Diva

USER GUIDE

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Introduction

To get the most out of Diva, you will need a powerful computer

Diva is rather demanding in *divine* mode, but that's the price we pay to hear her wonderful voice in top form. If your computer stutters while trying out presets, switch the accuracy mode to *great*, *fast* or even *draft*. You will soon learn which one your system can handle. Monophonic presets without voice stacking should be no problem, even on older computers. If your computer is fairly new, try the *multicore* option which distributes voices between the CPU cores. You should generally render tracks to audio in the highest possible quality, which means setting *OfflineAcc* to *best*.

Install / uninstall

Go to the Diva page, grab the appropriate installer for your computer system, double-click on the downloaded file and follow the instructions. Diva is fully functional in demo mode except for an intermittent crackling which disappears as soon as the product is registered. To register, right-click on Diva's data display and select the first entry. To uninstall, delete the plugin itself plus associated files from the following file locations (assuming you confirmed the default paths during installation):

Win	presets (local)	*C:\Users*YOU*\Documents\u-he\Diva.data\Presets\Diva*
	presets (user)	*C:\Users*YOU*\Documents\u-he\Diva.data\UserPresets\Diva*
	preferences	*C:\Users*YOU*\Documents\u-he\Diva.data\Support* (*.txt files)
	alternative skins	*C:\Users*YOU*\Documents\u-he\Diva.data\Support\Themes*
Mac	presets (local)	*Macintosh HD/Library/Audio/Presets/u-he/Diva/*
	presets (user)	*Macintosh HD/Users/*YOU*/Library/Audio/Presets/u-he/Diva/*
	preferences	*Macintosh HD/Users/*YOU*/Library/AppSupport/u-he/com.u-he.Diva...*
	alternative skins	*Macintosh HD/Library/Application Support/u-he/Themes/*
	other resources	*Macintosh HD/Library/Application Support/u-he/Diva/*

Online resources

For Diva support and other u-he products, 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 our u-he facebook page
For video tutorials and more, go to our u-he youtube channel
For thousands of u-he presets (commercial and free), go to the u-he patch library

The Spirit of Analogue

Diva captures the spirit of various analogue synthesizers by letting the user select from a variety of alternative modules. The oscillators, filters and envelopes closely model components found in some of the greatest monophonic and polyphonic synthesizers of yesteryear.

But what sets DIVA apart from other emulations is the sheer authenticity of her analogue sound. This comes at the cost of quite a high CPU-hit, but we think it was worth it: Diva is the first native software synth that applies methods from industrial circuit simulators (e.g. PSpice) in realtime. The behaviour of our zero-delay-feedback filters when pushed to the limit clearly demonstrates the advantages of this groundbreaking approach.

About zero delay feedback filters (ZDF)

Most filters in old analogue synths have one or more feedback paths. The input signal passes through a series of controlled resistors and condensers, and the output is fed back into the input (or to another point within the signal path). The classic Moog™ ladder filter has four lowpass filter stages and a resonance control that determines how much of the signal is fed back into the input. This feedback loop doesn't introduce any delay, feedback is practically instantaneous.

Digital models attempt to reproduce this behaviour by calculating the result of applying four simple lowpass filters to an input sample. Feedback means repeating the current calculation using the results of the previous one.

While real circuitry can process a signal within a few nanoseconds, digital models calculate per sample, adding about a million times as much latency to each iteration. The cumulative effect of feedback latency in digital emulations is very noticeable. Oversampling and higher sample rates help reduce the latency, but conventional digital filters always “smear” at high resonance levels.

Methods of addressing the latency have been available for many years, but the implementations either 1) don’t model the complex distortion inherent in real circuitry, or 2) aren’t suitable for realtime processing. Common to all methods is that they **predict** output values and use that prediction in the current calculation.

Of course we can’t see into the future either, but our routines are fast enough to deliver at least a few voices in realtime. We calculate the filter with a few test samples and look at the deviation between the prediction and the result, then we use that deviation to calculate a better prediction. The goal, of course, is to close the gap as quickly as possible!

Diva applies a classic trial-and-error principle but includes a rather intelligent way (or so we like to think) of learning from mistakes. As a rule of thumb, Diva’s filters only need to be calculated once or twice in succession. However, it can take up to 15 cycles if the resonance is very high and/or the input is very complex, for instance noise.

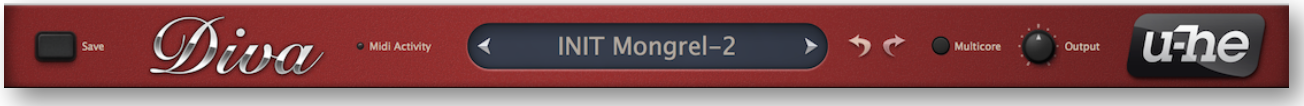
Accuracy

Click on the MAIN button at the bottom of the window. In the panel above the button are two selectors called **Accuracy** and **OfflineAcc**. These are global parameters, they remain fixed across all presets per loaded instance:

draft.....CPU-friendly, but FM will sound rough and resonance is primitive (not ‘zero delay’)
fast.....Fine for older computers and/or when you need more polyphony in acceptable quality
great.....The best compromise between quality and polyphony on high-power computers
divine.....Top-quality zero delay feedback filters – but can your computer can handle it?

