u-he

HIVE

VERSION 1.2

USER GUIDE

7. Dec 2018

HECKMANN AUDIO GMBH – BERLIN

Table of Contents

Introduction

Installation

Go to the Hive page at www.u-he.com, download the appropriate installer for your system and un-zip the compressed file. Open the "Hive" folder and start the installer application. The only demo restriction is a mild crackling sound at irregular intervals after about two minutes of use, which will disappear after you have entered a serial number.

By default, recent versions of Hive use the following directories:

Win	presets (local)	*C:\Users*YOU*\Documents\u-he\Hive.data\Presets\Hive*
	presets (user)	*C:\Users*YOU*\Documents\u-he\Hive.data\UserPresets\Hive*
	preferences	*C:\Users*YOU*\Documents\u-he\Hive.data\Support\ (*.txt files)*
	microtuning	*C:\Users*YOU*\Documents\u-he\Hive.data\Tunefiles*
Mac	presets (local)	*Macintosh HD/Library/Audio/Presets/u-he/Hive/*
	presets (user)	*~/Library/Audio/Presets/u-he/Hive/*
	preferences	*~/Library/Application Support/u-he/com.u-he.Hive... (*.* files)*
	microtuning	*Macintosh HD/Library/Application Support/u-he/Tunefiles/*
	other resources	*Macintosh HD/Library/Application Support/u-he/Hive/*

For our terms of use and more, please refer to the **ReadMe** text that came with the installer.

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Online resources

For downloads, news articles and support, go to the u-he website
For lively discussions about u-he products, go to the u-he forum at KVR
For friendship and informal news updates, go to the u-he facebook page
For u-he presets (commercial and free), go to the u-he preset library
For u-he video tutorials and more, go to the u-he youtube channel

The u-he team (2018)

Urs Heckmann (code, vision)
Sascha Eversmeier (code, bad puns)
Howard Scarr (presets, manuals, necessary grump)
Rob Clifton-Harvey (interwebz, support)
Sebastian Greger (GUI design, 3D stuff)
Jan Storm (framework, more code)
William Rodewald (student life-support code)
Viktor Weimer (support, presets, the voice)
Thomas Binek (QA, bug-hunting, presets)
Jayney Klimek (office management)
Alf Klimek (tagging & repairs)
Henna Gramentz (worldly supervision)
Dario Lupo (marketing, web design)
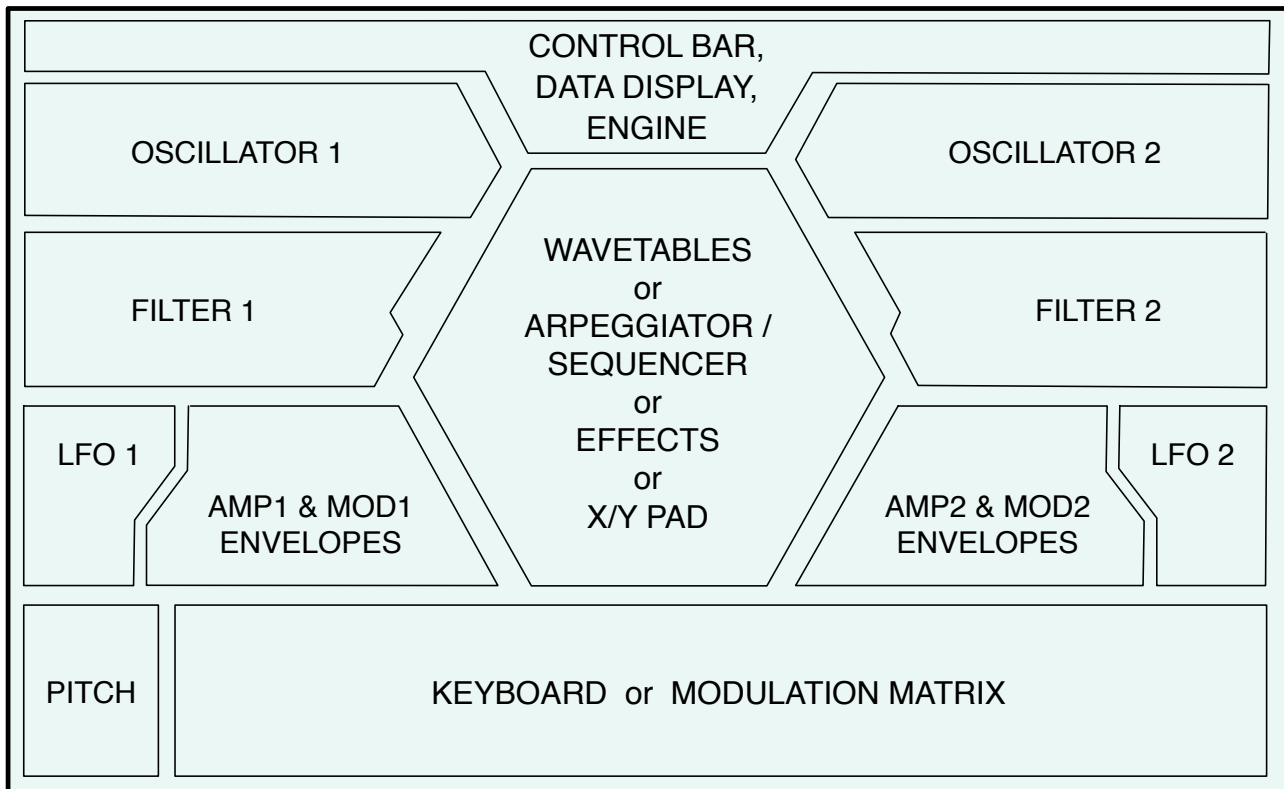Frank Hoffmann (more framework, new browser)
Alexandre Bique (all things Linux)
Oddvar Manlig (everything else!)

Special thanks to Brian Rzycki for maintaining PatchLib

The User Interface

Here's an overview of the panels, followed by some important information about how to operate Hive. Please read this section thoroughly.

	CONTROL BAR, DATA DISPLAY, ENGINE	
OSCILLATOR 1		OSCILLATOR 2
FILTER 1	WAVETABLES or ARPEGGIATOR / SEQUENCER or EFFECTS or X/Y PAD	FILTER 2
LFO 1 AMP1 & MOD1 ENVELOPES		AMP2 & MOD2 ENVELOPES LFO 2
PITCH	KEYBOARD or MODULATION MATRIX	

The main area is separated into two equal halves by the large central hexagon. Each half has a dual oscillator, a filter, an LFO and a pair of envelope generators.

This symmetry wasn't purely an aesthetic decision, it also encourages users to layer two relatively simple voices – a powerful approach to synthesizer sound design with a grand tradition (e.g. Yamaha CS80, Korg 800 DV).

However, the main oscillators and sub-oscillators can be freely routed to either or both filters, and filter 1 can be fed into filter 2. This means that Hive's signal routing / mixing depends entirely on the filter input selectors and filter volumes – simple and effective!

Knobs, Sliders, Selectors

All controls react consistently to **left-click & drag** up/down by activating the primary function, while a right-click will often open a context menu.

To **fine tune** the value of any continuous parameter, hold down a SHIFT key before clicking on the control. To reset a parameter to its default value, either double-click on it or hold down an **ALT** (Mac) or **CTRL** (PC) key, then single-click.
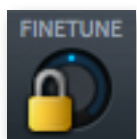
To guarantee that the value of a parameter doesn't change whenever you switch presets, use the Lock function. Right-click on any control and select the last entry (often the only entry) from the context menu.

Note that a locked parameter can still be adjusted manually!

Panel Presets

To the left of each panel's label is a button containing a triangle – click to copy, save or load panel presets. Note: The Arp/Seq and FX panel preset buttons look rather different. They are appear as fields which show the name of the selected panel preset.

To locate panel presets on your hard disk, select *reveal in Finder* (Mac) / *open in Explorer* (Win):

Windows   *C:\Users*YOU*\Documents\u-he\Hive.data\Support\Modules*
macOS   *Macintosh HD/Library/Application Support/u-he/Hive/Modules/*

Solo

To the right of each title in the oscillator / sub-oscillator and filter panels is a button labelled 'S', which stands for **Solo**. Just like on a mixing desk, activating Solo isolates particular modules so you can check how they contribute to the overall sound.

Skin / GUI Size

You can change the skin or resize the GUI by right-clicking anywhere in the background and selecting from the list. These settings are also available in the Preferences page as more permanent, global defaults.

Signal Flow

All grey arrows in this diagram represent stereo signals, and the blue arrows are fixed modulation paths (immediately available without requiring the modulation matrix).
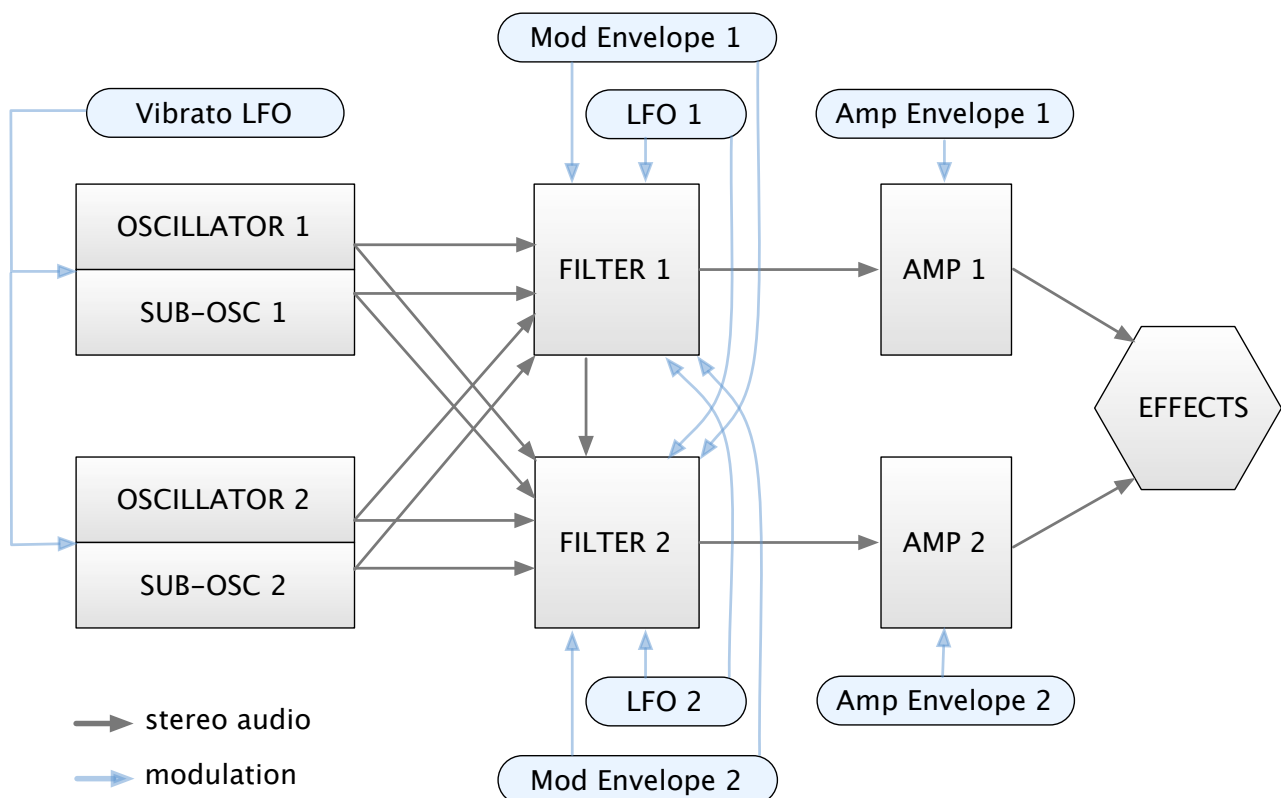
Performance Control

Hive responds to pitch bend (PB), modulation wheel (MW) and pressure (AT = aftertouch). Many of the presets also respond to "Control A" and "Control B", which are set to breath control and expression pedal by default. Please configure your MIDI hardware to send the control change (CC) messages 2 (breath) and 11 (expression)…

See *Control A Default* and *Control B Default* in the [Preferences](#).

While auditioning presets without any specific goal in mind, we recommend exploring the potential of one preset before moving on to the next. Many seemingly harmless presets really come to life when you use the wheels, aftertouch, Control A and Control B.

The Control Bar

Along the top, either side of the data display (see below), Hive's **Control Bar** hosts a number of global parameters plus a few utility functions.
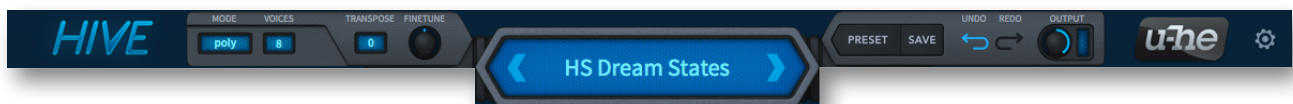
Mode (voice mode)

The **poly** mode option means normal polyphonic, **mono** is monophonic with envelope retrigger, **legato** is monophonic without the retrigger. In **duo** mode, oscillator 1 plays the lowest held note while oscillator 2 plays the highest.

Voices (maximum polyphony)

This selector determines the maximum number (2-16) of voices that can play simultaneously before note-stealing occurs. The Voices parameter only applies to **poly** mode, it is ignored in all other voice modes. Setting a low value here can save CPU.

Transpose

The pitch of the preset in semitones (+/- 24).

Fine Tune

The pitch of the preset in cents (+/-100).

Data display

This has several duties, most of which have to do with presets...

It usually shows the name of the current preset. Clicking on the arrows to the left and right steps through presets. Clicking on the display itself lets you select a preset from the current directory (see the [Preset Browser](#) chapter for a more flexible method).

While you are adjusting something in Hive, the data display shows the parameter name and value. After a few seconds of inactivity, it shows the name of the preset again.

Initialize preset: Whenever you want to start from scratch with a simple template preset, right-click on the data display and select **init** (currently the only entry in that context menu).

Presets
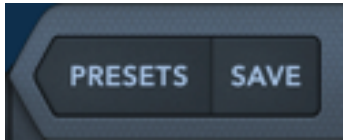
See the [Preset Browser](#) chapter.

Save

Stores the current preset into the **User** folder or the currently selected folder, depending on the status of the **Save Presets To** [preference](#).

Right-clicking on the [SAVE] button lets you select the preset format you will be using. Standard is **.h2p**, which has the great advantage of being cross-platform compatible. The *.h2p extended* format is similar but also allows per-line comments (the files are therefore larger).

Undo / Redo

Clicking on the curved arrows calls **undo** and **redo** functions. Note that you can even undo a change of preset i.e. recall edits made to the previous one. If the undo or redo step is available, the arrow will be highlighted blue like in this image.

Output

This is Hive's main volume control, accompanied by a signal level indicator. To avoid digital distortion, reduce the Output whenever you see the top (red) line flashing.

Most of the factory presets have Output set to 100. Higher values can be used to boost very quiet signals up to 'normal' levels.

The u-he Badge

Click on this badge to open a popup menu containing links to this user guide, to our website, to our user support forum at KVR as well as to our address in various social networks:

> visit u-he.com
> user guide
> support forum
> u-he on Twitter
> u-he on Facebook
> u-he on YouTube

Configuration cogwheel
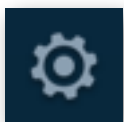
Clicking on the cogwheel icon opens the global configuration pages where you can assign remote control (via MIDI CC) and set various other permanent preferences. For details, go to the [Configuration](#) chapter.

Mode Switches / Indicators

Synth Engine

The row of buttons below the data display select one of 3 fundamentally different 'characters' which simultaneously affect various parts of Hive:

NORMAL .... Exponential oscillator detune, s-shaped envelope attack, short decay, over-sampled self-oscillating 'ladder' filter model with non-linear resonance.

DIRTY   Evenly-spaced oscillator detune, exponential envelope stages, oversampled self-oscillating 'diode ring' filter. Highly non-linear and unpredictable!

CLEAN   Slightly wider oscillator detune, linear envelope attack, exponential decay and release, linear (non-distorting) 'state variable' filters, no oversampling.

Link
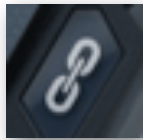
Between Filter 1 and the hexagon is a button which, when activated, causes all knobs and sliders to the right of the hexagon to 'follow' their counterparts on the left.

Linked controls on the right are marked with a small 'L'. All movement is **relative** i.e. the linked control will not necessarily adopt the same absolute value.

Revision | MIDI Activity Indicator | CPU Indicator

At the very top of the hexagon is an information bar showing the plug-in revision number, a MIDI activity indicator and a CPU usage meter. The labels appear fainter than they do in this image:
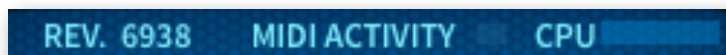
Keys / Modulation Matrix Selector

The three buttons below the hexagon are for switching what appears at the bottom: either the on-screen keyboard (KEYS) or one of the two modulation matrix pages (MM1 or MM2).

