

60 Second Discrete

The term 'looper' has come to mean many things these days. Are we talking about one-man-band loopers based on a record/play paradigm? Are we talking about loop switchers to activate different effects on your pedal board. In our case, no, we're talking about the original loopers which were digital implementations of effects achieved by literal loops of magnetic tape, and later by the dual tape recorder techniques pioneered by Terry Riley, Brian Eno and Robert Fripp.

These digital implementations are analogous to simpler delay pedals that provide some delay memory plus a means of feeding the output back to the input to create repeated echoes. However, these days we can provide much more memory than was available in the early days. In the 60 Second Discrete we provide up to, you guessed it, 60 seconds of recording time.

This memory can be reduced by the Range switch to sizes that might be more suitable to Echoes (in Medium) and Chorus / Flange / Filter (in Short). One interesting side effect of switching Ranges is that blocks of memory are not accessed when in the Medium and Short ranges. They are neither played back nor recorded over. If something is recorded in Long range using the entire memory, then Range is switched to a shorter mode, the material previously recorded in that area of memory remains there, but unheard, while new material is recorded in the smaller memory area. When Range is switched back to Long the old material happily appears again. What material survived in that extended memory? Who knows? This can provide some constrained randomness to a performance.

The 60 Second Discrete provides a means of modulating the delay time which could be found on some early analog style delays and which is the basis of chorus, flange, and double tracking type of effects. With longer delay times it can introduce a warble reminiscent of a tape machine in poor condition. The 60 Second Discrete also provides a square wave modulation in addition to the more common sine wave. In general, sine is used for subtle chorusing or warble while square can jump quickly between to speeds. Both can get extreme.

As opposed to an analog delay, digital memory makes possible effects otherwise impossible, such as the ability to infinitely hold the recording in memory and loop it as long as desired. Additionally, the playback "direction" can be reversed via the Reverse footswitch at any time. It's important to remember that Reverse is relative. If something is recorded with Reverse off and it is then switched on it will sound reversed. However, new material recorded with Reverse on will likewise sound reversed when Reverse is switched off. It can be more intuitive to think of how recording on to a tape loop would sound as the direction is changed forwards and back.

The 60 Second Discrete has two clock options: Slow and Fast. The two settings switch precisely between to clock speeds determined by the Ratio switch. With a Ratio setting of 2:1 this creates perfect octave jumps up and down, in both playback speed and pitch, depending on whether the material was recorded initially Slow and is being played back Fast, or vice versa. When the Ratio is 3:2 the jumps are a perfect fifth. Fast / Slow can be switched in three ways:

1. The front panel toggle switch. It rests in the middle and can be moved up or down, whichever is more convenient, to toggle between speeds.
2. By a momentary foot switch connected to the rear jack labeled 'Fast'.
3. Automatically, based on the Speed control from the modulation LFO. At slow LFO Speeds this can provide interesting jumps to extended loops. At fast speeds effects reminiscent of organs appear. And at very fast speeds new harmonics become apparent.

Quick Start

Set all controls to noon. Multiply to x2, Auto/Manual to Manual, and ensure Infinite is off. This should put you in a familiar delay/echo mode. From there, start exploring!

