GRAINDAD

iPad User Manual

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What is Graindad?

Graindad is a real-time granular effect which allows for audio manipulation at the most extreme levels. In contrast to many existing products, Graindad works on a single buffer, capable of simultaneous recording and playback. With this, dynamic freezing, time stretching, looping, reversing and buffer scrambling are possible in real-time. From breakbeat frenzy, to abstract ambient, many new and unique effects can be created.

On top of its prowess as an effect engine, Graindad has powerful MIDI capabilities which allow exploiting it as an instrument / MIDI controlled effect. Feed Graindad a drone, and produce granular leads, basses, and percussion. Even polyphony can be simulated with the MIDI Arp pitch mode!

When building up grain clouds, up to 64 grains can be stacked. This can be further overridden when firing off grains at audio rates. To keep everything musical, just about all parameters can be synced to clock for the best results, even at the most abstract settings. From grain density to grain size to buffer record, know peace in quantization.

Unique to Graindad, transient triggering is found everywhere. Pull transient info from your input audio to trigger recording, advance clocks, and engage randomizers. Synchronize Graindad to your playing, with your playing.

And at last, the Orbiter is back under a new name – the Harvester. Having matured significantly from the Orbiter found in Aparillo, the Harvester is a massive modulation engine, capable of extremely customized automation. Blend the Harvester with parameters on the Main Page, or allow the Harvester to take complete control of Graindad. Explore sonic storytelling with the Harvester's multi-breakpoint editor, or use the breakpoints unique MIDI trigger mode to take macro automation to the next level.

And of course, being a Sugar Bytes effect, our favorite randomizing dice can be found in every section to kickstart your creations.

Let's dig in!

Interface

Here is a quick overview of Graindad. Click on the names to refer to Graindad's main sections in this manual.

Top Bar

Buffer Section

Main Stage Parameters

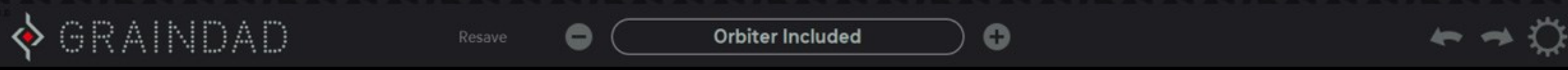
Output Section

Modulation & Random Assign

The Havester

Modulators

Effect Section



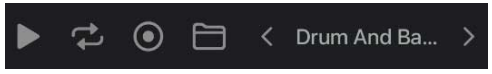
Top Bar

Graindad logo:
Opens up the About Screen to check the version number and your serial.

Tempo (Standalone only)
Graindad requires tempo information in order to synchronize to the beat. Tap the BPM Control panel to match the tempo or move the BPM control up or down to manually set up the tempo. The tempo of audio loops with a length up to 32 bars will be analysed automatically during load.

Presets menu:
Load and save your presets here. Select the next and previous preset in the current folder with the + and – buttons.

Audio Player menu (Standalone only)
Here the currently loaded track is displayed. Click onto the currently displayed audio file name to load another track.
You can load any number of tracks and access them with the arrow buttons.



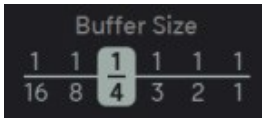
Play: Plays or stops the current track.
Loop: Repeats the played track.
Record: Starts audio recording of the Graindad Output.
Export File: Export or delete audio files

Undo / Redo:
Never fear a mistake. Any action can be undone or redone, as many times as needed.

Settings:
Opens the settings menu.

Buffer Section

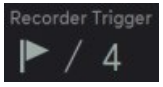
Recording Buffer



Perhaps Graindad's most defining feature is its real-time recording buffer. Capable of simultaneous recording and playback, this is where the magic begins. The buffer size can be thought of in terms of note lengths, from a 16th note up to 1 bar. The various sizes can be utilized for different scenarios – from real-time granulation with short buffers, to audio looping and mangling with longer buffers. In this section, just select a buffer size.

Buffer Sizes: 1/16, 1/8, 1/4, 1/3, 1/2, 1/1

Recorder Trigger



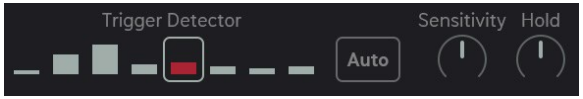
To get audio into Graindad's buffer, we need to trigger recording first. The process can be triggered several ways, with **Transient**, **MIDI**, and **Host Clock** modes. Each trigger can be divided, so that only the 2nd, 3rd, 4th, trigger will be used for recording, etc.
Click on the **/1** and drag up/down to divide the triggers. Let's look at the **Recorder Modes**:

First off, we have **transient** driven recording. The transient detector produces triggers which tell the buffer to record. (Record Triggers appear as red flags in the transient window.) This mode is useful for playing live instruments such as guitar, or when we don't have a host clock. With transient record, we can synchronize many events in Graindad to the audio itself.

Next, we have **MIDI** triggered recording. When a MIDI note is played, a Record Trigger is produced, and the buffer begins recording. Subsequent Record Triggers will take effect after the current buffer has fully recorded (in the case of many triggers received).
We can use this mode for complete control over what and when we want to loop, freeze or just mangle. Want to freeze a specific word in a vocal phrase? Just send a note and fill the buffer at that exact moment. This mode plays great with DAWs, automation, or with your favorite synths.

Finally, we have **Host Clock** driven recording. Host Clock mode produces a Record Trigger at regular intervals, with the recording interval determined by the buffer size. E.g., a Buffer size of 1/4 will record to the buffer every quarter note.
This mode is a guaranteed method to stay on beat.

Transient Detection



Graindad sports a multiband transient detector, displayed as an array of level meters.
This utility has several parameters to fine tune the detector to your playing or audio sources:

Bands: Click on a level meter to select it as the frequency target for detection.
Auto: With Auto active, the loudest band will be used to produce the transient trigger.
Sens: The sensitivity will produce more or less transient triggers depending on the knob position.
The threshold is highest, with slowest reaction time to the left.
Hold: Hold will maintain the current trigger for the specified length, ensuring no new transients within that time.

These transient triggers are used throughout Graindad to trigger many events: recording, Rnd 1-3, Mod/Trig sequencer clocks, the envelope, the LFO, and dry/wet level.

Grain Window

The amplitude envelope of a grain is called its **Window**. Classically, grain windows were shaped to avoid clicks and pops from hard cuts.

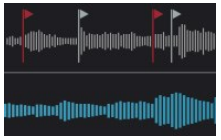
With dense, overlaid grain clouds, the window shapes such as the Parabol, Sine, or Triangle help to smooth out the audio. Other shapes such as Decay or Solid offer more percussive, transient qualities, and may produce additional harmonics at high rates.

Grain Windows: Attack, Solid, Decay, Sine, Triangle, Spike, Notch, Parabol.

Tip: For looping, or preserving the input audio, we may use the 'solid' window, as it maintains the original amplitude for the duration of the grain.

Transient Window & Record Buffer

There are two waveform displays. The top display is the transient window. This shows you the transients detected in your input audio as markers.



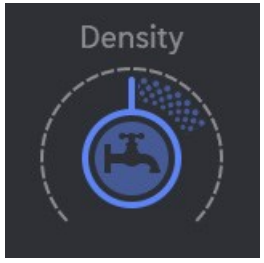
Grey markers are transient triggers. Red markers are record triggers. Both of these transient types are used throughout Graindad to synchronize modulation, sequencers, envelopes, etc, to your input audio. The bottom window is the Record Buffer. Recorded audio is displayed here. Grain size, Jitter, Window and position are also visualized.

Main Page Parameters

Density
Density Mode
Grain Size
Speed
Position
Jitter
Pitch
Time/Rate Mod
Filter Mod
Reverb
Delay

Density & Density Mode

Density



Density is a description for the rate that new grains are generated. This key parameter works hand-in-hand with Grain Size to sculpt the basis of your sound.