For details, see Keyboard and Modulation Matrix.

Preset Browser

Overview

You can load any preset in the current folder by clicking on the data display, or step through presets by clicking on the arrow symbols either side of the data display. Of course Hive also includes a preset browser – click on the **PRESETS** button:
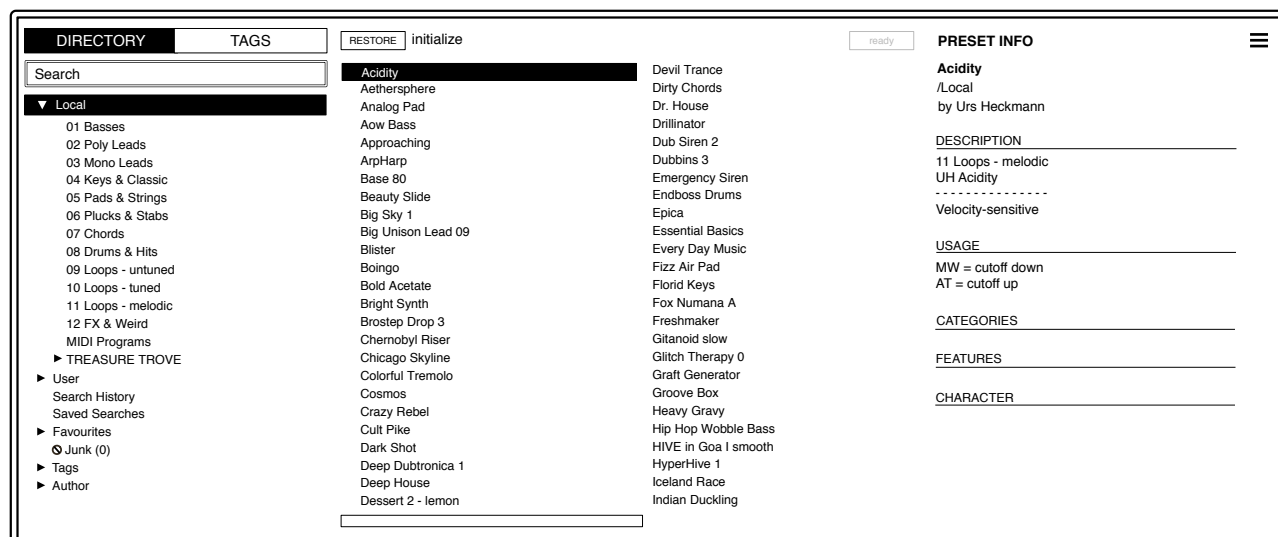
Folders appear on the left, presets appear in the centre and information about the currently active preset appear on the right. If you can't see any presets at all, click on *Local*. If you can't see the PRESET INFO panel, click on the button in the top right and select *Show Preset Info*.

The *Local* root directory contains a representative selection of presets copied from the subfolders. After selecting a preset here you can step through the others using your computer's cursor keys.

<div align="center">

That's all you need to know for now!

</div>

If you want to dig deeper, Hive's browser has many more features including *drag&drop*, a powerful search engine and much more. For details, read the rest of this chapter.

Default preset

Whenever Hive is started it checks whether the Local root contains a preset called *default*. If this file exists, it is loaded instead of the demo sound. Note that *default* will not appear in the browser!

If you want a simple template preset to be loaded instead, right-click on the data display and select **init** (initialize). Check that the Local root is is the currently open folder and [SAVE] this preset under the name *default*.

If a fresh instance of Hive is not loading your new default preset, it is likely to have landed in 'User' instead of 'Local', in which case you should go to the [Preferences](#) and change the [Save Presets To](#) setting from *user folder* to *selected folder* and repeat the above.

Directory Panel

If you don't see this panel on the left of Hive's Presets browser, click on the DIRECTORY tab.

```
      DIRECTORY

 Search

 ▼  Local
        01 Basses
        02 Poly Leads
        03 Mono Leads
        04 Keys & Classic
        05 Pads & Strings
        06 Plucks & Stabs
        07 Chords
        08 Drums & Hits
        09 Loops - untuned
        10 Loops - tuned
        11 Loops - melodic
        12 FX & Weird
        MIDI Programs
     ▶  TREASURE TROVE
 ▶  User
     Search History
     Saved Searches
 ▶  Favourites
     ⊘ Junk
 ▼  Tags
     ▶  Categories
     ▶  Features
     ▶  Character
        Untagged (n)
 ▶  Author
```
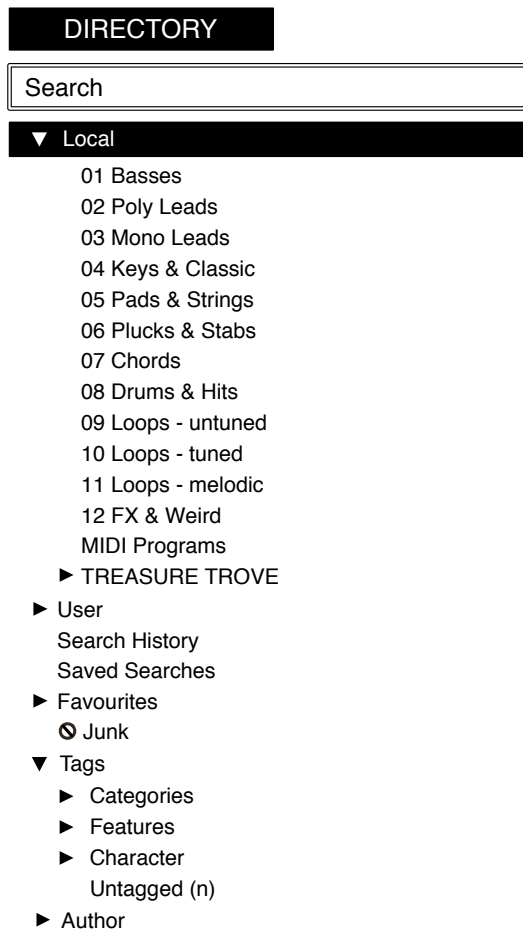
Local

Hive's factory presets are sorted into folders 1 through 12. We recommend that you do not add or remove presets here, but save all your creations and other soundsets in 'User' (see below).

TREASURE TROVE

This folder contains over 1.000 presets kindly submitted by Hive fans shortly before release. Note that *1 MC without FX* contains dry (effect-less) versions of all the MC presets.

While auditioning the presets in this folder, please keep volume levels a bit lower than usual. Unlike the factory presets, they have not been normalized or otherwise edited.

MIDI Programs

'Local' also contains a special folder called 'MIDI Programs' which is normally empty. When the first instance of Hive starts, up to 128 presets from that folder are loaded into memory, to be selected via *MIDI Program Change* messages. For more details, see towards the end of this document.

User

The best address for your own creations as well as soundsets from other sources. You can either select *User* immediately before saving the preset, or set a global preference which ensures that it will always be saved to this folder – see the *Save Presets To* preference.

Tip: It's worth finding out where the *User* folder actually resides on your computer. Right-click on *User* and select *reveal in Finder* (Mac) or *open in Explorer* (Win).

Smart Folders

The other folders do not contain files, but display the results of querying a database of presets. The content is therefore dynamic i.e. it will change whenever the underlying data changes.

Search History

Click on this folder to display the results of past searches (maximum 10). Whenever you need to make the results of a search more permanent, right-click and select *save Search...* The entry will be moved to the *Saved Searches* folder – see below. To remove all searches from the list, right-click on the *Search History* folder and select *clear*.

Saved Searches

This folder contains searches that have been saved via right click from *Search History*. To re-move individual saved searches, right-click on the search and select *delete*.

Tip: Entries dragged from *Saved Searches* and dropped onto real folders within *Local* or *User* will create a folder containing copies of all found presets!

Favourites

8 smart folders, one for each *Favourite* colour. See *Presets context menu* on the next page. Presets dropped onto one of the *Favourites* folders will be marked as such.

Junk

A smart folder pointing to all *junked* presets. See *Presets context menu* on the next page. Pre-sets dropped onto this folder will be junked, and will therefore disappear from the rest of the browser unless made visible (see *show junk* in the *Presets context menu*).

Tags

Smart folders for each Category/Subcategory, Features and Character tag. Presets dropped onto these folders will adopt the corresponding tag. Presets dropped onto the *Untagged* folder will have all Category/Subcategory, Features and Character tags removed.

Author

Smart folders for each Author. Tip: Instead of signing each of your creations, you could sign just one of them, then select them all and drag them onto *Author/(You)/*. As the process cannot be undone, please use this feature with caution!

Directory context menu

Right-clicking on any folder within *Local* or *User* will open this menu:

```
refresh
create new…
rename…
reveal in Finder *

move to Trash

on open expand to        ▶
```
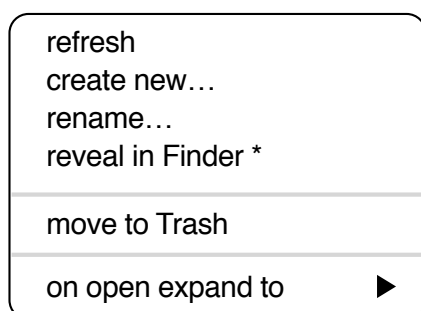
refresh: Update the contents of the browser. This is necessary after you have moved, added, removed or renamed any folders or presets using Explorer / Finder.

create new: Insert an empty subdirectory.

rename: Edit the folder name.

reveal in Finder / **open in Explorer**: Opens a system window for the clicked folder. After adding, removing or renaming preset files or folders outside of Hive's own browser, remember to re-fresh the directory (see *refresh* above).

on open expand to: These options determine how deeply the browser will open subdirectories whenever the GUI is (re)opened or the refresh function is called. The first *none* option collapses all folders, while the final *all levels* option reveals all nested folders.

Presets Panel

The central, unlabelled area of the browser is where you click to load presets...

Presets context menu

Right-click to open a menu containing functions that can be applied to individual presets.

● mark as favourite
● mark as favourite
● mark as favourite
● mark as favourite
● mark as favourite
● mark as favourite
● mark as favourite
● mark as favourite
🚫 mark as junk
✔ show junk
select all
deselect
rename…
duplicate *
reveal in Finder *
convert to h2p
move to Trash

mark as favourite: Choose one of eight 'favourite' marks. The selected entry in the menu will be replaced with *unmark as favourite*.

mark as junk: Instead of deleting any unloved presets, you can mark them as 'junk' so that they disappear from the browser…

show junk: Activate this option to display junked files (see above) instead, but mark them with a STOP symbol.

select all, deselect: See *Multiple Selection* below.

rename: You can change the names of presets using this function. Note that only the most recently selected preset can be renamed i.e. you can't rename multiple files at once.

copy to User folder / duplicate: The entry here depends on the status of the *Save Presets To* preference as well as on the location of the source preset(s) i.e. whether they are in the Local or the User folder. Selected presets are copied with a number appended to the name, which increments (just like the 'Auto Versioning' option) so that no preset can be overwritten by mistake.

reveal in Finder / **open in Explorer**: Opens a system window for the selected preset. After adding, removing or renaming preset files outside of Hive's own browser, remember to *refresh* the directory.

convert to native / h2p / h2p extended: Converts selected preset(s) into the format previously specified via right-click on the [**SAVE**] button.

move to Trash / Recycle Bin: Moves selected presets to the system trash.

Restore

You can audition as many presets as you like in the browser without losing track of the one that was loaded immediately before you opened the browser: Clicking on [RESTORE] navigates to that preset and loads it again.

Scan / ready

In the top right of the presets panel is a dark rectangle normally labelled 'ready'. Whenever you use the *refresh* function (see the *Directory context menu* on the previous page), this turns into a progress indicator showing the preset database being refreshed. The process should only take a few seconds, even for a large preset library.

Multiple selection, drag & drop

A block of adjacent presets can be selected via shift+click, and individual presets can be added to the selection via cmd-click (Mac) / alt+click (Win). Presets can be moved to a different folder via drag & drop. Use SHIFT etc. on your computer keyboard to highlight the files you want to move, click and drag them from the files area and drop them onto a target folder. To deselect, either click on an unselected preset or choose deselect from the context menu.

Note: *unmark as favourite* (see *mark as favourite* above) will not appear in the presets context menu for multiple files unless you right-click on an existing favourite.

Preset Tagging

"Tags" are elements of metadata, information that you can add to presets so that they can be more easily found.

IMPORTANT: Clicking on the [SAVE] button isn't required, as tags are updated automatically. The main advantage is that presets don't have to be saved each and every time you edit a tag. The main disadvantage is that you should **only edit tags AFTER saving** your preset. For instance, if you decide to edit tags while you are creating a new version of an existing preset, please remember that you are actually changing the tags of the original preset!

The Tagging Window

Right-click on the [SAVE] button and select *Tag this preset*:

Category		Features	Character	
Bass	Acoustic	Mono	Bright	**Dark**
Pads	Analogue	Poly	Constant	Moving
Leads	Digital	Duo	**Clean**	Dirty
Keys	**Dist+LoFi**	Chord	Soft	Aggressive
FX	E-Bass	**BPM**	Phat	Thin
Drums	FX Bass	Modulated	Natural	Synthetic
Seq+Arp	Plucks	Dry		
Other	Rhythmic	Percussive		
	Sub	Soft Attack		
	Sync	Slow Release		
	Synth	**Glide**		
	Vocal	Wavetable		

Category describes a preset by analogy to instrument types or typical usage, and each one has an appropriate set of subcategories. *Features* are technical classifications, and *Character* tags are pairs of opposites from which you can choose only one.

Tagging via PRESET INFO

In the PRESET INFO panel, right-click on the *Category*, *Features* or *Character* and select or unselect tags from the menu…

Note: This method only works for individual presets. If you right-click on an existing tag, the first option in the menu becomes *remove tag.*

The function *create Search from Tags* finds all presets with exactly the same set of *Category*, *Features* and *Character* tags.

Tagging via smart folder

You can tag presets by dropping ("drag & drop") any number of presets onto one of the *Tags* smart folders. To remove all tags, drag presets onto the *Tags/Untagged* smart folder.

Search by Tags

Click on the TAGS tab to open this view. The buttons here let you set up search criteria according to existing tags with just a few mouse clicks:

TAGS

Search

CATEGORIES ∧

| Bass | Pads | Leads | Keys | FX | Drums | Seq & Arp | Other |

FEATURES ∧

| Mono | Poly | Duo | Chord | BPM | Modulated | Dry |
| Percussive | Soft Attack | Slow Release | Glide | Wavetable |

CHARACTER ∧

| Bright | Dark | Constant | Moving | Clean | Dirty |
| Soft | Aggressive | Phat | Thin | Natural | Synthetic |

FAVOURITES ∧

| ○ 1 | ○ 2 | ● 3 | ● 4 | ● 5 | ● 6 | ○ 7 | ● 8 |

Below the Search field are four sets of buttons (CATEGORIES, FEATURES, CHARACTER and FAVOURITES). The first three correspond to the tags in the tagging window (see the previous page), while the bottom row lets you find any presets you have tagged as *Favourites*.

Clicking on the [^] icon to the right of each heading hides the options for that set of tags.

Categories and Subcategories

Here are just a few bullet points to get you started. Especially for *Category* tags, following a step-by-step tutorial is much easier than studying a full technical description. Try these:

Each Category has its own set of subcategories. Not selecting any subcategory here means "show me presets tagged with any subcategory". Click on [Leads]...

You can select multiple categories without specifying any subcategory if you hold **cmd** (Mac) or **alt** (Windows) while clicking on the category. Try that with the [Keys] button.

Selecting subcategory with the **same name** as the category means "show me presets tagged without any subcategory". Note: You should not find any of these in the factory presets!

Completed category+subcategory tags appear below the subcategories as buttons with 'off' switches [X] so that you can add other main categories by simply clicking on them.

Search by Tags Tutorial

• Click on the DIRECTORY tab, right-click on the *Search History* smart folder and select *clear*. Double-click on *Local/06 Plucks & Stabs* to restrict the scope of the search to that particular folder. The selected path appears below the *Search* field instead of preset folders.

• Click on the TAGS tab. In the Categories, select [Bass]. Subcategory buttons appear and the preset window is updated to list all presets in *06 Plucks & Stabs* that are tagged as [Bass]. There is only one, namely *XS Bubblegum*.

• Now click on [Keys]. The [Bass] category is switched off, and the preset window is updated to list all presets in *06 Plucks & Stabs* that are tagged as [Keys]. There are quite a few of those! Note that you haven't specified a subcategory yet...

• Hold down the cmd (Mac) or alt (Win) key and select the [Bass] category again. The previously selected [Keys] button remains highlighted and the list shows all presets in the *06 Plucks & Stabs* folder that have either of those tags (disregarding any subcategories).

• Click on the DIRECTORY tab again: The text #Bass:* #Keys:* appears in the editable field as well as in the *Search History* smart folder followed by the number of found presets. The colon symbol ':' functions as a separator between Category and Subcategory, while the star (*) means "any Subcategory, even none".

