle through the stored presets:

- Light Blue | Preset #1
- Green | Preset #2
- Yellow | Preset #3
- Red | Preset #4
- Pink | Preset #5
- White | Preset #6

While in Preset Mode you can rotate the knobs to see the saved location of each knob in the stored preset. When each knob is rotated, its corresponding LED will flash, and will return back to a solid color once the knob is rotated over the stored location.

# Control Knobs

## Mix Knob

The Mix knob controls the overall loudness of the repeats. Rotating fully counter-clockwise will set the repeats volume to minimum and fully clockwise to maximum. The Mix knob does not affect/remove any of your dry signal. In order to get 100% wet delay, you need to engage Kill Dry

Mode.

## Repeats Knob

The Repeats knob controls the number of repeats that will be regenerated from the Eternity. Rotating fully counter-clockwise sets the repeats to minimum (one repeat) and fully clockwise sets the repeats to maximum. At maximum settings, the repeats will not self-oscillate.

## Filter Knob

The Filter knob controls the overall brightness of the repeats. Rotating fully counter-clockwise allows all frequencies to pass, when rotating clockwise the upper frequencies will be removed. Rotating clockwise sets the cutoff frequency lower and lower for darker repeats. The Filter knob does not affect/remove any frequencies from your dry signal.

## Cntrl1 Knob

The Cntrl1 knob varies per algorithm, please reference the Algorithm section for details pertaining to the Cntrl1 knob for each Algorithm.

# Soft Click Switches

## Bypass Switch

The Bypass Switch functions as the main navigation for the pedal, below outlines the functions attached to this switch.

- Short Press
  - Performing a short press will engage/disengage the pedal. When engaged, the Bypass LED will illuminate and the delay signal will be heard. This is called “Live Mode”, the sound of the delay will be heard based on the current settings of each knob, toggle switch, and the active Algorithm that is illuminated by the Repeats LED.
- Double Tap
  - Performing a double tap will engage/disengage “Preset Mode”. When Preset Mode is engaged, the Tap LED will illuminate and the delay signal will be the sound that is saved in the current preset location. The current preset  can be identified by the color of the Mix LED. When Preset Mode is engaged, the saved Algorithm can be identified by the color of the Repeats LED.
- Two Button Press (Tap & Bypass Switches)
  - Performing a two button press will cycle through the stored presets. Each time a two button press is performed the color of the Mix LED will change, identify which preset is active or cue’d up. If the pedal is in Preset Mode, it will cycle through each preset and the new preset sound will be heard immediately. If the pedal is in Live Mode, you can cue up which preset will be heard when Preset Mode is engaged.
- Long Press

- Performing a long press (hold for 1 second and release) will cycle through the active algorithm. Algorithms can be changed at any time in both Live Mode and Preset Mode

## Tap Switch

The Tap Switch is dedicated to tap tempo. To set a tempo you must press the tap switch at least 3 times, anything less and the tempo will not update. The tap tempo may take longer to update than other delay pedals however we feel accuracy is more important than speed. Our tap system is the most accurate tap tempo on the market and this is achieved by averaging the tempo based on the number of taps it receives. In other words, the more taps you enter into the Eternity the more accurate the tempo will be.

# Toggle Switch

## 1/4  Note Setting

Setting the Toggle Switch to the top position will create repeats with a 1/4 note subdivision based on the tempo that has been tapped in by the Tap Switch.

## Dotted 1/8 Note Setting

Setting the Toggle Switch to the middle position will create repeats with a dotted 1/8 note subdivision based on the tempo that has been tapped in by the Tap Switch.

## 1/8  Note Setting

Setting the Toggle Switch to the bottom position will create repeats with an 1/8 note subdivision based on the tempo that has been tapped in by the Tap Switch.