Depending on Grain Size, lower densities may produce more rhythmic or 'cut up' textures and sounds. With shorter grains, these low densities produce distinct rhythms where you can hear each grain, and the contour of its window.

Higher densities tend to 'smooth out' sounds. This can be good for freezing, stretching and texturizing audio.

Density Mode

Density can be measured many ways. Depending on the Density Mode, different rates can be achieved.

Absolute: Density is measured in divisions of the host tempo. The lowest density of 1 generates grains every 1/4 note. The highest density of 40 becomes 256th notes.

Relative: Density is linked to grain size. When one grain has played through, a new grain is immediately born. Therefore, shorter grains = higher densities, longer grains = lower densities. As Grain Size is measured by the same beat divisions as Density, you may multiply [Density x Grain Size] for the current rate.

Pitch: Grains are generated at audio rates. This may create additional overtones and harmonics leading to resonator-like textures with certain settings. Density is so fast that it generates Pitch and is quantized in MIDI notes. The Pitch parameter now turns into a Formant shift control.

Grain Size

Grain Size is a description of the length of each grain. It shares the same beat divisions as Density. The longest grains with a value of 1 are 1/4 note long.

Grain Size works in balance with Density. Shorter grains make up only fragments of the recorded audio, while longer grains begin to sound more like samples than grains.
Overlapping grain clouds will occur when grain size is longer than the density rate, or when Jitter is introduced.

Grain Size Quantize: This switch quantizes Grain Size to divisions of the project bpm. The divisions are the same as found in the Density control.

Tip: To achieve fine control over the Density rate, use un-quantized Grain Sizes with the Relative Density Mode.

Speed

Speed controls the playback direction and rate that the 'playhead' scans the audio buffer (i.e. the continual position in which new grains are born). The directions are forward and backward.

The Movement is triggered/reset by the Rec Trigger. (Note, that a MIDI Rec Trigger is only accepted after the buffer has completed recording.)

The obvious use case of the Speed control is live time-stretching. With a slow positive speed, it has the effect of stretching your audio right down to the point of freezing it infinitely. This could be used to turn the quick strum of a guitar chord into a swelling pad. Or, it could be used to create glitchy tails on drum hits.

Negative speeds on the other hand will have the effect of playing your live audio in reverse. In such cases, offset Position, to scan backward to the beginning of the buffer.

Speed Quantize: *Quantizes the playback rate of the audio buffer to divisions of the current buffer size. E.g., a speed of 100% plays back a 1/1 buffer size in 1 bar. A speed of 50% would play the 1/1 buffer back in 2 bars, etc.*

Position

Position offsets the current location in the buffer.
This parameter can be used to manually scrub through the buffer, or jump through different 'zones' with modulation.
When a Rec Trigger is received the 'playhead' will reset to the location Position is set to.
An additional use for this parameter could be to skip the initial transient portion of a sound by setting Position just slightly ahead in the buffer. Or, reverse swells could be created by pushing the Position even further ahead, and setting a negative Speed to scan in reverse towards the recorded audio.

Position Quantize:

When engaged, the buffer is divided into 16 'zones'. Any adjustments to Position will be quantized to these zones. With rhythmic audio material and a synced Clock Mode, we can be certain that Position will always land on key rhythmic targets in the buffer. This goes great with the mod sequencer, or random modulation.

Sliced Position Mode:

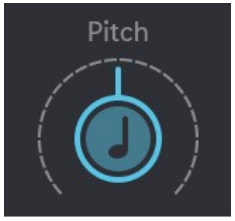
Activate the Slice button to enter the "Sliced Position Mode". This mode will make the Transients found within the buffer available for the position control. The QNT button will disappear when the Slice button is activated. It works best when the Rec Divider is used, so you have a lasting buffer with slices to be adressed by the position control.

Jitter

Jitter introduces slight randomization to a grain's Pitch and Position at a grains birth. As the grain is born with these random values, the values will not change during the grains lifetime. This parameter is key to avoiding the resonator effect that Density causes at higher rates.

Depending on your source audio and settings, Jitter can also be used to introduce noise at high values. Warble, chorusing, and unison detune-like sounds are also easily produced.

Pitch



Pitch is, as you guessed, the pitch of a grain. Unlike *Grain Size*, *Position* or *Jitter*, Pitch is not attributed to a grain at its birth. Therefore, pitch can be altered as the grain plays through. Due to this, dynamic pitching effects are possible. Direct a fast decay envelope at Pitch and make a granular kick drum. Or, use an attack envelope to make unique granular risers.
The Pitch parameter is expressed in MIDI note intervals. In most Pitch Modes, the note range is +/- 24 semitones. This 48-note range can be offset with modulation or with external MIDI.

Pitch Mode

The **Pitch Modes** bring great instrumental power to Graindad. With the MIDI modes Graindad can become a full on granular synth capable of mono leads and bass, to the simulation of full on polyphonic pitch. The Scale Modes make for easy and musical results, and are the perfect companion to Mod Sequencer or the RND modulation found throughout Graindad.

Fine: +/- 12 semitones of un-quantized pitch. Useful for smooth pitch modulation.
Free: +/- 24 semitones of un-quantized pitch. Like Fine, but with more range.
Chromatic: Pitches are quantized to the Chromatic scale.
Major: Pitches are quantized to the Minor scale.
Minor: Pitches are quantized to the Minor scale.
Octaves: Pitches are quantized to octaves.
MIDI: A 'monophonic' live play mode. Pitches are derived from MIDI Note input. Useful for bass and leads.
MIDI Arp: A 'polyphonic' live play mode. Pitches from the MIDI Input will play in sequence as an arpeggio, each time a grain is fired off (timed by density). At lower densities, this sounds like a standard arpeggio. At higher densities grains blend together and the pitches overlap, simulating a unified chord. Useful for pads and stabs.

*Tip: Check the **MIDI Pitch Mode** in the **Settings** menu. 'Latch' and 'Momentary' will affect how the pitch modes respond to your playing.*
*Tip 2: To turn Graindad into more of a 'playable' instrument, use the **MIDI Gate** to trigger the envelope, and engage the envelope control of **FX Level**. This gives you a MIDI Triggered VCA that is synced with the MIDI Play Modes.*

Time / Rate Mod

Need faster or slower modulation? Want to modulate the modulator? This is that parameter.

Time Mod will increase or decrease the rate of envelope stages, the LFO, and the RND modulator's clock speed.

There is a **mod source** attached to this parameter, so you can use the envelope to modulate the LFO speed, e.g..
Or, you could achieve recursive modulation of the envelope, and modulate it with itself for even snappier exponential decays.

Filter Mod

For modulation of all the filter parameters.

The **Filter Mod** knob is an attenuator/attenuverter of the cutoff frequency. It has these 4 sources to choose from:

Direct – The knob acts as a manual offset.
ENV – Mod depth of Envelope to cutoff frequency is controlled.
LFO – Mod depth of LFO to cutoff frequency is controlled.
SEQ – Mod depth of Mod Sequencer to cutoff frequency is controlled.

Assign Knob:
The Assign knob offsets modulation to either Filter Resonance, Filter Mix, or Grain Pan.

Reverb & Delay

Reverb

Add operates like an effect send. As Add is increased, more signal is fed into the reverb. The reverb will continue to decay even as level is reduced.

In the settings menu, you can determine if the reverb tail is added before or after the global dry/wet, so even if dry/wet is modulated, the reverb tail is maintained.

D/W controls the dry/wet reverb balance. In this mode, the reverb constantly receives signal. At 100%, the dry granular signal is no longer heard. This is a great mode for cinematic swells or gated reverbs.

Delay

This knob controls the amount of signal sent to the delay. The delay comes after the reverb in the signal chain, and works in a send effect manner, where the delay tail is added to the main signal.

Output Section

Dry/Wet Level

Here is the mixer for Dry & Wet. It operates like a crossfader. This control works directly with the FX Level parameter beneath it to set the balance of your mix. This parameter can be switched between **Dry/Wet** and **Dry Level** mode in the Settings menu.
Dry/Wet has three dynamic/VCA trigger modes.