• Click on the TAGS tab again. Select the [Drums] category without holding down *cmd/alt* this time... the [Bass] and the [Keys] tags are removed from the search. Select [Distorted] as sub-category. The result is a list of all presets in the *06 Plucks & Stabs* folder that have the *Drums:Distorted* tag. Immediately below the subcategory options you will see the complete tag in the form [Category:Subcategory|X].

• Let's get more hits by including another subcategory: Click on the [Metal] subcategory. The tag [Distorted] remains selected, and the list of hits is updated to include presets which have either of those tags. Click on [Distorted] again and the tag search will find fewer presets – only those that are tagged as [Drums:Metal] in the *06 Plucks & Stabs* folder.

• Click the [Leads] category. Below the subcategories, the [Drums:Metal|X] tag remains in place because it is complete (Category with Subcategory). Check the tags in the PRESET INFO by clicking on presets in the central list: Each preset will include a *Drums:Metal* tag or a *Leads* tag (with any or no subcategory), or both.

• Click on the DIRECTORY tab. The text *#Leads:* #Drums:Metal* appears in the Search field as well as the Search History smart folder. If you are feeling adventurous, you can try editing the characters in the Search field – after hitting Return, the results will be updated accordingly.

• To the left of the grey search path is an 'up' [^] symbol. Click on this to exit the current folder, which in this case changes the search path from *Local/06 Plucks & Stabs* to the *Local* root. The list now includes more presets because the range of the search spans all of *Local*.

• Another click on [^] expands the scope to the entire preset library i.e. /Local and /User. Note that clicking on the [X] symbol to the right of the search path will immediately exit any subfolder.

• Repeat the above a few times if necessary – you'll soon get the hang of it!

Features, Character and Favourites

Unlike multiple Category tags which expand the search, these types **restrict** the search. As a practical example let's find all "thin" and "moving" presets with a slow release…

Click on the TAGS tab. If any Categories are highlighted, click on them. Select [Slow Release] feature, then the [Thin] and [Moving] characters. You should now see about 10 hits in the presets panel – which is generally a good number to aim for while searching!
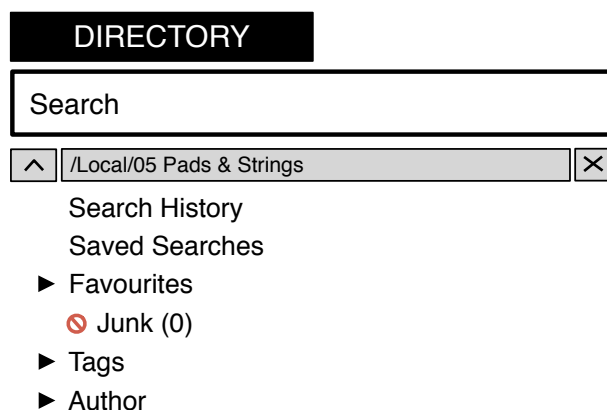
Summary

In the DIRECTORY panel, specify a search path via double-click. In the TAGS panel, select category tags. Add others if required to extend the search, but remember to hold down **cmd** (Mac) or **alt** (Windows) if you want to retain category tags that don't specify a subcategory. Select Features, Character and/or Favourites tags to refine the search. Remember to exit the search path (if there is one) afterwards!

Search by Text

The **Search** field lets you find presets according to a string of characters i.e. text. Here's an easy example: If you remember that the preset you're looking for has the word "*clock*" in either its name or its description, simply enter *clock* into the Search field and hit Return…

The search normally looks into the preset name, author, the DESCRIPTION and USAGE (see the PRESET INFO panel). Searches are not case-sensitive, and quotes are not required unless you need to include spaces.

To restrict the search to a particular path, for instance *Local/05 Pads & Strings*, double click the *05 Pads & Strings* folder. This path will appear beneath the Search field instead of the preset folders, and you will only see smart folders plus any folders within the specified path:

DIRECTORY

```
Search

[^] [/Local/05 Pads & Strings          ] [X]
      Search History
      Saved Searches
   ► Favourites
      🚫 Junk (0)
   ► Tags
   ► Author
```

The [^] button to the left moves the Search path up one level, in this case to */Local*. The [X] button to the right sets the search path to include all Hive presets (i.e. *'Local'* and *'User'*), and all the regular preset folders reappear.

Try a text search: Enter three or four letters then hit Return. For instance, *star* would find all files containing the text string *star* (e.g. *mustard* or *starters*). Entering "*star wars*" – with the quotes! – would find e.g. *Battlestar Warsaw* (if such a text string existed anywhere in the presets).

Syntax

Scope

You can limit the scope of the search to just the preset name or specific parts of PRESET INFO by using **name** (preset name), **author**, **desc** (description) or **use** (usage) followed by a colon. For instance, *author:the* finds all presets by sound designers whose author names contain '*the*'. Similarly, *desc:space* will find all presets with the word *space* in the description.

Logic

IMPORTANT: The following logical operators can only be used between text elements.

AND requires that presets contain both words. It can be written explicitly if you prefer, but is not necessary. For example, *star AND wars* (or simply *star wars*) will find presets that contain both *star* and *wars*.

OR means that presets can contain just one of the words or both. For example, *star OR ship* will find presets that contain *star* as well as presets that contain *ship*.

NOT excludes presets containing the word. To find all presets that contain *star* but don't contain *ship*, enter *star NOT ship*.

Including Tags

Note: In the current version of the browser, tags must appear after any text items.

Regular tags can also be entered into the search field if preceded with a '#'. For example, *name:"hs " #bass:** will find all presets with "*hs* " in the name that are tagged as *Bass* with any or no subcategory. The colon separates Category and Subcategory, and the star (*) means "any subcategory, even none". Between multiple tags of the same type is an implicit *OR*, while between different types is an implicit *AND*.

A few example searches

You could copy/paste these into Hive's search field and see what they find. Note that tags are automatically removed from the search field and appear as active tag buttons instead.

desc:classic = presets with the word "classic" in the description

author:ark = presets by Arksun

use:"at =" *author:how* = aftertouch-controlled presets by howard

tuc OR xs #pads:strings = strings by either The Unshushable Coktor or Xenos

tuc OR NOT xs #pads:strings = strings by The Unshushable Coktor or anyone **except** Xenos

Panel Reference

This chapter explains each of the synthesis elements in Hive's main panel, the area to the left and right of the central hexagon).

Oscillators (OSC)

Hive's oscillators feature Unison, stereo panning and a freely tuneable sub-oscillator (see below):

Wave

Sine, **Sawtooth, Triangle** and **Square** options are classic waveforms that shouldn't require further explanation. **Half** and **Narrow** are pulse waves with differing widths.

Pulse sounds similar to Square at first. However, if you modulate the hidden parameter 'Pulse-Width' (see list of targets), you can get any static pulse width you like by using Constant as source, or a cyclic PWM effect if you use an LFO as source. See Mod Matrix.

White and **Pink** are the two standard variants of noise: White is bright, Pink is darker.

Wavetable is Hive's most recent and most powerful mode by far. It can load *.wav* or *.uhm* script files, each containing up to 256 waves ("frames"). As there is much more to wavetable synthesis than choosing a single waveform, it has its own Wavetables chapter.

Unison

Stacking multiple waves (Unison) can result in a much richer sound, especially when they are detuned (see Detune below). Of course more Unison means more CPU load.

Note: Unison only applies to the main oscillator unless the sub wave is set to **like Osc**.

Octave / Semitone

Discrete tuning, +/- 3 octaves for the whole oscillator. Note that the sub-oscillator's 'Semitone' parameter is **relative** to the main oscillator (see below).

Phase Mode

"Phase" is basically the horizontal (time) position of a waveform. Hive offers 3 phase modes:

Reset.........Phase is fixed at 0° – where the wave crosses zero in the positive direction. Use this mode whenever you need robotically consistent attacks.

Random ....Phase is set to a random value whenever a note is played. Very organic.

Flow ....The phase of a note picks up where the previous one left off, so the phase relationship (and therefore any beating) between oscillators is continuous. Note that Flow mode only applies to the main oscillators, not to the sub-oscillators.

This mode is probably closest to what a classic analogue polyphonic synth delivers, although the difference between Random and Flow can be rather subtle.

For technical reasons, *Flow* only works as described with the main oscillators, not with the sub oscillators (see below).

Note that the oscillator phase angle is a hidden parameter and can therefore be modulated.

Vibrato

The amount of cyclic pitch modulation from the Vibrato LFO. Also applied to the sub-oscillator. Tip: For typical vibrato with depth control via modulation wheel, go to the mod matrix, click on a triangle and select 'Vibrato via MW".

Pan + Width

The Pan knob controls the stereo position of the oscillator (including the sub-oscillator). If **Unison** (see above) is set to 2 or more, the **Width** knob adjusts the stereo width of the signal around that pan position. If Unison is set to 1, the Width control has no audible effect because in that case the oscillator is mono, not stereo.

The rectangular area between the two knobs mainly serves as an indicator for stereo spread, but you can also click+drag it to adjust the Pan and Width at the same time: vertical movement adjusts the panning, horizontal movement adjusts width.

Detune

If 'Unison' (see the previous page) is set to 1, this is a regular fine tune control: Oscillator 1 is tuned up and oscillator 2 down within a range of 100 cents i.e. 1 semitone.

If Unison is set to 2 or higher, the multiple waves are detuned in opposite directions and the sub-oscillator isn't affected (unless it is set to **like Osc** – see Wave below). It might not be obvious, but you can still fine tune the overall pitch of unison oscillators by using a slot in the Modulation Matrix (source = Constant, target = Tune).

Volume

The amount of main oscillator signal sent to the filters. Note that the Sub has its own separate volume control. See Setting Volumes.

Sub Oscillators (SUB)

Although they share a panel with the main oscillators, and the frequencies (including modulation) are linked, the sub-oscillators are otherwise independent…

Wave

The Wave selector of the sub-oscillator offers the same options as the main oscillator but with one addition: **like Osc**. In this mode only, the sub-oscillator inherits the Unison and waveform settings from the main oscillator.

Semitone

This is a pitch **offset** relative to the main oscillator. Use SHIFT to fine tune. The default value (double-click) is -12 i.e. an octave below the main oscillator.

Volume

The sub-oscillator's own volume control. See Setting Volumes.

Filters (FILT)

Before we take a look at individual parts of that panel there's a very important row of buttons (already mentioned in the Mode Switches section a few pages back) that affect Hive's basic 'circuitry', including the filters…

Synth Engine

As they also affect envelope shapes, the unison detuning and a few other parts of Hive, the Synth Engine buttons aren't in the filter panel. Instead, they sit in a suitably prominent position between the data display and the central hexagon:

NORMAL..........Oversampled self-oscillating **ladder** filter model with non-linear resonance – listen to the tonal difference when you crank up the Input Gain.

DIRTY................Oversampled self-oscillating **diode ring** filter model. Turn up the resonance for interesting, unpredictable results. Also try Input Gain values below 0.00 dB.

CLEAN ....Linear i.e. non-distorting **state variable** filter. This option is quite CPU-friendly as non-linearities don't need to be calculated and there's no oversampling.

Back to the filter panels, which look like this:

Filter Input Selectors

The vertical row of buttons labelled **OSC1**, **SUB1**, **FILT1** (filter 2 only), **OSC2** and **SUB2** select which signals will be routed into each filter.

Filter 2 has an extra **FILT1** button, the signal from filter 1 **at full volume**. To use the two filters 100% in series, turn filter 1's volume down to zero and select the **FILT1** button (only) for filter 2.
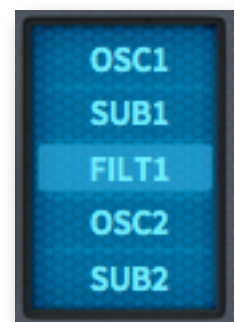
Type

Bypass simply disables the filter circuit. Note that the input switches as well as the Gain and Volume controls all remain functional.

Lowpass types remove high frequencies from the signal. Hive offers the most popular two low-pass 'strengths': **24** dB/octave and **12** dB/octave.

Bandpass filters remove both low and high frequencies, only allowing a narrow band to pass through. This is probably the best choice for 303-style resonant sounds – turn up the Input Gain and Resonance, and try adding some foldback distortion.

Highpass is the opposite of lowpass, as it removes low frequencies.

Bandreject is the opposite of bandpass. It removes a narrow band while allowing lower and higher frequencies to pass through unfiltered.

Peaking is just like Bypass, but with active resonance. Use this mode to accentuate a particular frequency e.g. for massive bass boost or mid-range 'honk'.

Input Gain

In **Normal** or **Dirty** synth engine mode (see above), the filter's input gain not only controls the input volume, but also the amount of non-linear distortion – an important characteristic of real analogue filters. In **Clean** mode, it simply attenuates or boosts the level. See Setting Volumes.

Cutoff

Everybody's favourite synthesizer control, 'Cutoff' is the knob most likely to show signs of wear and tear on old synths! There's something very satisfying about manually sweeping the cutoff, especially with at least a bit of resonance…

Resonance

Resonance is a filter-internal feedback loop that emphasizes the cutoff frequency. In the Synth Engine modes **Normal** and (especially) **Dirty**, the amount of resonance you will hear depends on the signal input – see Input Gain above.

Volume

Simply the filter's output level. See <u>Setting volumes</u>.

LFO

Cutoff modulation from the selected LFO (1 or 2). The knob is bipolar so you can make the filters move in opposite directions without using up a slot in the modulation matrix.

Tip: Set the LFO mode to Gate and experiment with LFO Phase.

Mod Env

Cutoff modulation from the selected envelope (MOD1 or MOD2).

Tip: Turn Cutoff way up and try negative MOD Env values. This can take some getting used to: Experiment with the modulation envelope settings until you are familiar with the 'upside-downishness' of it all!

Key Track

Cutoff modulation from **MIDI note**. At 100%, the cutoff point will track semitones played on your keyboard fairly well. Turn KeyTrack and Resonance up to maximum to check that out. A tiny bit of white noise is enough to get the resonance going.

KeyFollow (the modulation source used by the filter-specific parameter 'KeyTrack') pivots around the E below middle C (MIDI note 52). Like a seesaw, all other notes are modulated up and down by KeyFollow, while the pivot note remains fixed.

Would you like to test that in the modulation matrix? Try this: Set the source to KeyFollow, the target to oscillator Tune. Whatever the amount of KeyFollow modulation, the pitch of that particular E doesn't change at all.

Low Frequency Oscillators (LFO)

Hive has two regular LFOs (low frequency oscillators):

Unipolar (+)

Shifts the LFO wave 'upwards' so that it outputs positive values only. Note that the absolute output level is halved so that the maximum value can't be exceeded.

Waveform

Selects a shape. The options are **sine**, **triangle**, **saw up**, **saw down**, **sqr hi-lo** (square wave starting high), **sqr lo-hi** (square wave starting low), **rand hold** (stepped random wave) and **rand glide** (smooth random wave).

Rate

Shifts the LFO speed relative to the value set by 'Sync' (see the next page).

Phase

Where (within the waveform) the LFO will start whenever a note is played. This setting is irrelevant if 'Restart' (see below) is **random**. Tip: To restart a sine or triangle at the highest point, set Phase to 25.00.

Restart

Selects rules for how LFO phase is reset…

Sync ....LFOs of all voices are synchronized to the host, so they all adopt the same phase. Unlike Single mode (see below), the phases can still be modulated apart by a 'polyphonic' source such as Velocity, KeyFollow or Random.

Single ....All voices share the same LFO, which is restarted at the next MIDI note after all previous notes have been released.

Gate ....Notes restart the LFO for each voice independently at the specified Phase.

Random ....Notes restart the LFO for each voice independently at a random phase, ignoring the value of Phase.

Sync

The basic 'speed mode', the Sync parameter offers non-synchronized times measured in seconds (**0.1**, **1s** or **10s**) as well as a long list of values synchronized to song tempo. The latter include dotted times (50% longer) and triplets (3 in the space of 2).

Envelopes (AMP, MOD)

Hive's envelopes are arranged in pairs. The left half controls the amplification (AMP) envelope, while the right half controls the modulation (MOD) envelope:
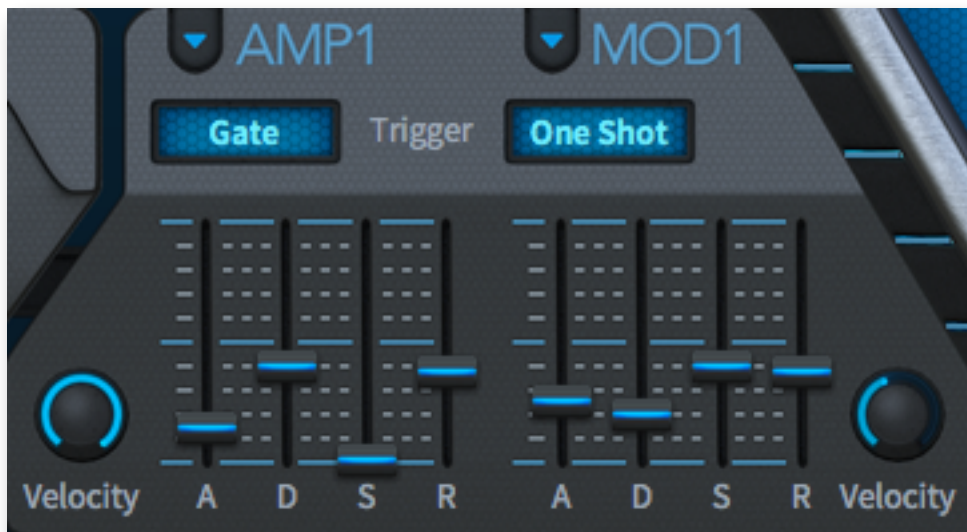
Trigger

The **gate** option is for normal triggering via MIDI notes. Default, standard.