Knobs

1. INPUT sets the input level. An overload LED is located near the ACTIVE footswitch. It will be Red when the signal is overloading. In general, the Red overload indicator blinking once in a while is no issue and providing the loudest level into the delay provides the best signal to noise ratio. Let your ears be the judge of how much is too much. The control is a full volume control and when fully counter-clockwise the INPUT is off.
2. MIX sets the balance of dry signal and delayed signal. Fully counter-clockwise is only dry signal and fully clockwise delayed signal only. Delayed signal only can be very fun to get unexpected sounds and timing especially when combined with automatic fast slow switching.
3. TONE sets the EQ curve of the repeats. Fully counter-clockwise will have the most high frequency roll off, meaning the darkest sounding repeats. At 12 o'clock the EQ is essentially flat. Clockwise provides low frequency roll off which can be useful to remove mud from repeats using a lot of REGEN. Experiment.
4. OUTPUT adjusts the output level
5. DEPTH controls how much LFO signal modulates the delay time. Counter-clockwise modulates with a square wave. Clockwise with a smooth Sine wave. 12 o'clock is no modulation. Can go in either direction from subtle to extreme. Note that modulating delay time works the same whether Fast/Slow switching is in Manual or Auto mode.
6. SPEED adjusts speed of LFO modulation and also the speed of Auto switching between Fast and Slow.
7. REGEN controls how much delay output is fed back to the input which controls how many repeats are heard. When fully counter clockwise only one repeat of any input will be heard. Towards clockwise more and more repeats are heard up to the point that each repeat will be louder than the last leading to increasing distortion with each repeat or oscillation on short delay settings.
The Regen knob has been tailored to be very fine around the point of 100% feedback so that repeats that seem to go on forever can be dialed in without runaway feedback. As opposed to Infinite hold, this can provide 'Disintegration Loops' [link to https://en.wikipedia.org/wiki/The_Disintegration_Loops] type sounds as the recorded material gets rerecorded over and over, each time with slightly less fidelity. Unlike Infinite hold new material can be added over the old.
8. DELAY TIME this is the large knob that is unlabeled. Think of this like a tape speed control. Counter-clockwise is slower and therefore longer delay times. Clockwise, faster, shorter delay times.

9. RANGE sets how much delay memory is used. In general, Long is suitable for Frippertronics style looping, Medium for echoes, and Short for Chorus, Flange, and Doubling effects but you may find settings in other ranges that are suitable.

Switches

1. MULTIPLY multiplies the main clock (sample rate) by the indicated value
2. AUTO/MAN. When in Auto mode the change from Slow to Fast will happen in time with the LFO speed.
3. RATIO sets the ratio between Slow speed and Fast speed. See the earlier discussion about Fast and Slow speeds.

Connections

The rear panel provides the following connections:

1. MULTIPLY A volume pedal can be connected here to override the panel control of this function. A 50k ohm, such as the Korg EXP-1 works well and others with 25k etc. will work but with possibly reduced range. Heel, Middle, and Toe positions will select x1, x2, x4
2. RANGE A volume pedal can be connected here to override the panel control of this function. A 50k ohm, such as the Korg EXP-1 works well and others with 25k etc. will work but with possibly reduced range.
3. OUT sets the audio output level
4. DELAY A volume pedal can be connected here to override the panel control of delay time. A 50k ohm, such as the Korg EXP-1 works well and others with 25k etc. will work but with reduced range. The cable should be plugged into the output of the volume pedal with nothing on the input of the volume pedal. A CV from a modular synth can also be used. Input impedance is approximately 10k ohm.
5. FX LOOP This is a send (tip) / return (ring) type jack which can be used to add effects in the REGEN (echo / repeat) path only. For instance, an Insert Cable (TRS to dual TS) can be used with a volume pedal to provide foot control of the number of repeats. The REGEN knob is still active post FX loop so can be used to set the maximum number of repeats when the pedal is fully up. Any type of effect or chain of effects can be used here. Be creative.
6. IN Audio input

Foot Switches

1. ACTIVE on/off. 2 LEDs are above the switch. Green will light when the delay is on.
2. REVERSE a tap here will reverse the direction of playback. The absolute direction is not important only the relationship of the direction when audio was recorded vs what direction is now. All that means is that audio that sounds normal now will sound reversed after a tap, and audio that sounds reversed will sound normal after a tap. A few taps should be enough to get the idea.
3. FAST Switches between two clock speeds (sample rates) according to the value of the ratio set by the FAST toggle switches. When Auto/Manual is set to Auto this will toggle automatically at the speed of the LFO
4. INFINITE When off, delay is functioning normally recording any signal at the input jack. This applies even if ACTIVE is off. The delay is always listening to what you're playing while INFINITE is off. This let's you immediately inject audio from some

time ago into the audio output as soon as you turn the pedal on. When INFINITE is on, nothing new is recorded and whatever is in memory will repeat infinitely.