Manual - Dry/Wet is adjusted manually.
Rec Trigger - An AD envelope is applied every time the buffer gets a record trigger.
MIDI Gate – An AHD envelope is applied every time a MIDI Note is received.

In these modes, a hidden envelope controls the mix level. The two envelope parameters are **Time** and **Delay**.
Furthermore, **Dry/Wet** has two modes, found in the Settings Menu:

Dry/Wet: Balances the dry input with the FX Level parameter.
At 0% you will only hear the dry input.
At 100% you will hear whatever the FX Level is currently set to.

Dry Level: This controls the Dry Level only, and is decoupled from FX Level.
At 0% you will hear no dry signal.
At 100% the dry signal is at max.
To hear the wet signal, adjust FX Level independently.

Preset Isolate: When this pin is active, the dry/wet level is maintained when switching between various presets. Use this to keep a constant FX Mix across presets.

*Tip: The two modes have the dry level on opposite sides (dry at 0% and dry at 100%). So, when using the dynamics/VCA control, take note that the envelope will move in opposite directions, depending on if you've selected **Dry/Wet** or **Dry Level** in the **Settings Menu**.*

FX Level & Grain Pan

FX Level

Here is the volume control for the wet level. It is used together with the Dry/Wet parameter above it to control the balance of the mix.

To clearly hear how this parameter works, try setting Dry/Wet to 100%. Now, FX Level will set the maximum Wet amplitude.
FX Level also has two dynamic controls: **Envelope** and **Enhance**.

Envelope - FX Level is modulated by the main AHD envelope, turning FX Level into a VCA. Great for tightening up percussive hits, using Graindad like a synth, and gating the FX output from sounding forever.

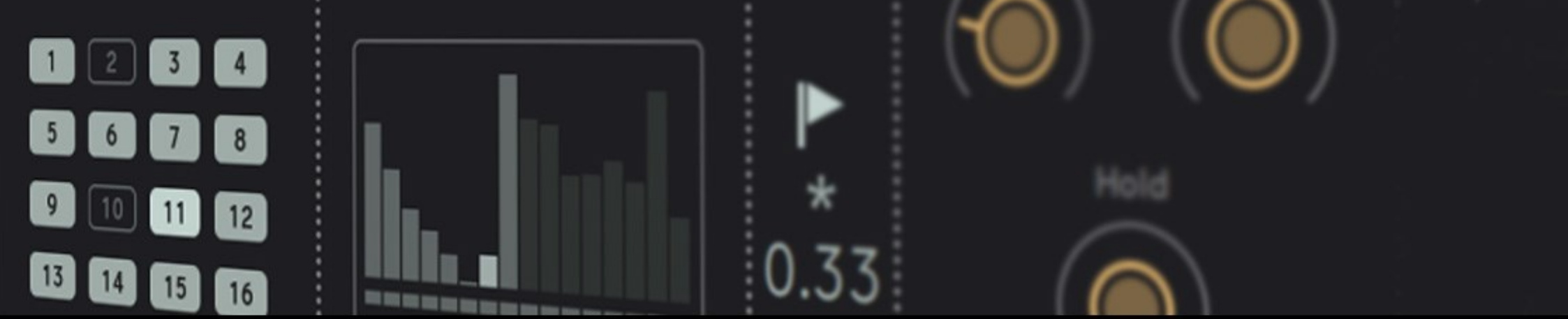
Enhance - Adds a volume boost and multiband compressor to smooth the granular output. At 50%, FX Level is at its original amplitude.
Above 50%, **enhance** introduces a Tube-like saturation.

Grain Pan

As grains are born, they will be placed randomly in the stereo filed. Grain Pan sets the possible width of the panning. At 0% there is no panning, and grains will always be placed in the center. At 100% grains can be born anywhere in the field, from hard left to hard right.

Grain Pan is impacted by the Pan control in the Filter Mod section. In this case, Pan acts as a direct offset, or bias control.

For example: When Grain Pan is set to 0%, you can use Pan to sweep the grains manually from hard left to hard right. When Grain Pan is set to 100%, you can use Pan to bias the random stereo placement to all left (0-50%), all right (50-100%), or select zones anywhere in-between.

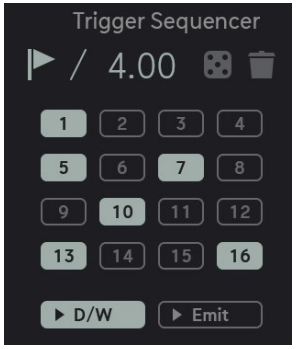


Modulators

Trigger Sequencer

The Trigger Sequencer's primary use is to trigger dynamic events in Graindad. Namely, hard switching of the dry and wet levels, triggering the envelope, and resetting the LFO. Additionally, with the right settings it can be used for stuttering, ducking, or 'trance gate' style gating effects. The trigger sequencer has two destinations: **Dry/Wet**, and **Emit**.

To use the sequencer, click on the individual steps. Highlighted steps are active.



Dry/Wet – Controls the Dry/Wet parameter. Toggles between 0% (inactive steps) and Dry/Wet's current set value (active steps).

Emit – Decides if Grains are born (emitted). As long as a step is active, Grains will be emitted, otherwise not. It is a rather natural way of trance gate, where grains are not cut off, they can play to the end, but they undergo birth control.

Use the **dice** button to generate a random trigger sequence.
Use the **trash** icon to toggle all steps active, or all steps inactive.

Clock Modes

The Trigger Sequencer has two **clock modes. (**Note the clock multiplier, which will multiply the clock rate by the shown factor…. *1, *0.25, etc.)

Transient: The Trig Sequencer will advance 1 step for every transient detected in the transient window.
Host Clock: The Trig Sequencer will advance at the host clock's tempo.

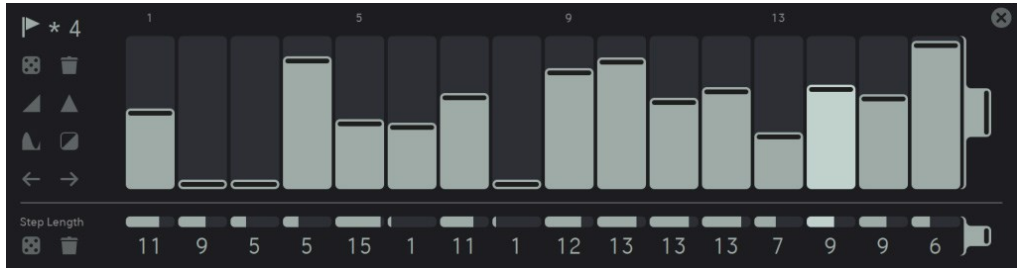
*Tip: The dynamics will behave differently depending on whether **dry/wet** or **dry level** is selected in the settings.*

Mod Sequencer

A step sequencer with some powerful tricks up its sleeve. This mod sequencer is actually two decoupled sequencers in one: a step value sequencer, and a step length sequencer.

Value Sequencer - Click and drag the bars to adjust their values. For fine-tune control, use the key shortcut [ctrl+click]. Drag the brace marker on the right to set pattern length.

Dice – Randomizes all step values.
Trash – Toggles all steps max, or all steps min.
Ramp – Creates a ramp of rising step values.
Triangle – Creates a rising/falling sequence of step values.
Sinus – Creates a wave of rising/falling step values. Similar to triangle, but non-linear.
Invert – Inverts the current sequence values. Min becomes max, 25 = 75,, 49 =51, etc.
Shift left/right – Shifts the pattern left or right.



Step Length Sequencer – This sequencer determines the length/repeats of the current step. Click and drag up/down on the display number to increase its length. All steps with a length of 16 would make a 256-step sequence! Drag the brace marker on the right to set the pattern length.

Dice - Randomizes the step length values.
Trash – Toggles all steps to a length of 1.

Mod Sequencer Clock Modes

Clock Modes

The Mod Sequencer has two **clock modes.**
Note the clock multiplier, which will multiply the clock rate by the shown factor (*1, *0.25, etc.)