In a **one-shot** envelope the gate length is ignored so it always completes the Decay stage. One-shot envelopes are therefore great for percussion sounds, fly-by effects, certain pads (e.g. 'HS Bloom Pad'). It usually makes sense to set Sustain and Release to minimum In this mode, but you can use higher values to create an interesting kind of 'Hold' effect: Experiment with Sustain at about 50, test extreme Decay values.

The **LFO1** and **LFO2** options retrigger the envelope from one of the LFOs. Unless you want a chaotically delayed trigger, don't set that LFO's Restart parameter to **random**.

A D S R

The 4 sliders control **A**ttack time, **D**ecay time, **S**ustain level and **R**elease time. Note that each of the envelope phases can be modulated in realtime – see Envelope Tricks.

Velocity

How strongly the envelope's output is affected by MIDI velocity. Note that modulating an envelope's Velocity in the modulation matrix doesn't **add** to, but **scales** the value you set here: if Velocity is set to zero, no amount of modulation will affect the output!

Performance

The panel at the bottom left contains several keyboard 'performance' parameters:

Glide

Glide (a.k.a. 'portamento') slurs the pitch between consecutive notes. There are two different glide **Mode**s: in **rate** mode ('constant rate') the glide takes longer for larger intervals, while in **time** mode ('constant time') it is independent of the interval.
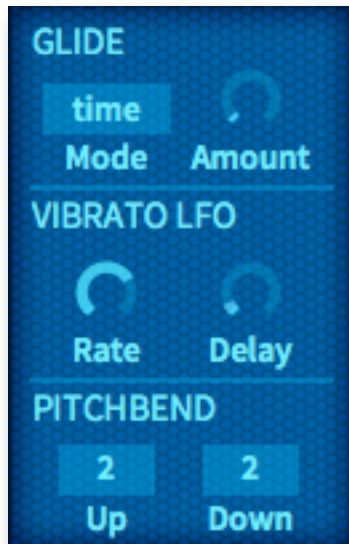
The **Amount** knob sets the glide time/rate for all oscillators and filters (in fact anything that uses key tracking).

Vibrato LFO

A third LFO, hardwired to the oscillators. The **Rate** knob controls the speed and the **Delay** knob controls how slowly it fades in. See also <u>Vibrato</u> in the oscillator panel.

Pitchbend

Most MIDI keyboards have a 'pitch bender' control, often a centre-sprung wheel or stick that bends the overall pitch up and down. You can specify **Up** and **Down** ranges independently from 0 to 24 in semitone steps, and 36 (3 octaves) or 48 (4 octaves).

Microtuning

At the bottom left of Hive's window, immediately below the LFO2 panel is a field where you can select a **microtuning table**, which can fundamentally change the tuning of each MIDI note:

The button activates/deactivates microtuning.

Hive supports standard **TUN** format microtuning tables, and you will find several in the list already. Many more microtuning tables are available online, most of them free.

The .tun files belong in the following folder on your hard drive:

Win   *C:\Users*YOU*\Documents\u-he\Hive.data\Tunefiles*
Mac   *~/Library/Application Support/u-he/Tunefiles/*

…or equivalent locations in accordance with your VST and Hive installation paths.

To go directly to that location from within the microtuning browser, right-click on any *.tun* file and select *Reveal in Finder* (Mac) / *Open in Explorer* (Win).

To close the microtuning browser again, click on the [CLOSE] button at the upper right.

Keyboard (KEYS)

The buttons below the hexagon select Hive's keyboard or the modulation matrix pages:

The keyboard comes in two flavours, regular keys or 'touch-plate' style. You can swap styles by clicking on the small button at the top right of the keyboard, and a right-click on that button will set the current style as the default.

The keyboard panel includes the standard left hand controls **pitch wheel** (PITCH), which is centre-sprung and **modulation wheel** (MOD), which isn't. Play notes close to the top for low velocities, further down for high velocities. Double-click on a key to sustain it. This feature is handy for sound design in case you don't have a real keyboard attached, or perhaps for holding a drone while play-ing live. Right-click on **KEYS** or **MM1** / **MM2** to set the current state as the default.

Modulation Matrix (MM)

The 12-slot modulation matrix is for connecting modulation **sources** (MIDI controls, envelopes, LFOs etc.) to modulation **targets** (more than 80 options). Two pages of six units each are switched using the MM1 and MM2 buttons below the hexagon:

All modulation matrix units have the same structure. Note the two target selectors:

In this example, oscillator 1 *Pulse Width* and Filter 1 *Input Gain* are being modulated by LFO1, the depth of which is controlled by the modulation wheel (or vice versa – see *Via* below).

Source

The upper left selector specifies a primary modulation source.

Via

An optional secondary modulation source, Via determines the amount of 'Source' passed on to the two targets. Or vice-versa: Source and Via are 100% interchangeable. For instance, swapping *LFO1* with *ModWheel* in the example on the previous page will make no difference. The effect will be exactly the same.

Target Selection

The easiest method of selecting a target is via drag&drop - see the next page.

Alternatively, right-click on a target selector. This opens a context menu containing all possible target parameters:

```
  MM01 #1 Curve             ▶
  MM01 #1 Quantize          ▶
  MM01 #1 Rectify           ▶
  MM01 #1 Slew Limiter      ▶
──────────────────────────────
  assign recent             ▶
✓ not assigned
──────────────────────────────
  Amp Envelope 1            ▶
  Mod Envelope 1            ▶
  LFO 1                     ▶
  Oscillator 1              ▶
  Filter 1                  ▶
──────────────────────────────
  Amp Envelope 2            ▶
  Mod Envelope 2            ▶
  LFO 2                     ▶
  Oscillator 2              ▶
  Filter 2                  ▶
──────────────────────────────
  CC Control                ▶
  Arp+Seq Clock             ▶
  Voice                     ▶
  Vibrato LFO               ▶
──────────────────────────────
  Lock
```

Each synthesis panel except the matrix itself has its own sub-menu – hover over an entry to see the individual targets. Note: FX parameters will only appear if the effect is currently active.
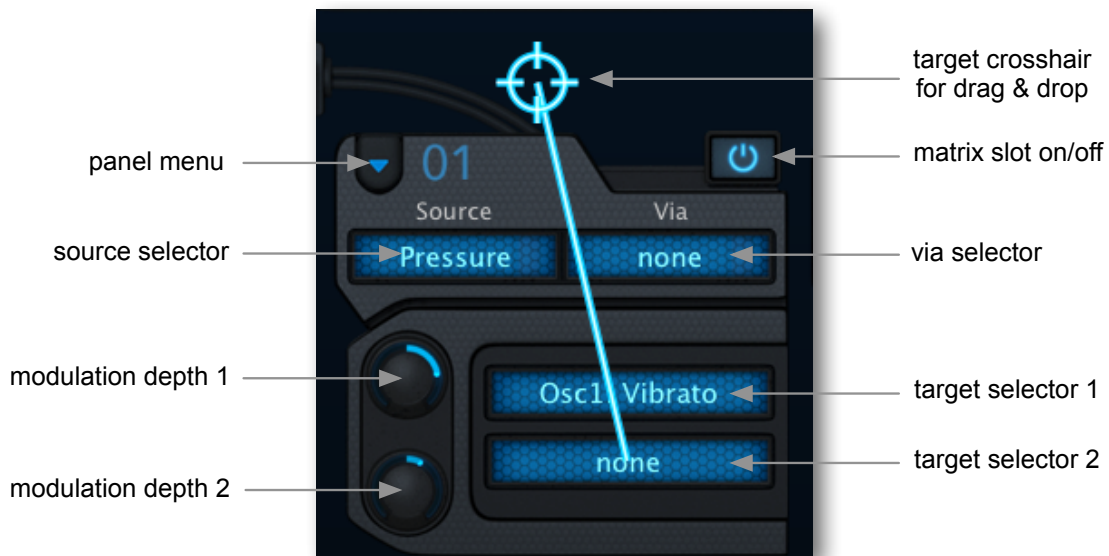
The first four entries (*Curve*, *Quantize*, *Rectify and Slew Limiter*) are not modulation targets, but *Slot Modifiers* – see the next page.

The *assign recent* submenu contains a short list of the most recently edited parameters so you can quickly assign several sources to the same target, for instance.

Immediately above the list of modulation targets is the option to remove ("unassign") the current assignment (if there is one, otherwise it will say "not assigned").

Drag & Drop

Hive has so many possible modulation targets that we added an easier way to select them…

panel menu — target crosshair for drag & drop

source selector — matrix slot on/off

modulation depth 1 — via selector

modulation depth 2 — target selector 1

target selector 2

Left-click and hold a target selector, drag the crosshair onto any valid target and release the mouse button. You can check out all the valid targets by dragging the crosshair across Hive's panels. You might be surprised at some of the possibilities, especially in the FX panel or matrix!

Pitch modulation, phase modulation, pulse width modulation, delay time

Not only the vast majority of the knobs in Hive, but also some of the selectors are valid targets for drag & drop assignment. Drop the crosshair onto *Octave* or *Semitone* in an oscillator panel to assign pitch modulation, onto *Phase* for phase modulation, or onto a Wave selector for **PWM** if the Pulse wave is selected. To modulate the overall Delay time, drop the crosshair onto the *Left* or *Right* selector in the Delay panel.

Slot Modifiers

At the top of the target selector's context menu are five functions which can be used to modify the shape of the modulation signal, individually for each slot:
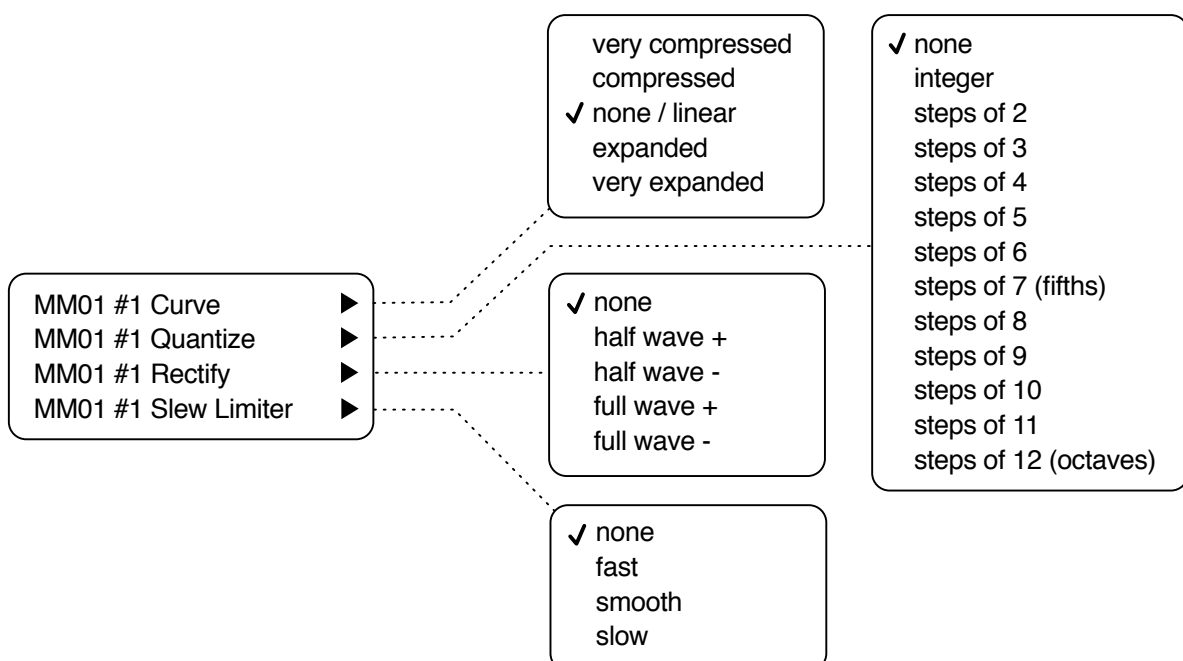
Curve

These options let you map the source onto an s-curve – it's like a waveshaper for modulation signals. A bipolar ramp, for instance from a rising sawtooth LFO or from the pitch bend control, would be transformed into one of these curves:

| very compressed | compressed | linear | expanded | very expanded |
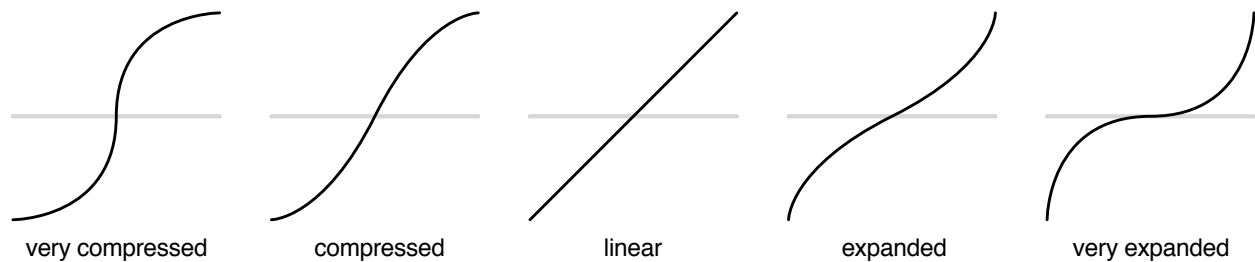
Unipolar modulation sources (envelopes, modulation wheel etc.) only use the top half of the curve. For instance, if you want the modulation wheel to have a very subtle effect when only pushed a little but still deliver the full effect when pushed all the way, choose *very expanded*.

Quantize

After applying a curve, the modulation signal can then be forced to adopt discrete values. The *integer* setting makes the modulation typically "steppy", while the *steps of 12* setting transforms bipolar sources into maximum 5 values (unipolar = maximum 3) including zero.

Note that quantization is applied to the source signal before it's level is set by the modulation depth knob, so a lower modulation depth will usually mean fewer steps: If you quantize an LFO to *steps of 12*, there will be no modulation at all unless you turn the depth up to 25 or higher!

Rectify

Either half-wave or full-wave rectification, in positive as well as negative versions.

| none | half wave + | half wave - | full wave + | full wave - |
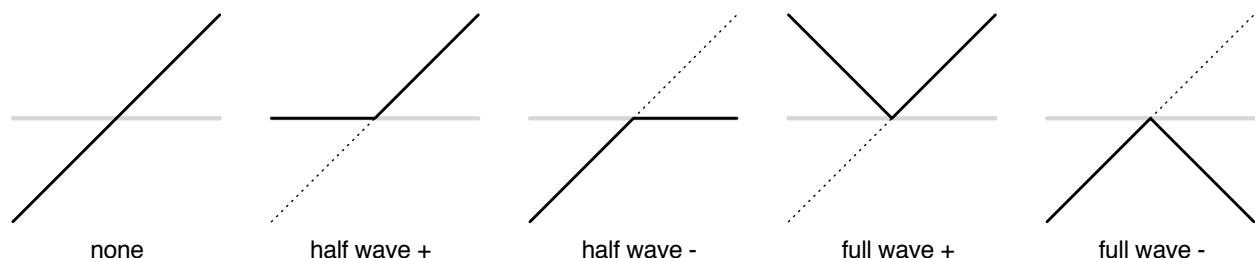
This example shows how a bipolar ramp wave would appear after rectification.

none............................no rectification
half wave +............removes negative values
half wave -............removes positive values
full wave +............folds negative values up
**full wave -**..............folds positive values down

To transform the pitch bender so that pulling also results in positive values, choose *full wave +*.

Slew Limiter

Akin to the dedicated [Glide](#) processor for pitch, the modulation matrix *Slew Limiter* is used to slow down any sudden changes in the input signal. There is no continuous control, however, but *fast*, *smooth* and *slow* options. Experiment with it: First, try modulating oscillator pitch from a square wave LFO, with set the *Slew Limiter* option to *slow*.

