HEDRA

MANUAL v.1

MORE THAN LOGIC. UNITING ART + ENGINEERING.

TABLE OF CONTENTS

SECTION 1 - FRONT PANEL CONTROLS

Key: Selects key for diatonic harmonies. Set to max for chromatic shifting
Alt Function: Scale Type Select
[from Min to Max]: Major, Minor, Melodic Minor, Harmonic Minor, Double Harmonic, Lydian Pentatonic, Minor Pentatonic

Tap: Sets the main tempo/delay time
Total available time = 520 msec
HOLD to access Alt Function:
Alt knob functions are available while this button is being held

Microtune: Slightly detunes all three pitch shifted voices
Alt Function: Pitch Correction and Glide
When the knob is between Min and Mid select between No Correction, Loose Corrections, Strict Correction. When knob is between Mid and Max selects amount of glide

Pitch 2: Sets interval for the second pitch shifted voice
Alt Function: Time Division 2
Sets a fraction of the main tempo for second pitch shifted voice

Bypass Status: Processes signal when lit, passes dry signal entirely in analog when unlit
Alt Function: Swell
Enable an automatic volume swell based on the input

Mix: Adjusts the balance between Dry and Wet signals
Alt Function: Delay Feedback
Controls delay feedback

Pitch Feedback: When button is lit, Pitch shifters are in the feedback loop of the delay
Alt Functions: Half Speed
Enable the delay to run at half speed

Pitch 1: Sets interval for the first pitch shifted voice
Alt Function: Time Division 1
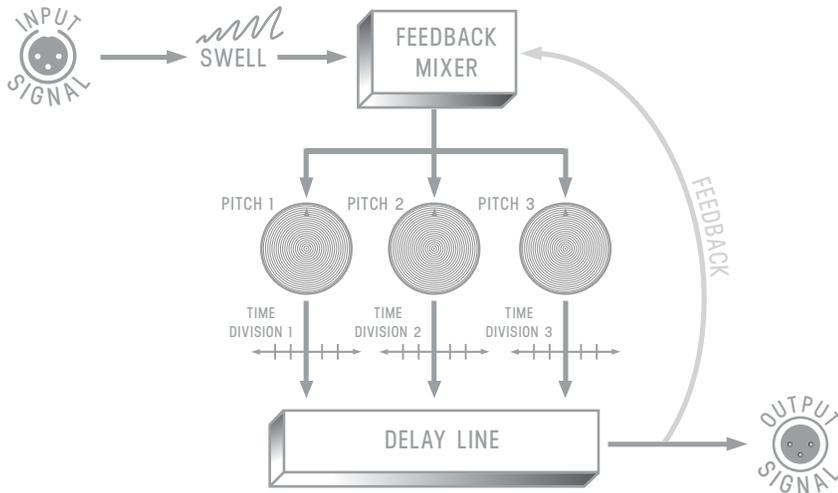Sets a fraction of the main tempo for the first pitch shifted voice

Pitch 3: Sets interval for the third pitch shifted voice
Alt Functions: Time Division 3
Sets a fraction of the main tempo for third pitch shifted voice

HEDRA

BYPASS

KEY

TAP
ALT
(HOLD)

MIX

PITCH
FDBCK

MICRO TUNE

PITCH 1

PITCH 2

PITCH 3

meris

SECTION 2 - SIGNAL FLOW OVERVIEW

The Hedra features 2 distinct delay line configurations:

1. Pitch Feedback On (button is lit):

In this mode, Hedra is configured to have one delay line (520 msec) with three inputs and one output. In this mode, the repeats are recycled through the pitch shifters