Transient – The mod sequencer will advance 1 step for every transient detected in the record buffer, respecting the step's length value.
Host Clock - The mod sequencer will advance at the host clock's tempo.

Tip: The mod sequencer can be decoupled for extremely long, non-repeating patterns. Just drag the two brace markers to different pattern lengths. For example, a 16-step pattern for values, with a 15-step pattern for lengths. Transport start will reset the sequences to step 1.

RND & Envelope

RND

A random modulation source. Produces random values for use in Graindad's Modulation Assign section. In the Mod Section, the parameter appears as **RND+,** for unipolar values, and **RND+-** for bipolar values.

Rnd has two clock modes and a clock multiplier: **Transient** and **Host Clock**
Note the clock multiplier, which will multiply the clock rate by the shown factor (*1, *0.25, etc.)

Envelope

Shape your sounds with the attack, hold, decay (AHD) envelope.
The envelope has two modes: linear, and exponential. The linear envelope has a longer audible phase and is great at swells, pads and long sustains. The exponential envelope has a much shorter audible phase, excelling at plucky, percussive sounds, stabs, etc.
The envelope has four trigger sources:

- **Trigger Sequencer**
- **Transient**
- **MIDI Gate**
- **REC Trigger**

Also take note of the internal mod routings; the envelope can be a direct source to Filter Mod and FX Level without needing to assign it in Modulation Assign. Conversely, all of the envelope stages are targets of Time Mod, for when you want to modulate the modulator.

Tip: To setup Graindad as a granular synth, enable MIDI Gate trigger mode and engage envelope control of FX Level.

LFO

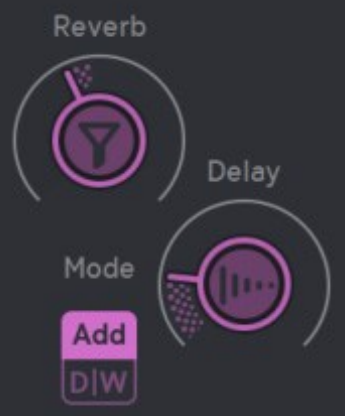
A beat synced low frequency oscillator.

The LFO can be reset by these sources:

- **Free Running**
- **Trigger Sequencer**
- **Transient**
- **MIDI Gate**
- **REC Trigger**

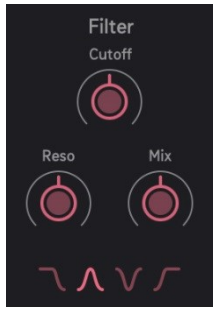
Waveform selection is accessed by clicking on the waveform, with options for **Sine, Triangle, Sawtooth, Ramp, Pulse and Random.** LFO output is bipolar with the exception of the **Ramp** and **Pulse** waves, which are unipolar.

Like the envelope, the LFO can bypass Modulation Assign as a direct source for Filter Mod, and as a target of Time Mod.



Effects Section

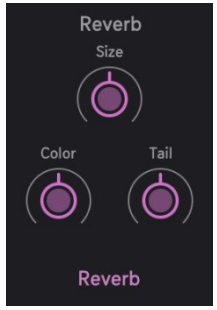
Filter, Reverb & Delay



Filter

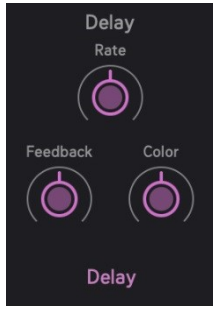
In this filter control section, Graindad sports a multimode filter with **Lowpass**, **Bandpass**, **Band Reject**, and **Highpass** modes. Unlike the filter on most of your synths, this filter can run parallel to your sound with the **Mix** control. For a serial filter, just crank mix up to 100%.

Refer to the Filter Mod section for info on modulating the filter parameters.



Reverb

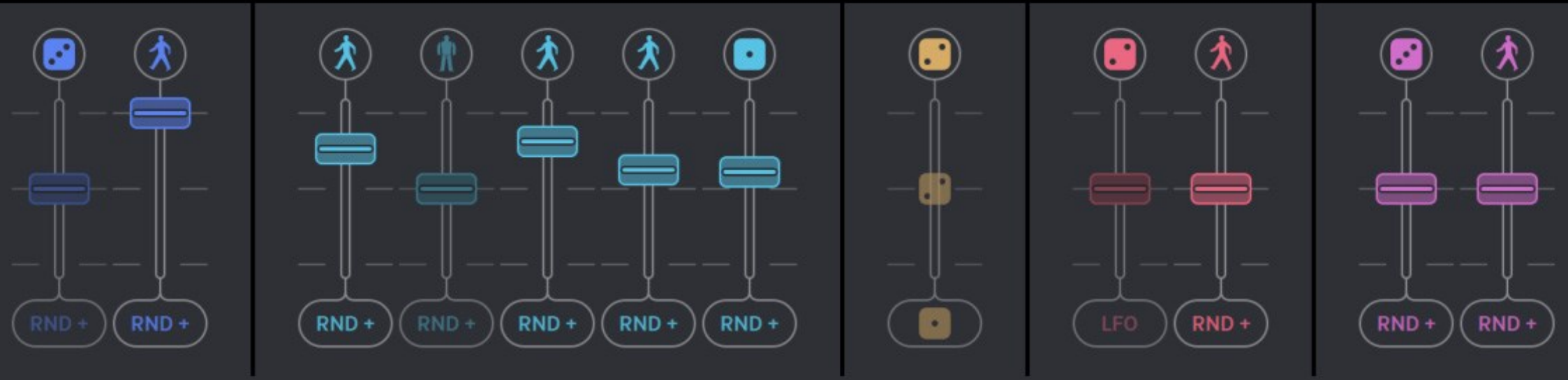
The control section for the reverb. By clicking on 'Reverb', three algorithms are selectable: **Reverb, Spring,** and **Shimmer.**



Delay

The control section for the delay. By clicking on 'Delay', six algorithms are selectable: **Delay, L/R Delay, Flanger, Flanger II, Chorus,** and **Chorus II.**

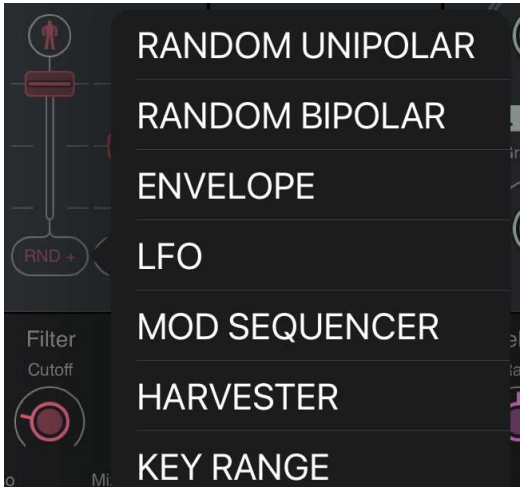
Modulation & Random Assign



Modulation Assign

One of Graindad's most prominent features is the Modulation Routing section. In this space we can assign, attenuvert and activate modulation to all of the main parameters. First, to assign a mod source, click the box beneath the fader (by default Random Unipolar is assigned). A context menu will appear with the following mod sources:

Random Unipolar: Unipolar Random modulation from the Rnd source in the bottom section. (RND+)



RND Bipolar: Bipolar Random modulation from the Rnd source in the bottom section. (RND+-)

Envelope: Envelope modulation

LFO: LFO modulation

Mod Sequencer: Modulation from the Mod Sequencer

Harvester: Selects modulation from the Harvester, if that parameter is active in the Harvester.