Wavetables

The [WT1] and [WT2] buttons at the top of the hexagon open the two pages that define wavetables for each oscillator. The hexagon will look something like this…
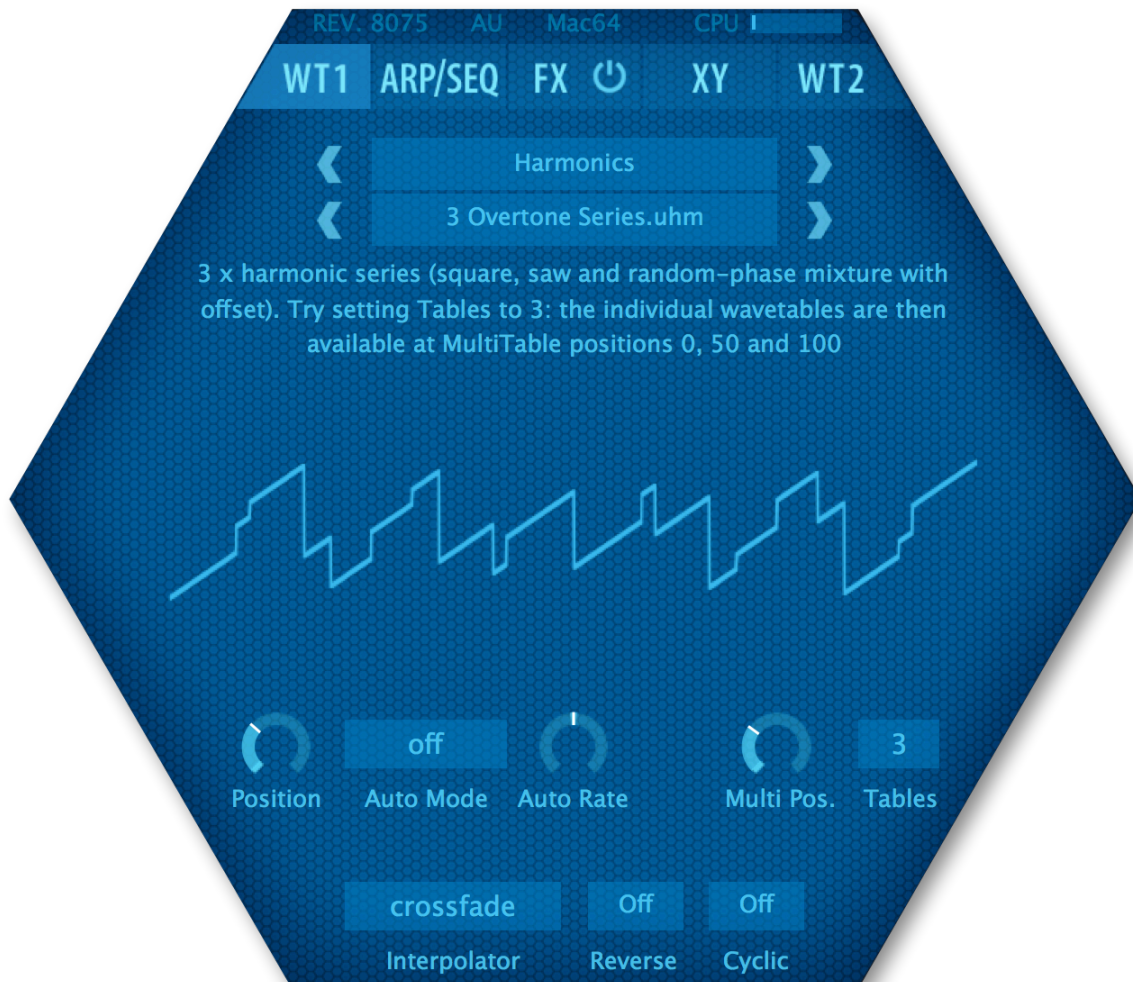
Alternatively, you can open this page via the [EDIT] button which appears as soon as you choose the the *Wavetable* waveform. This type can contain multiple single-cycle waves: you can specify a static waveform by setting the "Position", and modulate Position to create tonal movement.

Two kinds of wavetable

Hive can load wavetables in either of two formats, **.uhm** or **.wav**. The former is a powerful script format which creates wavetables on-the-fly by interpreting a list of text commands / formulas. For details of the *.uhm* script language and a few notes about *.wav* format requirements, please refer to the extra document *Hive Wavetables.pdf* included in the Hive installer. To locate this file, click on the u-he badge and select *user guide* – it resides in the same folder.

For wavetables to be recognized they must be in the same directory as the referencing preset, or here (see *File Selectors / Reveal*… below), where the factory wavetables also reside:

Win   *C:\Users*YOU*\Documents\u-he\Hive.data\Wavetables*
Mac   *MacHD/Library/Application Support/u-he/Hive/Wavetables/*

Note: Wavetable files in subdirectories will also be recognized and loaded.

IMPORTANT: If you ever see the message "File wasn't loaded: [wavetable name]" immediately below the selectors, the path stored in the preset is invalid. Be careful not to move, rename or delete wavetables or their enclosing folders if they are already in use! Note: Wavetables referenced by the factory presets can be restored by re-installing Hive.

In either format (.wav or .uhm), Hive's wavetables comprise up to 256 individual waveforms.

File selectors (unlabelled)

To load a wavetable you can click on either of the two selectors towards the top of the hexagon. The difference between them is that the arrows of the upper selector step through folders while those of the lower selector step through files. The menu also includes the following functions:

refresh wavetables updates the list of wavetables, like *refresh* does for the browser content.

reveal in Finder / open in Explorer opens a system window for the currently selected folder. After adding, removing or renaming wavetable files or folders outside of Hive's own browser, please remember to *refresh wavetables*.

unload current replaces the selected wavetable with a sine wave, minimizing preset load times as well as memory and CPU usage.

Info Text

Some wavetables include explanatory text, while others display the number of frames used. Try opening such an .uhm file in your favourite text editor and see how they are defined.

Position

The Position knob scans through the wavetable. The value is a percentage of the total size. The horizontal bar below the waveform graphic is a real-time Position indicator.

Auto Mode

This feature lets you scan automatically i.e. modulate *Position* without using any of the standard envelopes and LFOs. There are 3 modes:

one shot ....a single scan
loop --> ....a looped scan in one direction only
loop <--> ....a looped scan in both directions

Auto Rate

This knob adjusts the speed of *one shot* or *loop* modulation from "quite slow" to "very fast".

Auto "scanning" normally starts at the set *Position* and ends at the final wave, but this behaviour depends on the status of the *Reverse* and *Cyclic* buttons…

Reverse

Reverses the order of frames, which is particularly useful with *one shot* Auto Mode. Try this: Load *init* (right-click on the data display), select *Wavetable* as OSC1 Wave, load *DX Piano.uhm*, select Auto Mode *one shot*. It sounds a bit like a Sitar. Now activate Reverse…

Cyclic

Used in combination with Auto Mode, this option adds a copy of the first frame to the end of the table. Particularly useful for smoothing Auto Mode *loop* —>, it also allows loops to cross wavetable boundaries. Test this by setting a high Position then switching Cyclic on and off.

Multi Pos. / Tables

Hive's wavetables are basically 2-dimensional (some would say 3D). The **Tables** selector sets the number of splits in the x-axis while **Multi Pos**. adjusts position in the y-axis. An example:
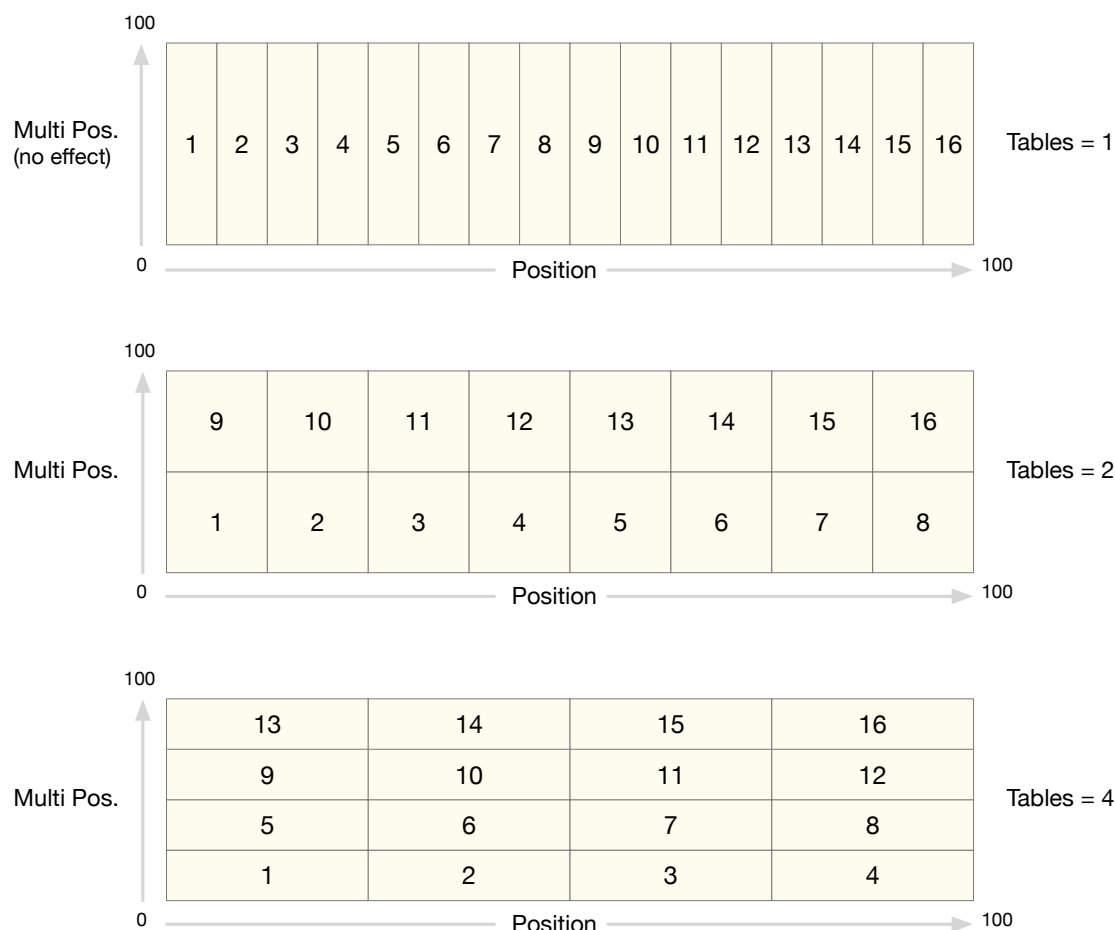
Things can get rather interesting if you set Tables to a value that doesn't divide the number of frames in the wavetable so evenly. Tip: Experiment with the Interpolator set to *switch*…

Interpolator

A choice of 4 different algorithms for interpolating between frames. This option only applies to the Position parameter – interpolation through Multi Position is always *crossfade*.

switch ....no interpolation at all, sudden jumps between frames
crossfade..........................smoothly interpolates waveform magnitudes i.e. a simple crossfade
spectral............................like *crossfade*, but also interpolates the phases of each partial
zero phase ....like *spectral*, but also forces the phase of each partial to zero first

Note: The appearance of waveforms can differ significantly, depending on the interpolation. The *spectral* and *zero phase* modes shift the relative phases of partials differently. The *switch* option only shows non-interpolated waveforms. So how about a quick test? Load *Spike Series.uhm*, set Position to 5.00 and watch the waveform change as you select different interpolation modes.

As blending different phases requires extra arithmetic, *spectral* is actually the highest quality mode, and therefore the most CPU-intensive. Tip: The CPU-friendly *crossfade* is usually fine.

Arpeggiator & Sequencer

The **ARP & SEQ** button at the top of the hexagon opens a window containing everything you need to set up complex arpeggios and sequences…

Clock

The arpeggiator and sequencer share a host-synchronized clock:

Time Base

Basic note division (**1/32**, **1/16**, **1/8** or **1/4**) for the arp and sequencer. As the clock is always synchronized to host tempo, no absolute times (in seconds) are available here.

Sync

'Strict Host Synchronization' causes arpeggios and sequences to align with beats in the host so they are not restarted with each played note.
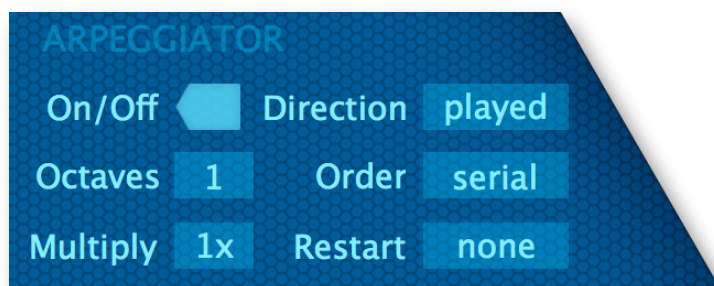
Multiply

Speed (50% to 200%). For triplets, set 75% or 150%, for dotted times set 66.67% or 133.33%.

Swing

Swing factor. 50% = 2:1 (triplet swing), 100% = 3:1 (dotted swing).

Arpeggiator

Hive's arpeggiator has the usual **octaves** and **direction** parameters, but also a few extras that make it surprisingly powerful, e.g. the ability to drive the sequencer.

On/Off

Activate / deactivate.

Octaves

(**1** to **4**) transposes the arpeggio in octaves according to the Order – see *Order* below.

Multiply

Driving the sequencer from the arpeggiator (switch them both on) lets you transpose sequences via MIDI notes/chords. It can get… interesting, especially if the arpeggiation doesn't happen for each note i.e. if you run the arpeggiator slower than the sequencer. The Multiply value specifies how many times slower (from 2x to 8x). Not to be confused with Clock Multiply!

Direction

Arpeggio playback mode.

played ....as the notes were played

up ....from lowest to highest note

down ....from highest to lowest note

up+dn 1.........from lowest to highest, then back down again

up+dn 2.........same as up+dn 1, but the highest and lowest notes are repeated

random ....chaotic order, unpredictable

Order

How/when the arpeggio jumps to the next octave.

serial ....plays all notes first, then jumps octaves up

round ....like serial, but also jumps down again if Octaves (see above) is set to 3 or 4

leap ....jumps octaves at each successive note

repeat............repeats the note in all octaves before playing the next note

Depending on the number of notes as well as the Octave and Restart settings (see below), some of the Direction and Order options will sound identical.

Restart

The number of notes the arpeggiator will play before jumping back to the start. The idea behind *Restart* is to ensure that arpeggios stay in time (e.g. 4/4), however many notes are played.

Available values are **none**, **4** to **10**, **12**, **14**, **16**, **24**, **32**. Experiment with '8' or '16' first. Be aware that if you choose a very low value here, the arpeggio is likely to restart before all held notes have been played: some notes will simply 'go missing'.

The results of arpeggiation also depend on the selected voice mode, with overlapping release phases (poly), retrigger (mono), or single trigger (legato and duo).

Sequencer

Below the Clock and Arpeggiator is Hive's 16-step sequencer / modulator / gater. Here is a screen-shot of the sequence used in the preset *HS Heavy Gravy*:
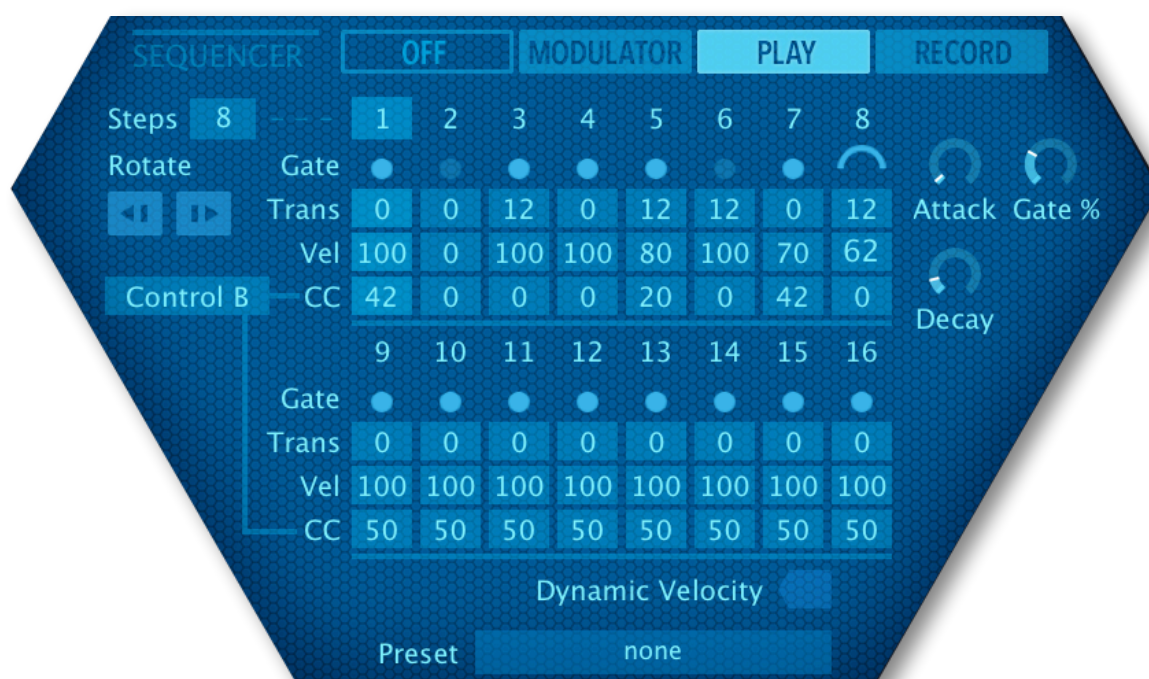
OFF | MODULATOR | PLAY | RECORD

The buttons along the top of the sequencer are used for selecting a 'sequencer mode':

In **MODULATOR** mode, the envelopes are not triggered. However, the CC values (see below) as well as Seq Gate (see Attack and Decay below) can still be used e.g. to modulate cutoff. Note that **Transpose** and **Velocity**, being MIDI note data, are ignored in this mode.