***See the Algorithm section for toggle switch settings for the ESD and Dual Delay Algorithms.

# Saving Presets

Saving a preset is simple and quick. Cue up the current preset location you'd like to save a preset to (identified by the color of the Mix LED). Change the active algorithm (if desired) and dial in the settings on the toggle switch and knobs. Once you have a sound that you like, simply hold down the Bypass Switch for 3 seconds. The Bypass LED will flash rapidly indicating the preset has been saved.

***To save a preset the pedal must not be bypassed, you can save a preset in either Live Mode or Preset Mode.

# MIDI Features and Controls

Library of MIDI commands and how to program your Eternity.

# How to Connect

Midi communication to the Eternity conforms to the specification for TRS to Midi adapters issued by the Midi Association. So what does this mean for me? In order to communicate via Midi you will need either a 5 pin to 1/4" TRS adapter cable that is wired to the TRS specification, or if you wish to make your own patch cables, a link to the wiring diagram and the midi specification can be found here. You can also use a midi box/ hub that converts 5 pin Midi to multiple TRS outputs, like the Traffic Control from JET or similar boxes from Strymon or Morningstar. You could also use a compatible Midi controller with TRS midi output's like the Futurist by Matthews Effects or various controllers by Morningstar.

# Changing the MIDI Channel

From the factory the Eternity is set to receive Midi messages on Midi channel 1, however this can be changed upon powering up the pedal. After applying power to the Eternity, hold down the Bypass switch while the pedal is in startup mode (Mix & Repeats knobs are scrolling thru the color spectrum). Once the LEDs turn a solid color, release the Bypass switch to enter the Global settings. Rotate the Cntrl1 knob and the Bypass LED will begin to blink between 1 and 16 times (depending on which channel is set by the knob). Rotate the Cntrl1 knob counter-clockwise to decrease the MIDI channel or clockwise to increase the MIDI channel. Once you've reached the desired channel (i.e. channel 6 means the LED will flash 6 times), hold the Bypass switch to exit the global settings and to save the Midi channel to permanent memory.

# Saving Presets via MIDI

You have two options for creating presets. The first option is to use a "smart" midi controller (like the JET MCX) that can send multiple simultaneous midi messages. Just send individual CC messages to turn the Bypass switch on, select the algorithm, and set the values for each knob/toggle switch.

The second option is to use our revolutionary CC Snapshot feature. While in Live Mode, select your desired algorithm and then set all of the knobs & switches to their desired positions. From there just send midi CC #28 with any Value from 7 thru 100. The pedal will then take a snapshot of its algorithm and knob/switch positions, after that the knobs will flash green letting you know the preset has been saved into permanent memory. To recall this preset, just send a PC message with the same number used for the Value when sending CC #28.

Example: send CC #28 Value 10 to save a preset in the 10th slot. Send PC #10 to recall the new preset.

The Eternity can save 100 onboard presets (the first 6 are saved using the pedal and 7 - 100 are saved with CC Snapshot).

# Program Change Messages

Receiving PC messages will recall the onboard presets stored within the Eternity.

- PC #0 - Will bypass the pedal (Available from Serial #132 and up)
- PC #1 - Recalls the first preset (Light Blue)
- PC #2 - Recalls the second preset (Green)
- PC #3 - Recalls the third preset (Yellow)
- PC #4 - Recalls the fourth preset (Red)
- PC #5 - Recalls the fifth preset (Pink)
- PC #6 - Recalls the sixth preset (White)
- PC #7 - 127 Recalls the preset created by CC Snapshot (Dark Blue)

# Control Change Messages

Receiving CC messages will control the individual controls, knobs, and switches of the Eternity.