INPUT SIGNAL → SWELL → FEEDBACK MIXER

PITCH 1   PITCH 2   PITCH 3

TIME DIVISION 1   TIME DIVISION 2   TIME DIVISION 3
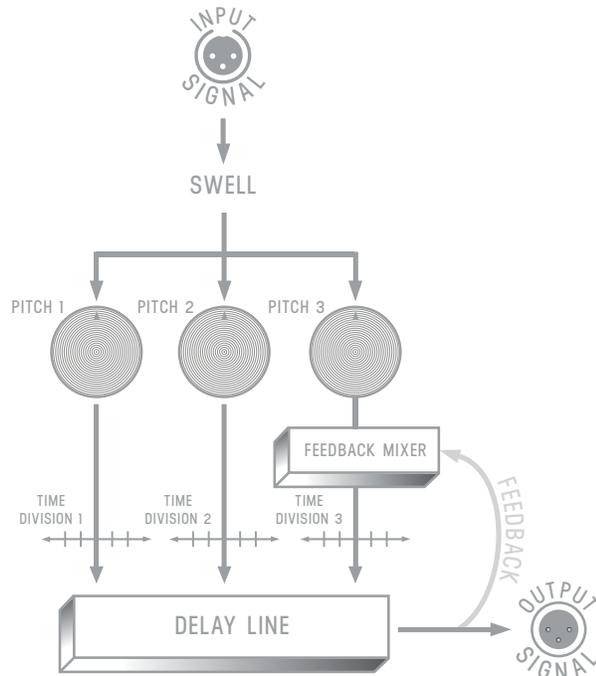
FEEDBACK

DELAY LINE → OUTPUT SIGNAL

2. Pitch Feedback Off (button is unlit):

In this mode, Hedra is configured to have one delay line (520 msec) with three inputs and one output. In this mode, the repeats are mixed in after the pitch shifting.

INPUT SIGNAL

SWELL

PITCH 1   PITCH 2   PITCH 3

FEEDBACK MIXER

TIME DIVISION 1   TIME DIVISION 2   TIME DIVISION 3

FEEDBACK

DELAY LINE → OUTPUT SIGNAL

SECTION 3A - KEYS AND SCALES

Along with the front panel Key selection available on Hedra, hold the alt button and turn the Key knob to modulate through and select among the following scales:
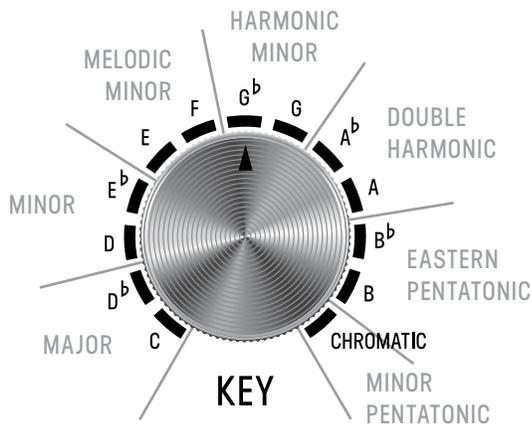
Major: Semi-tones: 2 - 2 - 1 - 2 - 2 - 2 - 1
Intervals: Root, Major 2nd, Major 3rd, Perfect 4th, Perfect 5th, Major 6th, Major 7th, Octave

Minor: Semi-tones: 2 - 1 - 2 - 2 - 1 - 2 - 2
Intervals: Root, Major 2nd, Minor 3rd, Perfect 4th, Perfect 5th, Minor 6th, Minor 7th, Octave

Melodic Minor: Semi-tones: 2 - 1 - 2 - 2 - 2 - 2 - 1
Intervals: Root, Major 2nd, MInor 3rd, Perfect 4th, Perfect 5th, Major 6th, Major 7th, Octave
Notes: When you ascend the melodic minor scale you use the above intervals, but depending on the composition, when you descend you might want to use the intervals of the minor scale.   Use an expression pedal with Hedra to choose how the scale reacts to your playing.

Harmonic Minor: Semi-tones: 2 - 1 - 2 - 2 - 1 - 3 - 1
Intervals: Root, Major 2nd, Minor 3rd, Perfect 4th, Perfect 5th, Minor 6th, Major 7th, Octave

Double Harmonic: Semi-tones: 1 - 3 - 1 - 2 - 1 - 3 - 1
Intervals: Root, Minor 2nd, Major 3rd, Perfect 4th, Perfect 5th, Minor 6th, Major 7th, Octave

Lydian Pentatonic: Semi-tones: 4 - 2 - 1 - 4 - 1
Intervals: Root, Major 3rd, Tritone, Perfect 5th, Major 7th, Octave
Notes: This scale was inspired by the incredible music and playing of Marty Friedman and Jason Becker. One of the modes of the Hirajoshi scale, Raga Amritavarshini, Malashri, Shilangi, and Batti Lydian.