Select **PLAY** mode to trigger envelopes / notes. Like the arpeggiator, the sequence will run whenever notes are played and will stop as soon as all notes are released.

RECORD fills the data area with transposition and velocity values (including whatever the arpeggiator is spitting out!) plus CC data if this is being used (see the next page).

Important: The first note you record defines 'Transposition = 0'. Tip: To prevent overshooting the transposition limits, play a fairly central 'root' note first, then the **complete** sequence (which should overwrite the first note). Finally, rotate one step to the left – see *Rotate* below.

Steps

The number of notes (**2** to **16**) the sequencer will play before it restarts.

Rotate

These two buttons shift the active part of the sequence to the left and right. It often happens that a heavily edited sequence appears to starts on the wrong beat, an effect which is easily fixed using the Rotate buttons. Certainly easier than recreating the sequence from scratch!

Gate

Click each step to cycle between **On**, **Tie** or **Rest** (the icon will change accordingly). You can edit several steps at once by swiping to the left or right.

On ....A note whose gate length is set by the Gate % parameter (see below).

Tie ....The same as On but with gate length set to maximum.

Rest .....The note is not played.

Trans (Transpose)

Per-step transposition within a 4-octave range (**-24** to **+24**).

Vel (velocity)

Per-step velocity values. These override normal MIDI note velocity unless the Dynamic Velocity switch is activated…

CC

The row of values labelled 'CC' (continuous controller) are used to modulate anything you like in time with the sequence. Select one of the options in the CC selector to the left, use that same modulation source in the Matrix for something dramatic (cutoff, pitch, whatever) and enter values in the CC row. You can even record CC.

Tip: Select the controller you use the least here, e.g. Control B!

Dynamic Velocity

Multiplies the sequencer's Velocity values with the actual MIDI velocity.

Attack *

How slowly the the modulation source **SeqGate** fades in for each step.

Gate % *

Sequencer gate time i.e. how long the notes are held relative to the clock's [TimeBase](#).

Decay *

How slowly the the modulation source **SeqGate** fades out for each step.

* Although Attack, Gate % and Decay can all be modulated, they do not appear in the modulation matrix target menu. For technical reasons you can only assign them via drag & drop.

Effects (FX)

The **FX** button at the top of the hexagon opens a window containing everything you need to set up a complex chain of audio effects:

The 'power' icon to the right of the FX label is a global on/off switch for the effects panel. Disable it and you won't hear any effects, even after changing presets!

Enable / Rearrange

The central column contains 7 buttons, one for each effect. Click on a button to switch the effect on (highlighted) or off (dark). Click and drag up and down to change the order.

Tip: Also try unusual effect chains, for instance reverb then phaser then distortion.

Distortion

Hive's distortion unit is relatively simple, requiring only a mode selector and 3 knobs…

Mode (unlabeled)

Soft Clip........Smoothly compresses peaks in the signal.

Hard Clip.......Simply chops off the top and bottom of the waveform.

Foldback.......Similar to soft clip except that increasing the gain doesn't slam more of the signal peaks against the limits, but reflects (folds) them back.

Corrode.........A combined sample rate and sample resolution control (a.k.a. bit crusher). The *Amount* and *Tone* controls (see below) are replaced by *Rate* and *Crush*.

Amount

Input gain control. This effectively sets a threshold above which distortion occurs (and therefore the perceived amount of distortion). In *Corrode* mode (see above), this knob sets the amount of sample rate reduction (the label changes to **Rate**) instead.

Tone

Bipolar frequency tilt for more bass or treble distortion. In *Corrode* mode (see above), this knob reduces the sample resolution (the label changes to **Crush**) instead.

Mix

Dry/Wet balance control. Turning Mix down from the usual maximum preserves more of the original character without affecting the distortion characteristics.

Rate (in Corrode mode)

Reducing ('decimating') the sample rate degrades audio quality: Low values introduce high-pitched 'grit'. At high Rate values, aliasing takes over – you will hear more rough metallic tones than the original signal.

Crush (in Corrode mode)

Bit crush (resolution reduction) amount. Waves become increasingly 'steppy' until they are reduced to clicks or even silence, depending on the input.

Reverb

It looks simple enough, but Hive's plate reverb is surprisingly flexible. It is capable of anything from small resonators (e.g. guitar body or metal tubes) to huge cathedrals…

Pre

A single delay before the reverb starts. Especially useful for retaining the presence of the original signal while using lots of reverb. Or as a slap-back delay!

Size

Room dimensions, from sardine can to infinity and beyond. Balance this with Decay…

Decay

Controls reflectivity of the room, essentially the opposite of Damp (see below). Affects how long it takes for the reverb tail to fade out.

Damp

Causes higher frequencies to fade out more quickly than low frequencies, imitating the 'warming' effect of carpets, curtains etc. in a room, or the audience in a concert hall.

Tone

Strong 'tilt' equalizer. Use in combination with Damp to colour the reverb.
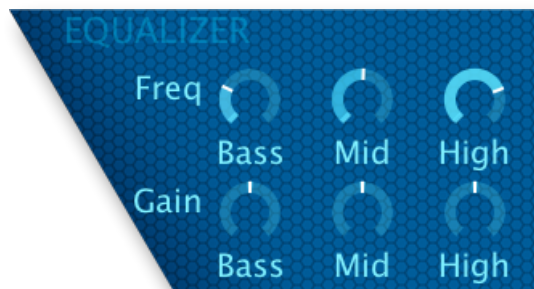
Width

Stereo spread of the reverb signal.

Mix

Balance between the original (dry) and reverb signals. At maximum, the dry part of the signal is faded out completely, which lets you use Hive's reverb for strong 'guitar body' type resonances: Set Pre to minimum, and fine tune the Size around 5.00.

Equalizer

Insert the EQ effect wherever you want to cut or boost part of the spectrum, for instance to add some mid-range 'presence'.

Low | Mid | High

The 3-band EQ has Low and High shelving filters surrounding a fixed-width Mid band. Each band has a corner Frequency and Gain control, and each band's gain can be set from -15dB to +15dB (i.e. plenty!)

Tip: Where you place the EQ in the effects chain is important. For instance, put the EQ after the Distortion unless your intention is to control distortion characteristics.

Chorus

As effect for synthesizers, chorus has a long tradition. After spring reverb, chorus was the second effect ever built into a commercial synthesizer. Hive's chorus is actually three different models that share a common set of controls:
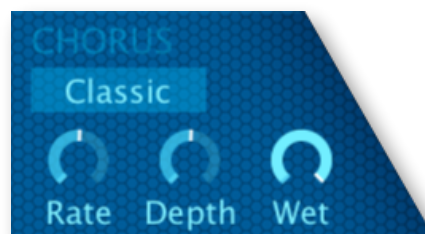
Type

Classic, **Dramatic**, **Ensemble** are based on well-known hardware effects. Ensemble is especially rich: it can turn a raw oscillator into a classic 'string machine' sound.

Rate

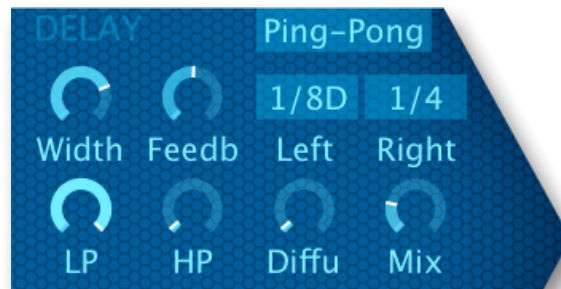The modulation speed. Use low values for slow stereo effects.

Depth

The modulation amount. Set to zero (with Classic or Dramatic) for static coloration.

Wet

Balance between the original and treated signal. Lower values here can be used to add warmth without making the sound too 'washy'.

Delay

Hive's delay unit looks simple enough, but is very 'musical'…

Width

Stereo width of the delay effect.

Feedb (feedback)

Feedback (regeneration) amount – the output signals are fed back into the input for repeating echoes. 100.00 will give you an almost infinite loop if LP is set to maximum and HP to minimum... so try that!

Mode (unlabeled)

The **Stereo** option has the two delays acting independently i.e. there is no cross-feed from one channel to the other.

Ping-pong feeds the left channel to the right then vice versa…

Pong-Ping is the same as Ping-pong except that it starts with the right channel.

Left and Right

Delay times for the two channels, always synchronized to host tempo. **T** means triplet time (3 in in the space of 2) and **D** means dotted (half as long again).

Tip1: For typical extreme stereo, set the Right channel to twice as long as the left e.g. 1/4 and 1/2. Use Ping-Pong if the left channel's delay is shorter, otherwise Pong-Ping.

Tip2: For a fuzzy slap-back effect, set the delay times to 1/32 and 1/16T, turn Feedb down to zero and Diffu up to maximum. You can make the delay times even shorter by negatively modulating the hidden parameter Delay / Time Scale.

LP and HP

Cutoff controls for lowpass and highpass filters within the feedback path. Lower the value of LP for typical damping, increase HP to reduce the bass and mid frequencies.

Diffu (diffusion)

The diffusion parameter makes the delay more 'fuzzy'. When Diffu is set to maximum, the individual echoes sound as if they had been treated with a short reverb.

Mix

Balance between the original and treated signal.

TimeScale (hidden parameter)

Modulate this parameter to shift all delay times away from strict synchronization.

Wow (hidden parameter)

'Wow' emulates the low frequency wavering of old magnetic tape delay units. To adjust the amount of Wow, use Constant as source in the modulation matrix (and of course select Delay / Wow as your target).

Tip: In the Matrix is a panel preset called '09 UnWow the Delay'. This not only sets Wow to zero, but also straightens the delay time (which is purposefully set slightly longer than the nominal value), making it sound much more robotic.

Compressor

Although dynamic processing is useful in any audio system, compressors are not often found built into synthesizers. The number of controls in Hive's compressor has been reduced to a minimum…

Amount

An inverted **threshold** and compression **ratio** control in one. At higher values, it can get loud…

Out

Turn this down to compensate for the boost in volume caused by strong compression, or turn it up to boost very quiet signals (set the Amount to zero).

Attack

How fast the compressor reacts to peaks in the signal. Experiment with Attack and Amount for maximum 'punch' in percussion sounds, or for the smoothest pads.

Release

Compression 'relaxation' time. This setting isn't quite as important as Attack because the actual release time is semi-automatic.
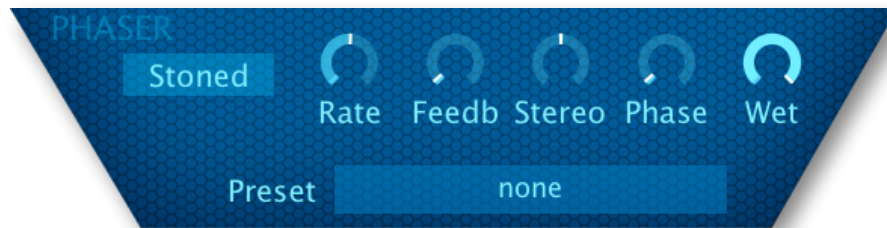
Gain Reduction (GR)

How much the signal level is being reduced whenever the compressor kicks in. For maximum effect, make sure there is plenty of movement here.

Mix (hidden parameter)

A Dry/Wet mix control for parallel (aka New York) compression.

Phaser

Traditional sweeping effect, stereo, with adjustable resonance (feedback)…

Type (unlabeled selector)

Stoned or **Flanged** – inspired by 2 different hardware units. The Flanged type is more complex (it uses more delays) and is particularly interesting for bright sounds. Note that in Stoned mode the maximum stereo effect is already at +/- 25.

Rate

Modulation speed of the Phaser's own LFO.

Feedback

The amount of resonance. Note: high resonance can create strong bass humps.

Stereo

A bipolar stereo width control. Note that with the '*Stoned*' type, maximum stereo width is at +/- 25.00 (this is especially obvious if you turn Feedback way up).

Phase

LFO phase offset, from 0 to 360°.

Wet

Amount of phase-shifted signal, from 0% (completely dry) to 50% Wet.

Depth (hidden parameter)

The amount of modulation from the Phaser LFO. Normally maximum.

Center (hidden parameter)

Phase offset. For static colouration effects, use the 'Constant' modulation source to both minimize the Depth (see above) and adjust the Center.

FX Preset

At the very bottom of the hexagon is a large **panel preset** button which lets you copy/paste, save or load all effect settings at once. Unlike the small panel preset buttons at the top of the other Hive panels, those in the hexagon show the panel preset's file name.

XY

Clicking on the [**XY**] button opens the pad containing four controls which share the same area. If any of the XY controls occupy the same position, you can set the focus to a particular control by rolling your mouse wheel withing the square, or by selecting one from the vertical row on the right.
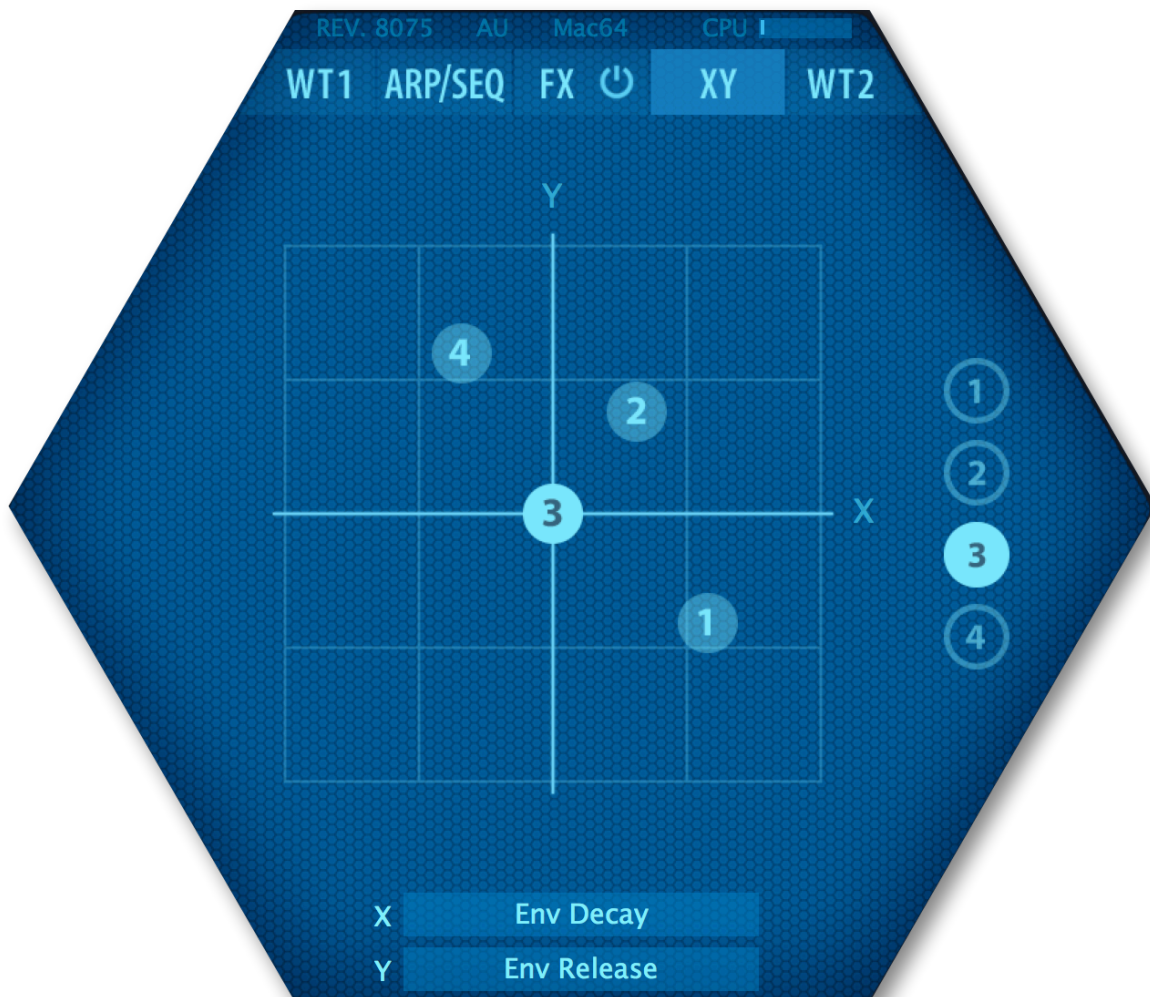
All presets load with the controls **automatically** assigned to pre-defined **macros**, many of which affect multiple Hive parameters at the same time. The macros affect the oscillators or Control A/B offset (XY1), the filters (XY2), the envelopes or LFOs (XY3) and the effects (XY4) respectively.