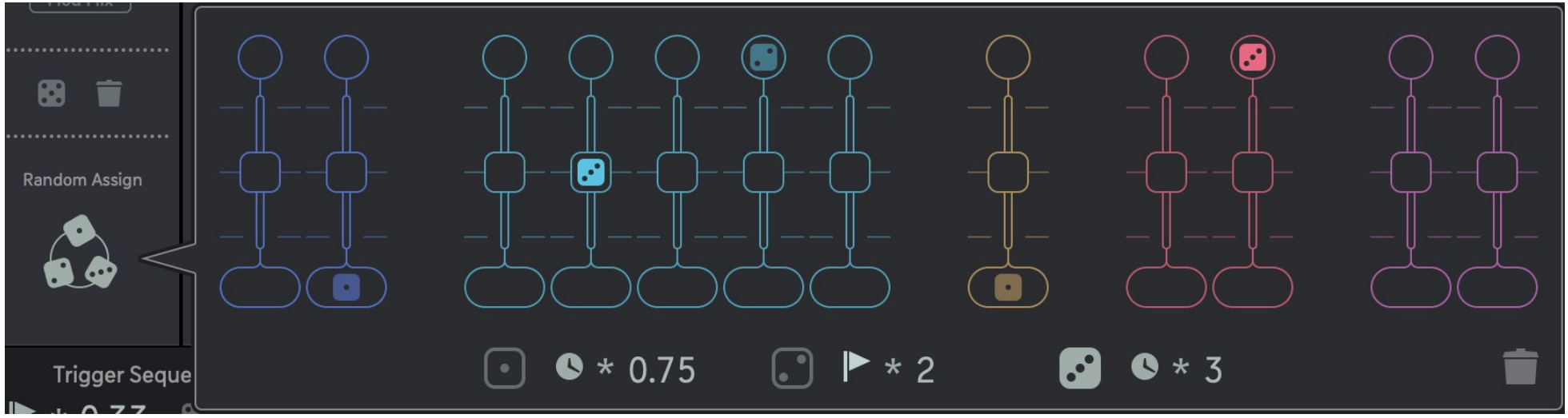
Key Range: Applies key-tracking from a connected MIDI source. (Find key-track range under Settings.)

To turn modulation on or off, click the 'human' icon at the top part of slider. This will highlight the man, and the modulation will toggle between active or inactive.

Setting mod depth is done with the fader. The faders are bipolar attenuverters, so dragging upward will apply positive modulation, while dragging down will invert the modulation. Modulation of a parameter begins from its current value. Depending on mod depth, the values may 'clip' at the upper or lower ranges, so adjust depth accordingly.

Random Assign

As a compliment to Modulation Assign, we have a section of powerful randomizers called **Random Assign**. In this section, we can assign dice which generate clocked random values to the Activators, Attenuverters, and Assign points of each parameter.



To enter **Random Assign**, click on the 'three dice' icon. In this window, each parameter's mod section will have three empty boxes. To fill these boxes, first click one of the dice icons to highlight it. Next, when you click an empty box, the currently highlighted dice will be applied to that section. To remove a dice, simply click on it. (From the main page, dice can also be deleted with a right click).

Dice applied the **Activators** (top) will randomize the on/off state of modulation.
Dice applied to the **Attenuverters** (middle) will randomize the depth of modulation.
Dice applied to **Assign** (bottom) will randomize the mod source (lfo, key, env, etc.).

Clock Modes
The **Clock Modes** for the dice are **Transient** and **Host Clock.** These dice clocks share the same clock multipliers found throughout Graindad.
(Note the clock multiplier, which will multiply the clock rate by the shown factor (*1, *0.25, etc.)
To clear all random assignments, click the **Trash** icon at the lower right.

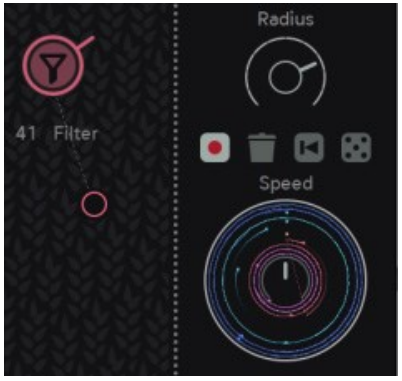
The Harvester

The Harvester

The Orbiter is back under a new name - introducing the Harvester!
The Harvester is a unique automation and modulation system that takes parameters as objects and measures their proximity to a static or traveling focal point. This entire section can be mixed in with the modulation from the main page, or replace it entirely. To build the analogy, the Harvester travels a field collecting grain.

Above this field is a shifting constellation of 'Planets' and 'Moons'. A **Planet** is one of the main parameters, such as *Filter or Jitter*. A **Moon** is recordable automation for that parameter. The distances of the Moons from the Harvester are measured and turned into parameter values. The closer the parameters (the planets with their moons) are to the focal point (the harvester) then the higher the parameter values will be. The further away they are, then the lower the parameter value will be. This distance between the Harvester and the Planets can be scaled with the Radius parameter.

Moons (modulation) always travel with their Planets (parameters). If a moon is not visible, it is hiding behind the planet, and can be dragged out into orbit when the **Record Orbit** button is active. When active, mouse movements of the dragged moon are recorded as it's 'orbit'.

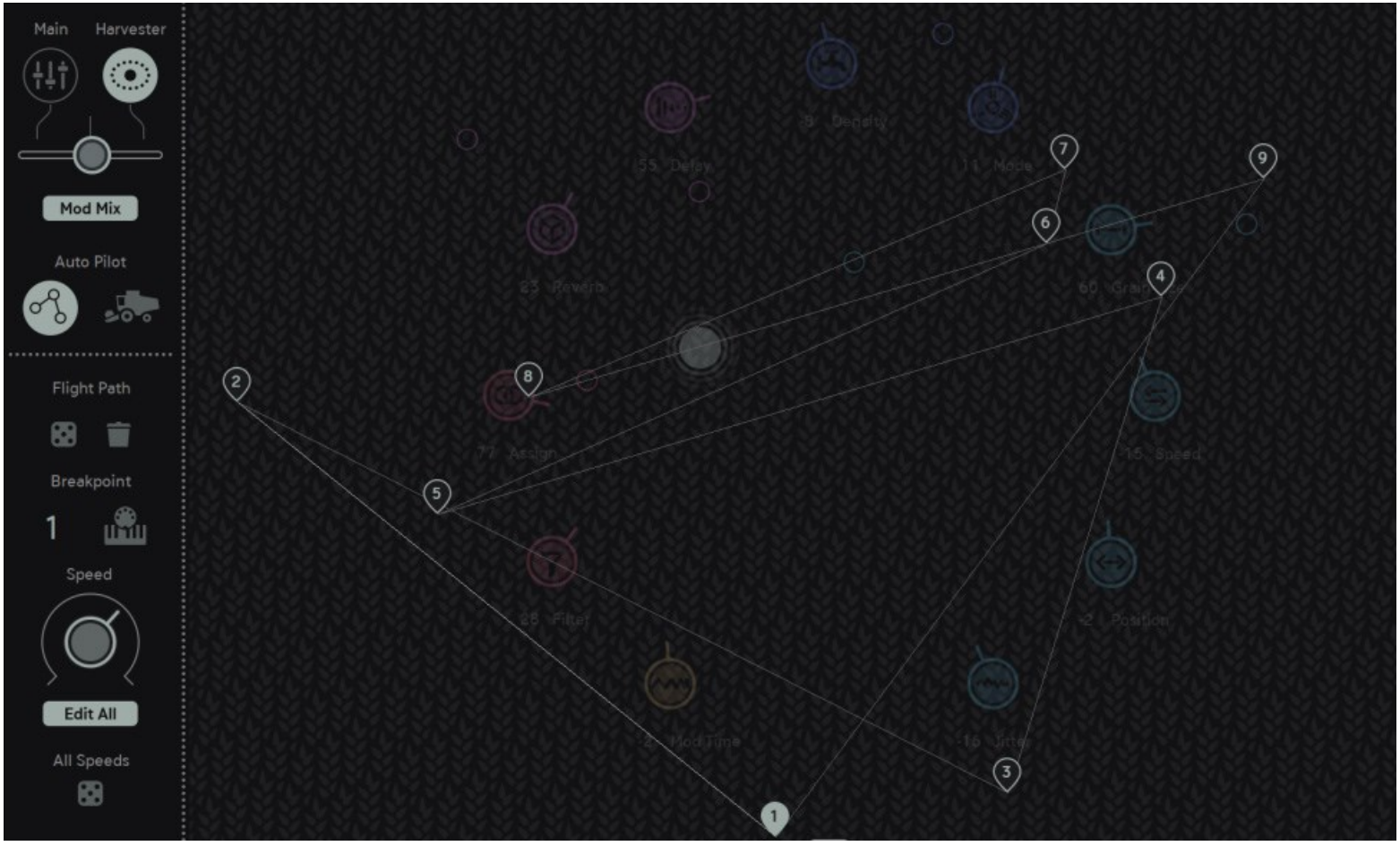


The speed this automation ('orbit') can then be slowed down, or sped up.