- CC #18 Any value between 0 & 42 sets the subdivision toggle switch to ¼ notes
  - Any value between 43 & 85 sets the subdivision toggle switch to dotted ⅛ notes
  - Any value between 86 & 127 sets the subdivision toggle switch to ⅛ notes
- CC #19 with any value of 0 thru 127 controls the Mix knob. 0 is the equivalent of having the knob turned completely counter-clockwise (mix turned off) and 127 is like having the knob turned completely clockwise (mix at full volume). Sending a value of 64 is the equivalent of having the knob straight up at noon.
- CC #20 with any value of 0 thru 127 controls the Repeats knob
- CC #21 with any value of 0 thru 127 controls the Filter knob
- CC #22 with any value of 0 thru 127 controls the Cntrl1 knob
- CC #23
  - Any value between 0 & 63 turns the Bypass switch off
  - Any value between 64 & 127 turns the Bypass switch on
- CC #24
  - Any value between 0 & 63 turns the Preset switch off
  - Any value between 64 & 127 turns the Preset switch on
- CC #25 any value between 0 & 127 increments the Preset number
- CC #26 any value between 0 & 127 decrements the Preset number
- CC #27
  - Any value between 0 & 21 activates the Tape delay algorithm
  - Any value between 22 & 44 activates the Digital delay algorithm
  - Any value between 45 & 66 activates the Analog delay algorithm
  - Any value between 67 & 88 activates the Dual delay algorithm
  - Any value between 89 & 110 activates the ESD delay algorithm
  - Any value between 111 & 127 activates the JET Signature delay algorithm
- CC #28 any value between 7 & 127 activates CC Snapshot mode
  - This takes a snapshot of your current settings and stores it in permanent memory at the appropriate preset location. An example would be to send CC #28 Value 7, this stores a preset in the 7th slot and can be recalled anytime by sending PC #7
- CC #29
  - Any value between 0 & 63 turns off Kill Dry mode
  - Any value between 64 & 127 turns on Kill Dry mode

# FAQ

Frequently asked questions

FAQ

# What are the Power Requirements for the Eternity?

The Eternity requires a 9 volt DC negative tip power supply that is rated for at least 300mA of current. Powering the Eternity above 9 volts will result in damage to the pedal. We recommend using an isolated power supply with the Eternity being powered from its own port. Daisy chaining power can result in unwanted noise in your signal path.

FAQ

# How Many Presets can be Saved to the Eternity?

The Eternity can store up to 127 presets on the pedal. The first six presets can be created and stored using the knobs and switches on the pedal. The remainder of the presets (7-127) can be created and stored using a MIDI controller using CC messages.

FAQ

# Can I use the Eternity in Mono? Or does it have to be used in Stereo?

The Eternity can be used with any board/setup including mono, stereo, or stereo inputs with sum to mono output.

***When using the Eternity in mono, use the Left inputs and outputs only. When using the Eternity to sum to mono, using the Left output will sum both outputs to mono.

FAQ

# Does the Eternity Have an External Input for Tap Tempo?

No it doesn’t, however the Eternity will receive BPM information via MIDI clock signals.

FAQ

# Are There Trails When Switching Algorithms or Bypassing the Eternity?

When switching between modes (Live or Preset) or switching between presets, the pedal automatically enters a "graceful transition" state, the Bypass LED will begin to flash letting you know that the Repeats knob is gracefully returning to its new setting. This only applies when staying within the same algorithm and staying on the same subdivision setting. If you're switching between algorithms or subdivision settings, you will not have delay trails.

When bypassing the Eternity, trails will always be active.

FAQ

# I Hear a Weird Noise, What Can I Do?

Most often, noise issues are related to the power supply feeding the Eternity. The first thing to check, does the power supply meet the requirements to power the Eternity (9V DC 300mA). Supplying voltage above 9 volts can damage the Eternity and supplying 9V with not enough current will cause unpredictable behavior and noise issues.

Is the Eternity being supplied with its own isolated power port (no daisy chaining). Daisy chaining power from pedal to pedal can introduce unwanted noise.

# Full Feature Overview Video

Please reference our Overview Video for all the Eternity's features and Global Settings options.

Full Feature Overview Video

# Eternity Overview Video

https://www.youtube.com/embed/NY6wHR1z9m4