To swap out macro assignments, highlight the control you want to change, click on the X or Y field at the bottom of the hexagon and select a macro from the list. See the next page for an alternative.
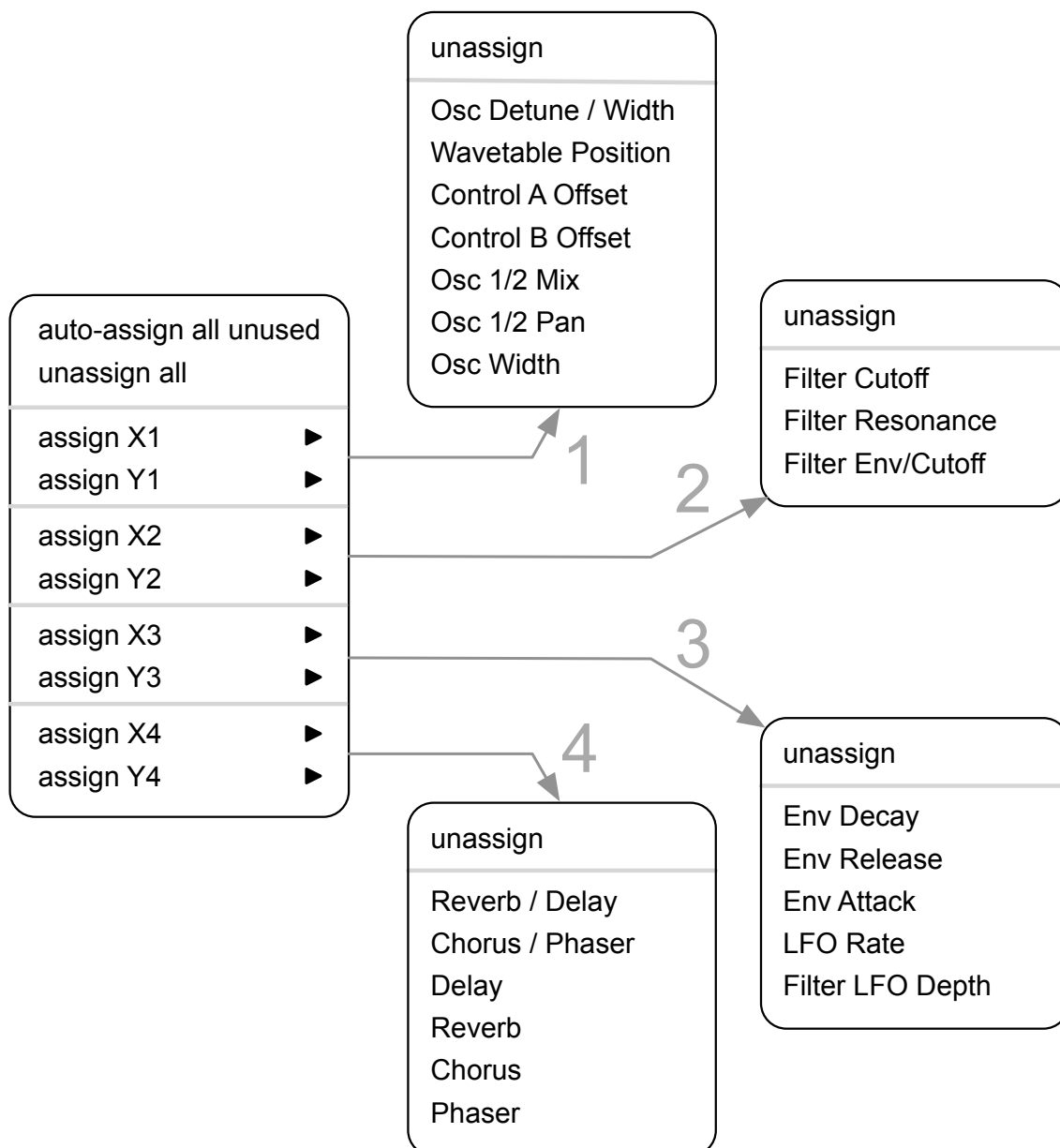
The *Control A Offset* and *Control B Offset* options (for control 1) let you control any of the modulation targets in Hive: Simply use the sources Control A and Control B in the modulation matrix. See also Control A/B Default in the Preferences.

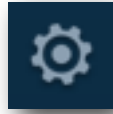All four XY positions are stored with the preset when you [SAVE].

You can remote-control the XY controls: Open the MIDI Learn view and right-click in the square.

Unipolar parameters that are set to zero will only respond to movement in the upper or right half of the square. Tip: Try turning such parameters up a certain amount and moving the assigned XY control equally far into the negative before saving your preset.

You can right-click anywhere within the square to open the full **XY macro assignment** menu:

unassign
Osc Detune / Width
Wavetable Position
Control A Offset
Control B Offset
Osc 1/2 Mix
Osc 1/2 Pan
Osc Width

unassign
Filter Cutoff
Filter Resonance
Filter Env/Cutoff

auto-assign all unused
unassign all
assign X1 ▶
assign Y1 ▶
assign X2 ▶
assign Y2 ▶
assign X3 ▶
assign Y3 ▶
assign X4 ▶
assign Y4 ▶

1
2
3
4

unassign
Reverb / Delay
Chorus / Phaser
Delay
Reverb
Chorus
Phaser

unassign
Env Decay
Env Release
Env Attack
LFO Rate
Filter LFO Depth

Configuration

The cogwheel button at the top right opens the **global configuration** pages where you can adjust the window size and brightness or connect Hive parameters to MIDI continuous controllers.

The 4 buttons are MIDI Learn [L], MIDI Table [≡], Preferences [tools] and Close [X]:

Tip: Right-click within the button area to set the currently selected page as default.

About MIDI CC

Before connecting knobs and sliders on your master keyboard to Hive parameters (see the next page), it's best to know what a "**MIDI CC**" is…

CC, which now officially stands for **Control Change** (and no longer Continuous Controller), is a multi-purpose message format used for editing and performing presets. However, CC isn't the only kind of MIDI performance data; there are also messages for **note on/off** (including velocity), **pitch bend** and two kinds of **aftertouch**.

Although the MIDI Manufacturers Association (MMA) was kind enough to leave most of the CC numbers undefined, two of them have very specific meanings which are also recognized by Hive:

CC#01 = modulation wheel
CC#64 = sustain pedal

Hive version 1.0 also offered modulation sources called *Breath* (CC#02) and *Expression* (CC#11). These have been replaced by the user definable *Control A* and *Control B*. See the [Preferences](#).

Note: You don't need e.g. a breath controller or an expression pedal to make use of CC messages. Most of the names specified by the MMA are purely convention: You can use anything that can send a CC, for instance a knob on your MIDI keyboard or a controller lane in your MIDI sequencer.

Later revisions to the MIDI spec even included a bunch of very specialized CC definitions such as *Celeste Detune Depth* (presumably at the bidding of a home organ manufacturer or two). We can safely ignore all such definitions!

MIDI Learn

The MIDI Learn page is where you can connect MIDI CC (see above) to Hive parameters. The CC data can be generated by e.g. knobs or sliders on your hardware controller, or by a track in your host sequencer.

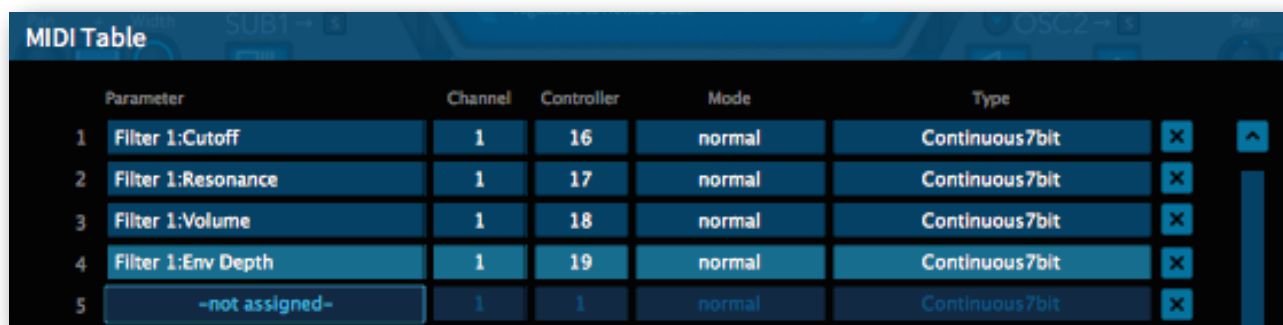Click on the configuration button and select the 'L' MIDI icon (looks like a 5-pin DIN socket):
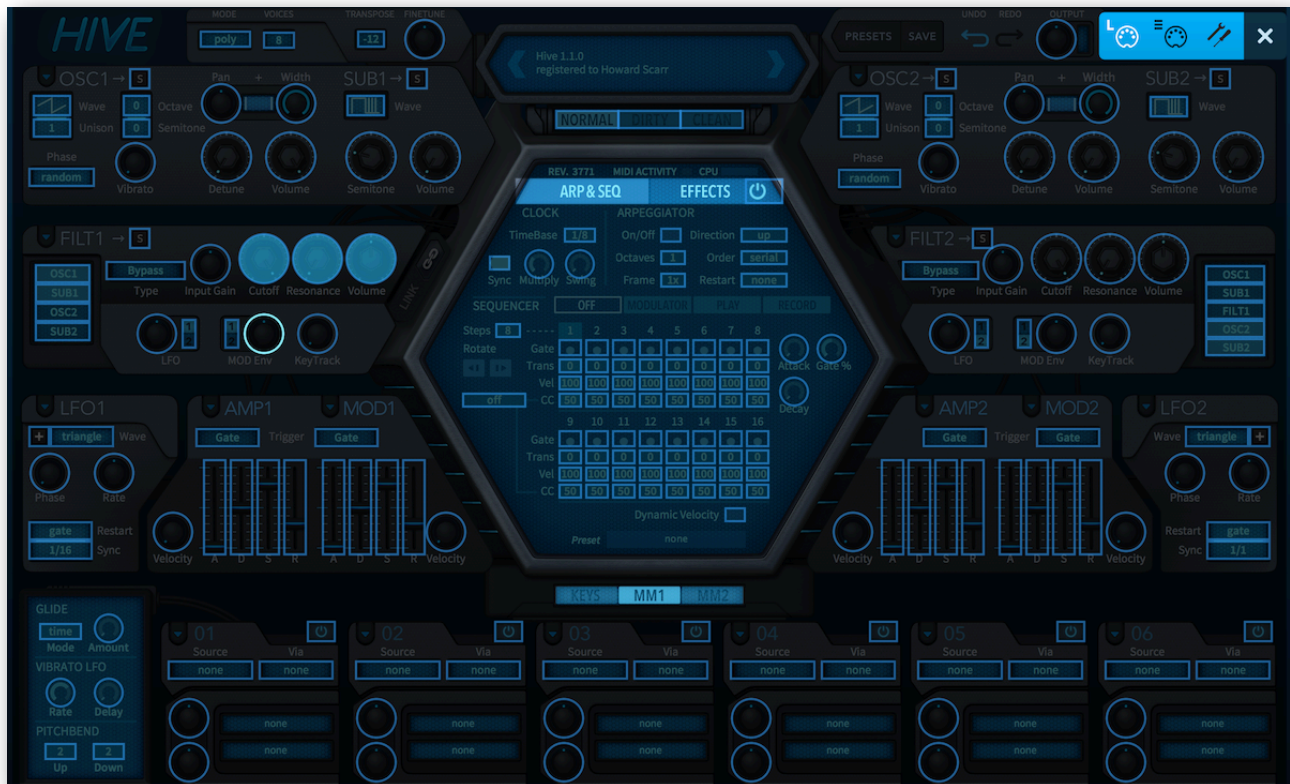
The window is a translucent overlay, with all MIDI-learnable elements appearing as selectable out-lines. Controls that are already connected are filled (like three of the filter knobs in this image), and the outline of the currently active control is highlighted (like FILT1 ModEnv in this image).

Try it: Click on the Filter 1 Cutoff knob so that it becomes highlighted then send Hive some MIDI CC data – wiggle a knob or slider on your MIDI controller and the assignment is made. If you don't want to keep the new CC connection, double-click on the knob to remove it.

Note: Some of Hive's controls won't be immediately available. For instance you might have to tog-gle between the ARP & SEQ and EFFECTS panels, or between the KEYS and MM1 / MM2 pages. Tip: You don't have to exit the configuration pages first, you can still switch them over from within the MIDI Learn page.

MIDI Table

Click on the configuration button and select the '≡' MIDI icon button to open an editable list of all current MIDI CC assignments.

Parameter

The field on the left selects one of Hive's many parameters, which are sorted into submenus. Click on the 'ADD' button at the bottom left and experiment with this field, then delete the assignment again by clicking on the small [X] to the right of the line you just created.

Here's an experimental feature… At the very bottom of the Parameter menu are two extra options. Select *Last Clicked Control*, enter a Controller number and exit the configuration pages. The most recently clicked knob or switch will now respond to that CC! The *Fine* option is similar, but with a significantly reduced range.

Channel / Controller

The next two fields are for MIDI channel and CC number. Hive is channel-sensitive, so you can map up to 16 channels for a total of about 2000 control assignments.

Mode

Specifies the range and/or resolution of values.

Normal: ....full range, continuous

Integer:........................full range, whole numbers only

Fine: ....0.01 steps between the two integers closest to the current value

Type

Specifies the type of hardware (by far the most common is Continuous 7-bit).

Encoder 127: ....unipolar encoder

Encoder 64: ....bipolar encoder

Continuous 7-bit: ....7-bit MIDI CC (normal resolution, common)

Continuous 14-bit: .....14-bit MIDI CC (high resolution, rare)
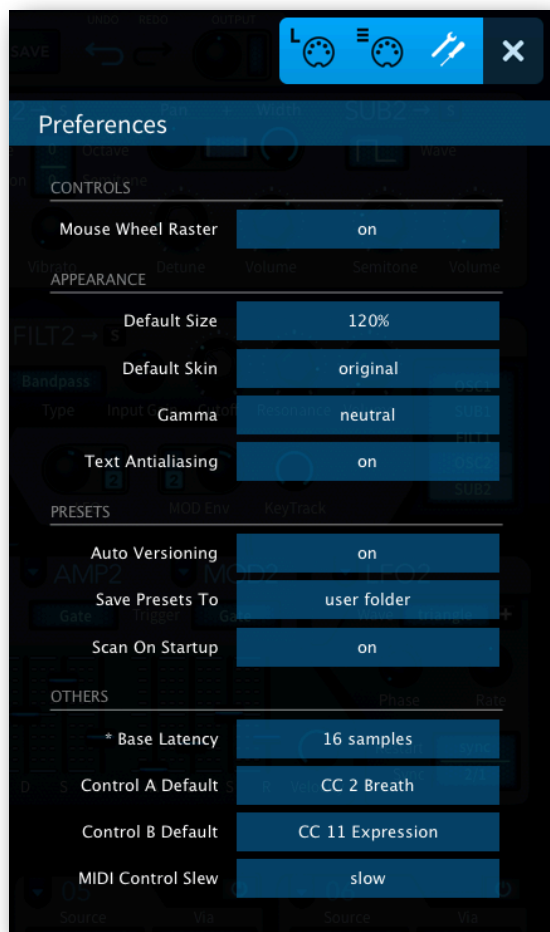
Remove

To remove individual assignments, click on the [x] to the right of each line. To remove all assignments, click on the **Delete All** button at the bottom of the window.

Control A / Control B

Local (per instance!) versions of the Control A/B Default settings.

Preferences Page

Click on the 'tools' icon to open this page…

CONTROLS

Mouse Wheel Raster

If your mouse wheel is rastered (you can feel it clicking slightly as you roll the wheel), set this option to 'on' so that each little click increments the value in sensible steps.

APPEARANCE

Default Size

The GUI size for each new instance. You can temporarily change GUI size without opening Preferences by right-clicking in the background.

Default Skin

Sets one of the skins as global default.

Gamma

Determines how bright Hive appears.

Text Antialiasing

Switches the smoothing of labels and values on or off. Normally left on, only in certain cases will switching it off improve readability.

PRESETS

Auto Versioning

If switched on, an index is appended to the preset name and automatically incremented each time you save it. For instance, saving 'Space' three times in a row would give you three files: 'Space', 'Space 2' and 'Space 3'.

Save Presets To

Choosing the user folder option causes all saved presets to land in the User folder instead of the currently selected one.

Scan On Startup

Whether the preset library should be scanned and the database recreated when the first instance of Hive is started, e.g. when you reopen a project.

OTHERS

Base Latency

If you are certain that your audio system – hardware as well as software – uses buffers that are a multiple of 16 samples in size (please refer to the appropriate documentation), you can safely disable Hive's base latency. Otherwise leave it set to the default *16 samples* to prevent crackles.

A new *Base Latency* setting will only take effect when the host allows e.g. on playback or after switching the sample rate. Reloading Hive also works. See MORE ABOUT BUFFERS below.