Here is a nice tutorial:
https://youtu.be/oa9lwmAuyKg

The Harvester Travel Paths

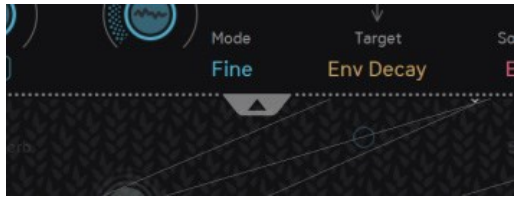
As all this automation is occurring in the night sky, the Harvester is busy below. We can arrange travel paths for the Harvester using breakpoints, to set a course through the fields. Each breakpoint has its own speed setting, determining how long it takes to travel to the next stage. Furthermore, each breakpoint can be instantly triggered when MIDI mode is engaged (MIDI notes 0-11).



Harvester Controls

Let's get familiar with the Harvester Controls.

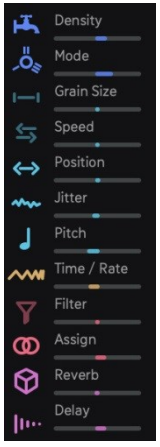
First off, to make things easy and avoid inspirational disturbances from page switching, the main page parameters can still be viewed on top of the grain field. Click the trapezoidal tag at the top of the field to open the granular parameters. Click on the bottom tag to open the modulator/fx section.



Mod Mix:
Crossfades modulation from the Main Page, with modulation from the Harvester. If the button is not engaged, modulation from the currently open page is applied.

Breakpoint Icon:
Opens the Breakpoint Editor.

Harvester Icon:
Turns the Harvester auto pilot on/off. (To follow the path set by the breakpoints)



Parameters:
Displays the parameters added to the Harvester as 'planets', and their current values.
Clicking the parameter icons will remove them from the field.

Radius:
Adjusts the scale of distance from the harvester to the moons. I.e., how far away '0' is from the moons to the harvester. Even without moons in orbit, you could treat this as one giant macro knob.

Record Orbit:
When record is lit, you may drag a moon from a planet. The path you drag the moon is recorded as automation.

Trash:
Removes all automation and orbiting.

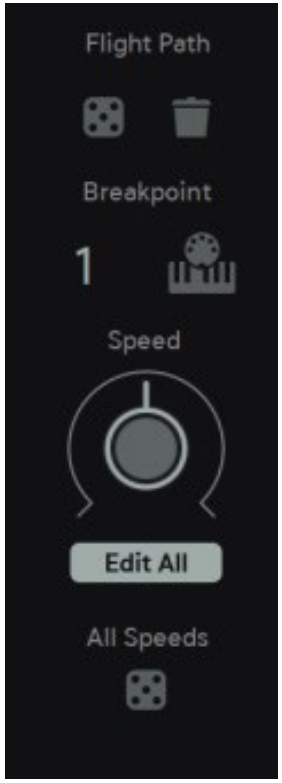
Reset:
Resets the Planets and the Harvester to their default positions, as a ring in the field. Moon orbits are unaffected.

Dice:
Randomizes moon movements.

Speed:
Adjusts the speed of recorded 'orbit' automation.
The length of recorded automation is visualized by how long the moon takes to orbit the center 'speed' knob. When the orbit reaches the blue middle line, that marks the beginning of recording. So, shorter recordings are animated as quick orbits, while longer automation recordings move in orbit slower.

Harvester Breakpoint Editor

In the breakpoint editor, we create custom paths for the Harvester to travel using up to 12 breakpoints. The parameters are as follows:



Dice: Creates a random flight path, randomizing the position and number of breakpoints, as well as their speed settings.

Trash: Removes all breakpoints.

Breakpoint Number: Drag up/down on the number to select through the breakpoints. Alternatively, clicking on a breakpoint selects it too.

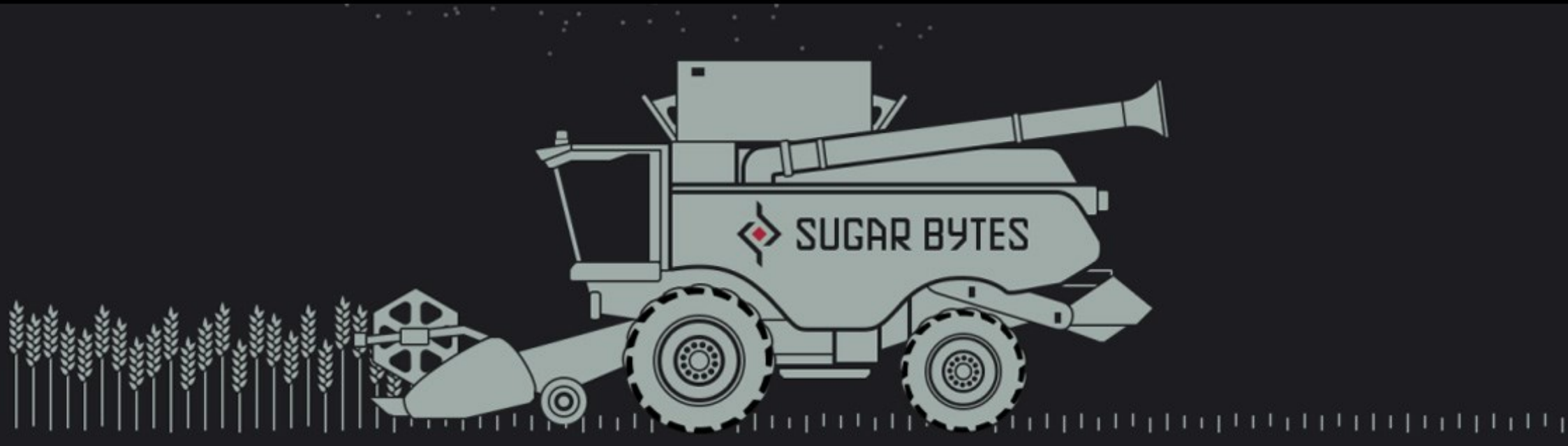
MIDI: Uses MIDI notes 0-11 to instantly jump to breakpoints 1-12. (Check Settings to enable the MIDI Gate of 0-11to continue triggering Record, Envelope, or LFO.)

Speed: Adjusts the speed that the currently selected breakpoint travels to the next point. Each breakpoint can have a unique speed.