Minor Pentatonic: Semi-tones: 3 - 2 - 2 - 3 - 2
Intervals: Root, Minor 3rd, Perfect 4th, Perfect 5th, Minor 7th, Octave

SECTION 3B - PITCH CORRECTION AND GLIDE CONTROL
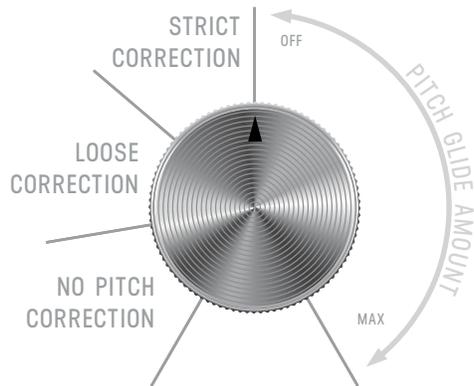
Hedra features 3 different pitch corrections settings or a pitch glide amount as listed in the knob graphic below.   When Loose Correction is selected, the notes are forced into the current Key and Scale but pitch bending is not removed from the input. When Strict Correction is selected, the notes are forced into the current Key and Scale but pitch bending is removed from the input.

SECTION 3C - TIME DIVISION CONTROLS
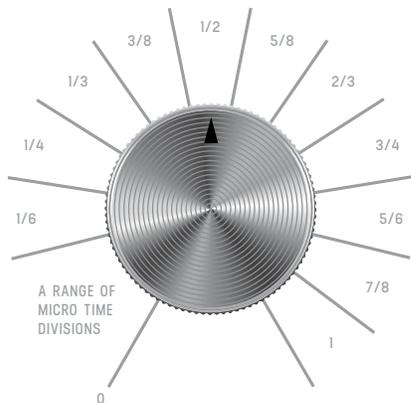
The Alt control under each Pitch knob is a corresponding Time Division.   The Time Division Knobs sets the delay of each pitch shifted voice by a fraction of the overall delay time set by the Tap Tempo switch.   Ex: a dotted eighth note is ¾ of a beat.

SECTION 4 - TRIGGERING PITCH VALUES WITH A MIDI KEYBOARD

Using our MIDI I/O, Hedra accepts MIDI Note On and Off messages to hard tune the pitch shift voices to the exact notes you play.   Sending a single Note On Message into the Hedra will just tune the Pitch 1 value, sending two Note On Messages will tune Pitch 1 and Pitch 2, and [as expected] sending three Note On Messages will tune all three pitch values. When Note Off messages are received, the corresponding pitch value will mute. Here are a couple of creative possibilities that open up when connecting a keyboard: turn Time Divisions to zero and the MIX Knob to max and the keyboard will turn your input audio into a whole new playable instrument, use a DAW or MIDI Sequencer to play a 3 part song along with your dry signal, or turn the delay and feedback to max and use a MIDI keyboard to build sonic sculptures one note at a time.

SECTION 5 - TEMPO

In Hedra you can set the tempo using one of the following tapping in quarter notes using the integrated Tap switch, MIDI Beat Clock, or Tempo MIDI CC. [An updated manual including MIDI information will be provided soon.]

SECTION 6 - FACTORY RESET

Holding down the "Bypass Switch" button [or R Top LED button] on power up resets all of the presets and all of the global settings back to their original factory values.   Once the reset is complete, simply recycle the power on the unit.

SECTION 7 - TECHNICAL SPECIFICATIONS

Conversion	24 bit A/D and D/A
DSP	32 bit floating point
Sample Rate	48000 Hz
SNR	-116 dB Signal to Noise Ratio [typical]
Frequency Response	20Hz-20kHz
Bypass	100% Analog Bypass
Linking	Stereo and surround linkable
I/O	Burr-Brown precision balanced input and output drivers

Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] this device may not cause harmful interference, and [2] this device must accept any interference received, including interference that may cause undesired operation.

This equipment requires shielded interface cables in order to meet FCC class B limit.
Any unauthorized changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.