Control A/B Default

Apart from the modulation wheel, the list of modulation sources in the previous version included two extra fixed MIDI controls: *Breath* (CC#02) and *Xpress* (CC#11). While retaining backwards compatibility, we have replaced those with the user-definable *Control A* and *Control B* sources.

MIDI Control Slew

Determines the strength of parameter smoothing for all performance controls – pitch bend, modulation wheel, Control A/B and Pressure. With *MIDI Control Slew* set to 'off', Hive is more responsive to modulation wheel data (for instance), but can sound rather grainy. The default setting ('Fast') is a good compromise between speed and smoothness.

The 'Slow' option is adaptive: Whenever incoming control data jumps immediately between values that are further apart, the slew is not applied.

MORE ABOUT BUFFERS

Internally, Hive processes audio in chunks of n x 16 samples. This 'block processing' method significantly reduces the CPU load and memory usage of all our plug-ins.

If the number of samples to be processed is say 41, Hive processes the first 32 and keeps the remaining 9 in a small buffer (16 samples is enough). Those 9 samples are then processed at the start of the next call… and so on.

The extra buffer is only necessary if the host or audio driver processes 'unusual' buffer sizes. In the many host applications that process buffers of e.g. 64, 128, 256 or 512 samples (all multiples of 16), try switching it off so that Hive can process latency-free.

Inside the Hive

This section starts with a few features that would otherwise have filled the previous chapters with a bit 'too much information'!

Internal sources	
Amp 1/2	amplifier envelopes
LFO 1/2	low frequency oscillators
Mod 1/2	modulation envelopes
Seq Gate	sequencer gate (adjust sequencer Attack and Decay)
Vibrato LFO	global low frequency oscillator (not only for vibrato!)

MIDI sources	
Control A	user-definable CC - default is Breath (CC#02)
Control B	user-definable CC - default is Expression (CC#11)
Gate	+100 while a note is played, otherwise zero (see numeric sources)
KeyFollow	value derived from MIDI note number, pivots around 'E3'
ModWheel	modulation wheel (CC#01)
PitchWheel	pitch bender
Pressure	aftertouch (channel pressure or poly pressure)
Velocity	MIDI note-on velocity

Numeric sources (%)	
Alternate	alternating extreme (+100, -100, +100, -100 etc.) per note
Random	random value anywhere between -100 and +100 per note
Constant	+100

Hidden Parameters

To avoid cluttering Hive's GUI with dedicated controls, we relegated some of the parameters to the modulation matrix only: continuous oscillator **Tune**, **Phase** angle and **Pulse Width** (for the **pulse** waveform), delay **Time Scale** and **Wow** as well as phaser **Depth** and **Center**.

To fine tune an oscillator while Unison is active, use **Constant** as the source and **Tune** (drag & drop onto an Octave or Semitone selector) as the target.

Synthesis targets	
Amp Envelope 1/2	Attack, Decay, Sustain, Release, Velocity
Mod Envelope 1/2	Attack, Decay, Sustain, Release, Velocity
LFO 1/2	Phase, Rate
Oscillator 1/2	Detune, **Tune** , Vibrato, **Phase** (angle), **PulseWidth** (pulse only), Volume (main oscillator), Pan, Width, Sub Tune, Sub Volume, WT Position, WT Auto, WT Multi Pos
Filter 1/2	Input Gain, Cutoff, Resonance, KeyTrack, Mod Env Depth, Mod LFO Depth, Volume
Mod Matrix	Depths. Drag&drop only i.e. not visible in the context menu!

Global targets	
Arp+Seq Clock	Multiply, Swing, Attack *, Decay * and Gate % *
Voice	Glide, FineTuneCents
Vibrato LFO	Delay, Rate

* For technical reasons, the sequencer parameters *Attack*, *Decay* and *Gate %* do not appear in the target menu – they are only available via drag & drop.

Effect targets	
Distortion	Amount, Tone, Mix, Rate, Crush
Chorus	Rate, Depth, Wet
Phaser	Rate, Feedback, Stereo, Phase, Wet, **Depth, Center**
EQ	Bass Gain, Bass Freq, Mid Gain, Mid Freq, High Gain, High Freq
Delay	**TimeScale**, Width, DryWetMix, Feedback, HighPass, LowPass, **Wow**, Diffuse
Reverb	PreDelay, Damp, Decay, Size, Tone, Width, DryWetMix
Compressor	Amount, Attack, Release, **Mix**, Output

A useful side-effect of implementing 'hidden parameters' is that we can add as many modulation targets as we like for the experts without making Hive any harder to use for beginners.

MIDI Specialities

MIDI Programs

All presets (up to 128) present in this folder will be loaded into memory when the first instance of Hive starts. 'MIDI Programs' can then be switched via 'Program Change' messages. As MIDI Programs are accessed in alphabetical order it makes sense to prefix each name with an index '000 rest-of-name' to '127 rest-of-name'.

IMPORTANT: Unlike regular presets, MIDI Programs can't be added, removed or renamed on the fly. Changes will only take effect after the host software is restarted!

The MIDI Programs folder can contain up to 127 sub-folders of 128 presets, switched via MIDI 'Bank Select' messages (CC#0) preceding the Program Change message. The MIDI Programs folder itself is bank 0, sub-folders are addressed in alphabetical order starting with bank 1.

When Hive receives a program change, it will display the bank and program numbers to the left of the preset name e.g. "0:0" for the first preset in the first bank. In certain hosts, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of confusion, make sure that there are no junked presets in the MIDI Programs folder. All files there are addressed, even if they are hidden.

Poly Pressure (polyphonic aftertouch)

Hive recognizes polyphonic aftertouch data – each voice is modulated independently.

Multi-Channel MIDI

Hive and all other u-he synthesizers support a growing class of expressive sensor-based instruments (e.g. Haken Continuum, Eigenharp, Roli Seaboard, Linnstrument) that can send each note over a separate MIDI channel. For Hive to respond correctly, your host must be able to route multiple MIDI channels to a single plug-in instance.

While receiving multi-channel MIDI, each voice will react **individually** to the following control messages: Pitch bend, Pressure (aftertouch), Modulation (CC #01), Breath control (CC #02) and Expression pedal (CC #11).

The voice modes **Poly**, **Mono** and **Legato** become practically identical. In each case, Hive behaves like several (up to 16) mono synths set to the same sound. Note that the **duo** voice mode isn't channel-aware i.e. all MIDI channels are merged.

Mod Matrix Lists

Sources

Here is a list of all modulation sources available in the modulation matrix. Note that it does not include the X/Y pad controls.

Targets

Here is a list of all modulation targets available in the modulation matrix. To the left is what you see in the target selector's context menu, to the right is what you see in each sub-menu.

Targets in **bold** typeface are **hidden parameters** which only appear in the modulation matrix, not in the main panels. For simple adjustment, modulate them using *Constant* as source.

Tips & Tricks

This chapter lists a few less obvious tricks you can apply to your own creations - enjoy!

Setting Volumes

There are several points within the signal path where levels are affected: Oscillator volume, filter input gain and output volume, amp envelope velocity, compressor amount, compressor output, main output.

Where you choose to adjust the overall level can and will affect the sound. As there are no hard and fast gain-staging rules in the digital realm, it's best to trust your ears.

Modulating Pitch

To get perfect semitones using an envelope, velocity or a unipolar square LFO as modulation source, integers won't do – you need to calculate the amount of modulation more precisely.

The simple formula is **50/12 x** (**interval in semitones**). Easy enough to calculate each time, but here are some values it might even be worth memorizing:

1 semitone	= 4.17 (50/12 is 4.1666666…)
2 semitones	= 8.33
3 semitones	= 12.50
4 semitones	= 16.67
5 semitones	= 20.83
6 semitones	= 25.00
7 semitones	= 29.17
12 semitones	= 50.00

Tuning to '432'

Instead of the standard 440, tuning A4 to 432Hz has become quite popular recently, especially in the PsyTrance scene. To globally retune Hive to 432Hz, set FINE TUNE to precisely -31.76 (using SHIFT), then right-click on the knob and lock it. This assumes that you haven't used *Fine Tune* often in your presets: only very few of the factory presets use it.

Using Constant

With lots of positive modulation, the cutoff can be too high even if the knob is turned down to minimum (30.00). All is not lost, however – you can take it much further down in the modulation matrix. Select 'Constant' as the source and Cutoff as target, then set a negative amount. For an example, see matrix slot 02 in *09 Loops - untuned / HS Analogue Noise Hits*.

Does the delay sound too wobbly or not wobbly enough? Go to the matrix, select the panel preset **09 UnWow the Delay** and adjust the lower of the two modulation amount knobs. The upper knob lets you adjust the overall delay time ('Time Scale') – another hidden parameter itching to be used for more experimental sounds!

For waveform variations, you can use Constant to adjust the pulse width of a pulse wave. Or even set a Phase offset between the main oscillator and its sub-oscillator. Try this:

- Load --INIT--.

- Activate SUB1 in filter 1.

- Tune SUB1 Semitone to 0.00.

- Select the sawtooth Wave and turn SUB1 volume up to maximum. The result is a pair of saws with a 90° phase offset (have a look at the waveform using an oscilloscope).

- In the matrix, select the **10 Phase Control** panel preset and adjust the upper modulation amount while listening carefully. At around -25 or +75 you should hear a perfect octave, with various timbres between those values.

- While moving the amount knob, did you notice the PWM-type effect? Try modulating oscillator Phase with a slow LFO instead of (or as well as) the Constant.

Constant can also unison-detune oscillators well beyond the maximum range of the Detune knob. Applying multiple times adds more detuning – see **07 Chords / HS Klustah 1 - pure**, which uses 14 slots just for the detuning. It is tedious to create the same assignment again and again, so there's a panel preset (**06 More Detune**) for oscillator 1 in the matrix.

Pulse Width Modulation

A chorus-like effect at the oscillator level, PWM is ideal for 'string ensemble' sounds as well as simple but rich-sounding leads and basses.

The first method is regular PWM using a Pulse oscillator and an LFO:

- Load --INIT-- from the User folder.

- Set OSC1 Wave to **Pulse** (the PWM-capable version of Square).

- In the first Matrix slot (01), select LFO1 as the Source.

- Click and drag the crosshair from either of the Target selectors in matrix slot 01 and drop it onto oscillator 1's Wave selector: the Target selector should now read 'Osc1:PulseWidth'.

- Turn the modulation amount up to about 50, play a low note and listen…

- Does the PWM effect sounds too 'square', not smooth enough? Change the LFO wave to Sine and listen again. Also try out different LFO rates.

- Start again, but instead of step 3 load the **PWM via LFO1** matrix panel preset.

Here's an alternative method that uses a pair of saw waves with one of them inverted:

- Load --INIT-- from the User folder.

- Tune the SUB's Semitone knob to about 0.20, but leave its Volume at minimum.

- In Filter 1, activate SUB1.

- In the Matrix, select Constant as the source then drag from a Target up to the SUB1 Volume knob. Set the amount to -100 (negative 100) for an inverted sawtooth at maximum volume.

LFO Tricks

- Try modulating a single target from both LFOs, with various Sync ratios and phases. For instance two square waves modulating oscillator 1 pitch. Or you can use two sawtooth LFOs with opposite polarity to create staircase patterns.

- The LFO waveforms can be skewed via recursive modulation of the Phase or Rate. E.g. set the source to LFO and the target to LFO1 Phase. You can even change the pulse width of a square wave using this method!

Envelope Tricks

- For a more snappy decay, negatively modulate the Decay from the same envelope. Positive modulation has the opposite effect, a convex curve. Modulate the attack negatively (-100%) and set the Attack to around 22 for a short "pre-attack".

- Experiment more often with the MOD envelope in 'One Shot' trigger mode instead of the standard 'Gate'. Higher 'Sustain' levels can lead to surprising results!

- For access to some extra LFO shapes in sync with the regular LFOs, set the trigger modes of any otherwise unused envelopes to 'LFO 1' or 'LFO 2'.

- A fairly well-known technique is, in addition to positive "Mod Env" depth, to modulate cutoff directly from velocity. Try modulating the Sustain level of that same envelope instead.

- Try modulating the vibrato amount with an envelope. You can easily create an initial 'growl' using very fast vibrato modulated by a rapidly decaying envelope.

- Try using two envelopes instead of one (although this can get a bit complicated). For a 2-stage decay, modulate the Sustain of one envelope from the other with a much slower Attack or Decay. For a typical 'cinematic swell', modulate the filter Input Gain or Volume from the other (also with a much slower Attack or Decay).

  Countless variations are begging to be investigated. Listen to what happens if you modulate each stage of the main envelope, or when a pair of envelopes modulate each other.

- Clicks: At minimum, the attack, decay and release phases are very fast, so notes played with Hive can click as much as (or even a little more than) any real analogue synthesizer. Mild clicking can give notes more "thwack", but if you want to remove it completely, set the amp envelope Attack to at least 1 and the Release to at least 8.

  Tip: If you set the oscillator Phase mode to 'Reset', all clicks will sound exactly the same unless oscillator phase is modulated. You have complete control!

Mod Matrix Tricks

- The depth knobs in the matrix are also valid modulation targets, which effectively gives you an extra "Via" modifier per slot. As this feature has only been implemented since version 1.2, none of the original factory presets use it. So experiment! You can't break anything.

- Quantize an LFO so that its speed can only be halved or doubled by the modulation source. Or in the following example, doubled or quadrupled: Starting with --INIT--, set LFO2's Restart mode to *sync* and the Sync mode to *1/4*. In the matrix, select Velocity as source and LFO2 Rate as target. Right click on that target selector, choose the Curve mode *expanded* and the Quantize mode *integer*. Set the depth to 50.00 and use LFO2 for cutoff modulation. Note: the *expanded* curve ensures that fairly low velocities don't already double the LFO rate.

- To transpose a random selection of your played notes up an octave, try this experiment: Starting with --INIT--, set a source in the mod matrix to Random, the target to Oscillator 1 Tune (drag & drop to its Octave or Semitone selector) and the depth to about 30 for now. Next, right-click on the target selector, choose the Quantize mode *steps of 12* and the Rectify mode *half wave +*. Play the same note repeatedly to test how often the higher octave appears. Turn the depth up to 75 for more, or even higher for the occasional note 2 octaves up.

- There's nothing stopping you from setting the same target parameter in both slots, but with a different set of slot modifiers. Load the matrix preset *12 Funny Release:* The amounts are equal but in opposite directions, which would normally cancel each other out. However, the Slew Limiter of the upper slot is set to *slow* so that the pitch bounces upwards on release.

Arp & Sequencer Tricks

- Try recording a sequence with the arpeggiator switched on – a very quick method of turning a simple 3-note chord into a 'rolling' sequence with consistent velocities.

- Vary the sequence length: MIDI-learn the 'Steps' selector, then with a 16-step sequence running, quickly change the number of steps from 16 down to 2 or 3. Watch how the sequence runs backwards (!) until it can comply with the new setting. Keep performing…

- If you would like an extra melody running in parallel, and you don't want it to glide, you should try modulating the pitch of one of the oscillators with the sequencer's velocity data. As the velocities are pitch **offsets** it can be difficult to set up.

  Alternatively, switch MIDI Control Slew off (see Preferences) and use either Breath or Expression as your pitch 'CC'. See **Modulating Pitch** a few pages back.

Effect Tricks

Reverb

- Try setting a very small reverb size e.g. 4.0, very little damping, a long decay and high mix value – you should start to hear comb filter type resonant effects. Start here for typical wind-instrument formants or small resonators (banjo, acoustic guitar, metal canister etc.)!

- In addition to the above, pre-delay will give you a coloured slap-back delay effect.

- Extreme values are a useful source of inspiration. For 'infinite space', set the Size and Decay both to maximum, Damp and Tone to the default values (double-click).

Delay

- For early reflection effects, set the Left and Right delay times to 1/32 and 1/16T and turn the diffusion up to maximum. Starting from zero, slowly adjust the feedback until it sounds like a cheap reverb effect. Then adjust the LP and HP values to thin out the reverb tail until you reach the desired ambient effect. If the current song tempo is very slow, you might have to speed up the delay by negatively modulating its Time Scale with the source 'Constant'…

- Adjusting the delay's Time Scale can also be used to give rhythmic presets some serious swing – see e.g. matrix slot 03 in the 'HS Rotation Shuffle' presets.

Wavetable Tricks

- Experiment with the 2D capabilities, not only with the wavetable preset *3 Overtones.uhm*. For instance *FM Fold Rhythm.uhm*, which normally includes several gaps of silence, changes its overall character if you set *Tables* to e.g. 4.

- Would you like an instant sitar-ish synth or a typical FM e-piano? Then try this: Load *init* (right-click on the data display), select *Wavetable* as OSC1 Wave, load *DX Piano.uhm*, select Auto Mode *one shot*. Play that sitar, then activate Reverse and play the e-piano.

- By far the most important wavetable parameter is *Position*. While auditioning wavetables, you should always try adjusting or modulating this parameter first.