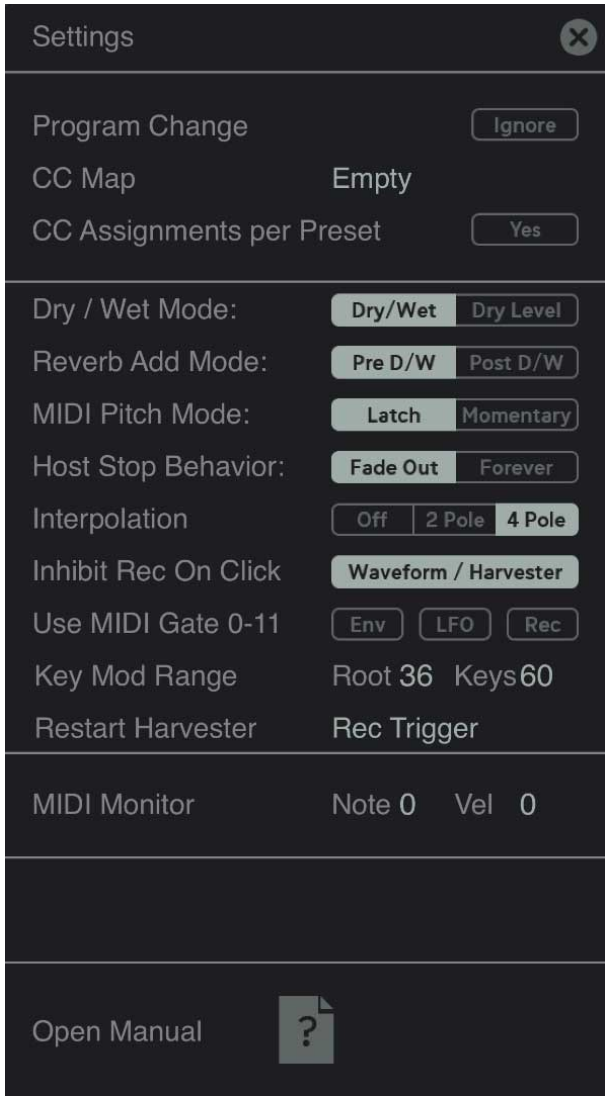
Edit All: When this is toggled, the speed of all breakpoints will be adjusted as one.

'All Speeds' Dice: Randomizes the speed of each breakpoint.

Settings



Use these settings to further customize signal flow, MIDI handling, and more.



Program Change:

Presets saved to the 'MIDI Programs' folder can be loaded with Program Change messages.
Select **ignore** to ignore Program Change messages.

CC Map:

Custom CC mappings can be saved and loaded from here. After MIDI learning the various Graindad controls, these mappings can be saved for later use.

CC Assignments per Preset:

When active, MIDI Learn settings will be kept and not be changed when selecting a different preset.

Dry/Wet Mode:

Changes the functionality of the Dry/Wet knob.
Dry/Wet crossfades Graindads dry input, with the granulated effect.
Dry Level sets the gain of the dry signal only, without affecting the wet level.

Reverb Add Mode:

When Reverb is in Add mode, it will be added to the main signal like a send effect (reverb control now is a send level control). Use this option to add the reverb *before* the global dry/wet (**Pre Dry Wet**) or *after* the global dry/wet (**Post Dry Wet**), to maintain the reverb tail even if the global dry/wet is heavily modulated. This ensures atmospheric ambiences will not drastically cut off.

MIDI Pitch Mode:

This changes how the MIDI Pitch mode responds to incoming MIDI Notes.

Latch remembers the last MIDI note played, and doesn't update pitch until a new MIDI note is played.

Momentary only updates the pitch as long as the MIDI note-on is sustained. Upon note-off, the pitch returns to its set value.

Host Stop Behavior:

Fade Out: The granular output fades out when the host clock is stopped, i.e., no wet output.

Forever: The granular output continues to play even after host clock has stopped. The FX Level *envelope* button can be used to control the output in this mode.

Interpolation:

Pitch shifting introduces aliasing artifacts because audio samples are not aligned to sample rate anymore. High pitches might skip audio samples, while low pitches might play audio samples twice. Interpolation will solve that. Two quality modes are available:

2 Pole is cpu friendly and sounds good.

4 Pole is more cpu hungry, but ensures best quality results.

Inhibit Rec on Click:

Buffer recording can be inhibited as long as the buffer waveform or the Harvester are clicked. This allows you to hold the current buffer during live performance, when you want to play with a word a singer just sung, e.g.

Use MIDI Gate 0-11:

Select these options when using MIDI Gates to trigger breakpoints in the Harvester.

Env: Uses the gate from notes 0-11 to trigger the envelope.

LFO: Uses the gate from notes 0-11 to reset the LFO.

Rec: Uses the gate from notes 0-11 to trigger Record, when buffer record is set to MIDI mode.

Key Mod Range:

Adjusts the range of key tracking of the MIDI Input, for use in the Modulation Assign.

Root: Sets the root key where key-track's minimum value begins.

Keys: Sets the number of keys from the root which will be key tracked. Adding the root + number of keys tells you which note the maximum value of key-track lands on.

Restart Harvester:

There are four different ways to restart the Harvester when it runs through its breakpoints.

Free: Runs free

Host Play: Restarts when the host starts.

Rec Trigger: Restarts when a rec trigger arrives (which is selected in the upper right corner, i.e. clock, MIDI or transient).

MIDI Gate: Restarts when a MIDI note arrives.

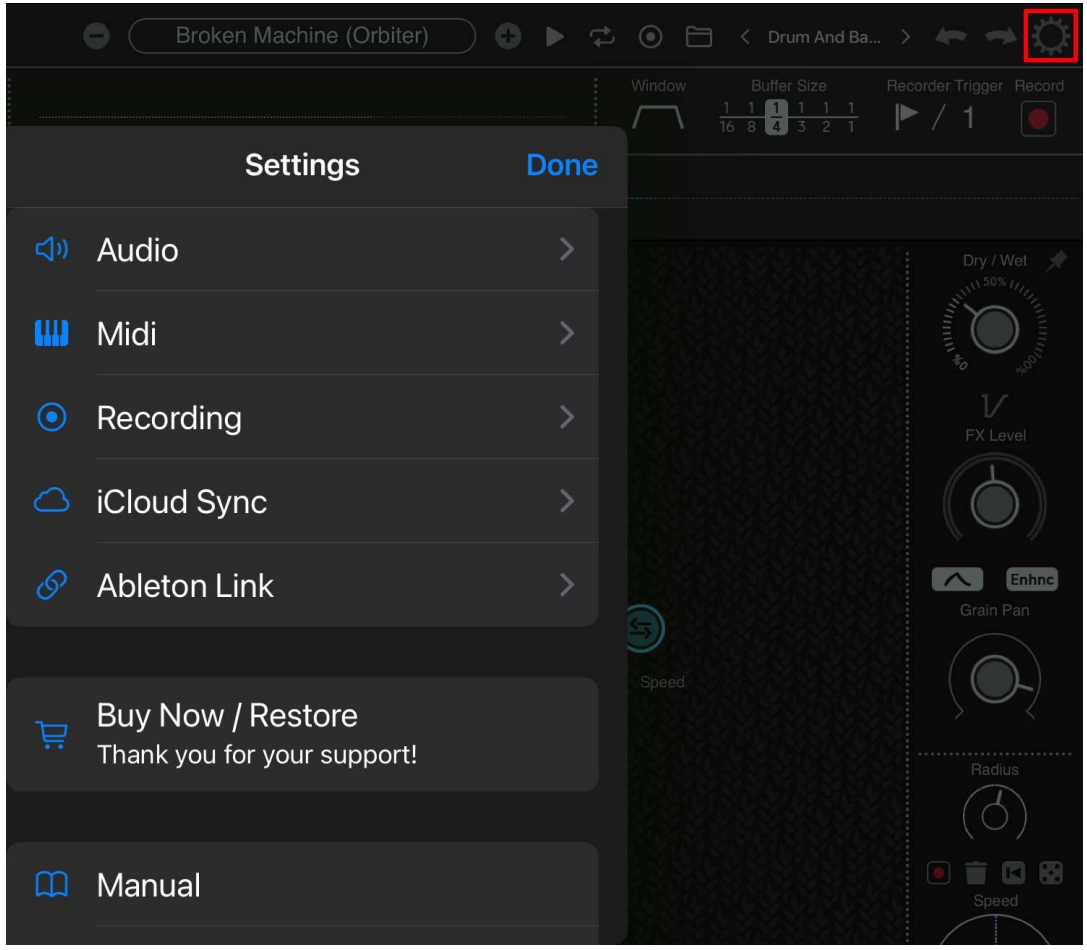
MIDI Monitor:

A handy utility to show you the current MIDI note number and its velocity. Great for quickly troubleshooting and checking octave ranges.

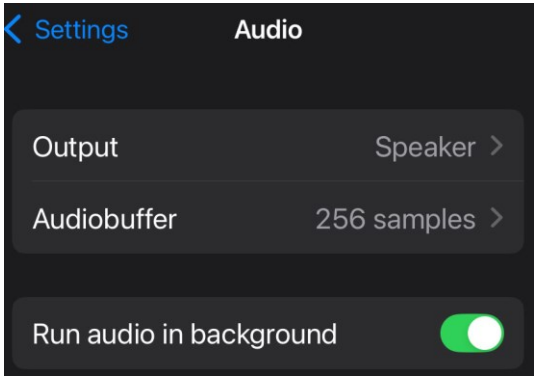
Open Manual: Opens this manual.

iOS Settings

Adjust the way Graindad operates in certain MIDI and Audio connections, enable or disable Ableton link as well as preset file sharing between Graindad iOS and your other devices via iCloud synchronization.



Audio Settings

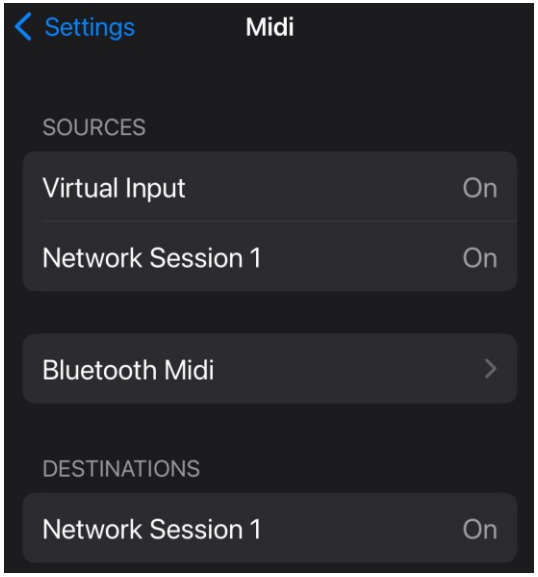


Output
If a multichannel sound card is connected, you can choose all available out ports here.

Audio Buffer
This allows you to change the audio latency of Thesys. If you experience crackles in the audio signal, you should use a larger buffer size.

Run Audio in Background
Choose Thesys to continue playing even if another app is on or not.

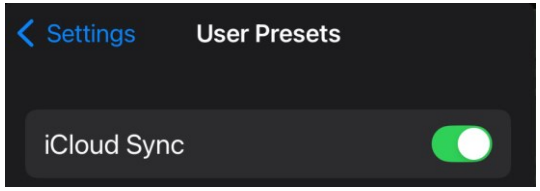
MIDI Settings



This list shows all MIDI devices currently connected to your iPad. Supported MIDI Types:

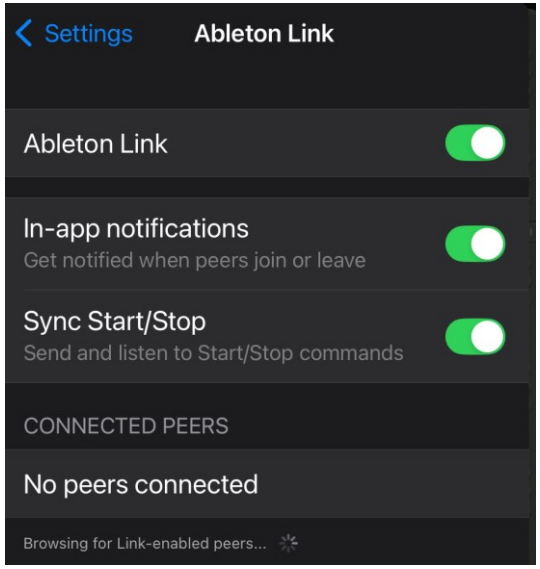
- CoreMIDI virtual ports (to/from other apps)
- CoreMIDI network (as a session originator or receiver to/from Mac or PC)
- CoreMIDI physical devices (USB MIDI Controller)
- Bluetooth MIDI

iCloud Synchronization



Share your saved presets across multiple devices.
Find out more about iCloud Synchronization **here.**

Ableton Link



When activated, Ableton Link will sync tempo across apps.
Find out more about Ableton Link **here.**

Connectivity

iCloud Synchronization

Through iCloud, you'll be able to share your saved presets across multiple devices including your desktop computer.
This feature is disabled by default. To sync Graindad across your devices, launch the Settings Screen.
Under **Settings** choose iCloud, tap iCloud and set iCloud to On.
Once activated, presets you save in the Graindad iOS version are synced automatically to your iCloudDrive.

To share a preset from your **Graindad iOS version to your computer**, you'll need to copy/paste the preset from

iCloudDrive/Graindad/Presets/User

into

~/Documents/Sugar Bytes/Graindad/Presets/User

To share a preset from your **computer to your Graindad iOS version,** you'll need to drag and drop or copy/paste the preset from

~/Documents/SugarBytes/Graindad/Presets/User

into

iCloudDrive/ Graindad/Presets/User

The presets will then automatically appear in the User folder of Graindad's preset browser.
Please note that creating and then reading out a subfolder is technically not possible.
that creating and then reading out a subfolder is technically not possible.

Graindad as a plugin inside your favorite portable DAW

Graindad supports the Audio Unit V3 standard making it possible to load multiple instances into any DAW that supports AUv3.

It will be up to the host app on how it implements the AUs menu, but in most host apps you'll find the menu where other effects, instruments, or editing tools can be applied.

Just select Graindad from the list of available AU effect apps.

Audio and MIDI connections (use the Graindad Midi variant) are now made between the DAW and Graindad and you can control it using the DAW's virtual keyboard or Performance view.

Parameters and presets are automatically saved within your DAW sessions and banks.

MIDI Remote

Some parameters of the Mixer page can be controlled via Host Automation and remoted via MIDI CCs.
You find the MIDI Learn function when you long press a control.

MIDI Program Change

If your mobile DAW or MIDI controller is capable of sending MIDI Program Change messages, you can call up the global presets of Graindad.

Therefore just choose 'Copy to Midi Programs' from the Preset folder and select the related presets, then confirm by clicking 'Copy to Midi Programs' again. You should later see the preset in the Graindad preset menu within the Midi Programs folder.

(You may have to restart Graindad after copying files into that folder in order to reflect the changes.)

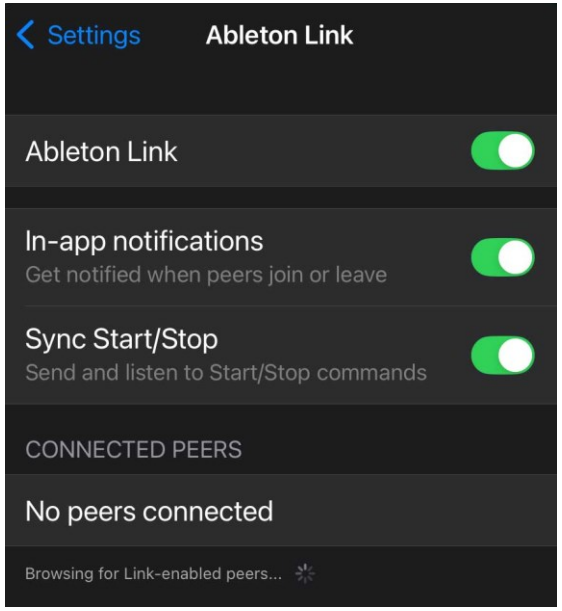
Make also sure that the "Ignore Program Change" setting in the Settings Screen of Graindad is deactivated and you have routed a MIDI connection to Graindad. Then the presets should load according to their alphabetical order and of course this is limited to 128 presets.

Ableton Link

Hop on to the same network and jam with others using multiple devices running Ableton Link-enabled software.
Anyone can start and stop their part while others keep playing. And anyone can adjust the tempo and the rest will follow.

You can activate Link via Graindad's Settings.

When activated, Ableton Link will sync tempo across apps.



Find out more about Ableton Link here.

Contact

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Vincent Miethe
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