OfflineAcc selects the resolution at which Diva instances are rendered to audio (offline). The two options are *same* (same as the Accuracy setting) and *best*. Some hosts have trouble rendering at the selected accuracy, while the better ones include an “inform plug-ins of offline rendering status” or similarly named option.

Control Bar



Save

First, right-click on the [save] button to check (or change) the format you will be using. Standard is **.h2p**, which has the great advantage of being cross-platform compatible. The **.h2p extended** format is the same but also allows per-line comments.

Important: If you have set the *Save Presets To* preference from the default *user folder* to the other option, *selected folder,* make sure that the folder in which you want to store your preset is already selected – if not, click on it first.

Click on the [save] button, give your preset a name and enter any other details. Preset description, playing tips etc. – anything you would like to appear in the *PRESET INFO* panel of the browser. Finally, confirm by clicking on the *apply* button. If you have loaded Diva as VST2, you will also see the option **.nksf**. See the NKS chapter.

MIDI activity

Small indicator which flashes whenever MIDI data is received.

Data Display

Primarily, the central display shows the name of the selected preset or the current value of any element being edited. Clicking on the areas either side of the display steps through presets. Clicking in the middle opens a drop-down list containing all the presets in the current directory.

Undo/Redo

The two curved arrow symbols call Diva's *undo* and *redo* functions – you can step backwards (or forwards again) through an unlimited number of edit points.

Multicore

Push this button to distribute voices between all available CPU cores so you can play more notes without 'smoking' your CPU. *Multicore* works well on recent processors such as the i5 and i7, but please note that performance can even be reduced if your CPU is older!

Note: Some hosts already offer multicore support, and having both active at the same time can lead to poorer performance for Diva. In such cases, try switching one or the other off.

Output

The final volume control for the preset. As this control doesn't affect the tone, use *Output* (in preference to amp *Volume*) to balance the levels between presets.

u-he badge

Clicking on 'u-he' at the top right opens a popup menu containing direct links to this user guide, to our homepage, to our support forum, and to various social networks.

Editing

GUI size

To adjust the size of Diva's user interface temporarily, right-click in the background and select from the list. The size is given in percentages and pixels (width times height).

To change the GUI size more permanently, go to the Preferences and change *Default UI Size*.

knobs

Values are adjusted via the usual click-and-drag, often allowing finer resolution via the SHIFT key on your computer. Knobs can be reset to their default values via double-click, and remote-controlled / automated via MIDI CC. Tip for wheel-mouse users: 'mouseover' and roll the wheel to edit values or scroll through a list (use SHIFT for fine tuning).

parameter locking

Clicking with the righthand mouse button on any knob or switch opens a context menu in which you can select 'Lock'. A locked parameter can still be adjusted, but the value doesn't change when you switch presets. To unlock again, right-click and untick 'Locked'.

modification indicator

This synbol appears next to a control if it is being modulated in the Modifications panel.

Programming 101

Although Diva ships with a whole bunch of presets, she is meant to be tweaked – that's why the interface is festooned with all those controls. Here's a quick and easy tutorial to get you started:

1. Click on the PRESETS button at the bottom of the window, select the Local / 8 TEMPLATES folder and load the preset called **INIT June-60**. Click on the SCOPE button – this gives you access to Diva's oscilloscope as well as all module panels.

2. Play a fairly low note (you do have a MIDI keyboard attached, right?). The shape you can see in Diva's oscilloscope is moving in time with the *tone* of what you are hearing.

3. Find the TRANSPOSE knob in the lefthand (DCO) panel, and change it from 8' to 16'. The oscillator is now an octave lower.

4. To the left of the TRANSPOSE knob are two faders. Double-click on the one labelled LFO2. The value of that fader (which controls pulse width modulation depth) is reset to the centre and the sound becomes static. Move the PW fader up and down while playing a low note. Watch how the shape changes, then leave it at minimum.

5. What you hear (and see) is a 50-50 mixture of 50% PULSE (i.e. a square) and SAWTOOTH. Click on the first SAWTOOTH option (silence) to isolate the pulse wave. Try the various HPF values, then leave it at 0.

6. Double-click on the PW fader (resets it to 25% pulse) and take the other fader (pulse width modulation depth from LFO2) up to maximum. Go to the bottom left of the window, change LFO2's Waveform to *saw up* and change Sync to *1/4*. The result is a slow pulsing sound.

7. Go to the VCF panel and play with the CUTOFF and RESONANCE faders. Then double-click on both to reset them. Still in the filter panel, take the second cutoff modulation knob (currently labelled LFO 2) down to about -30.00. You now have a rhythmic sound that will cycle through the notes in a chord if you play them at different times.

8. Activate the two effects (Chorus and Delay) at the bottom right of the window by clicking on the small round buttons (they will light up). If you like, experiment with the effects parameters for a while, especially the Delay controls. Add a bit of NOISE from the DCO panel!

9. In the LFO 2 panel, click on the lower righthand button and select *ModWheel* (or *default*). Turn Depth Mod up to maximum. The depth of all LFO 2 modulation is now 100% controlled by the mod wheel. Then turn Depth Mod down to minimum so that the wheel has no effect again.

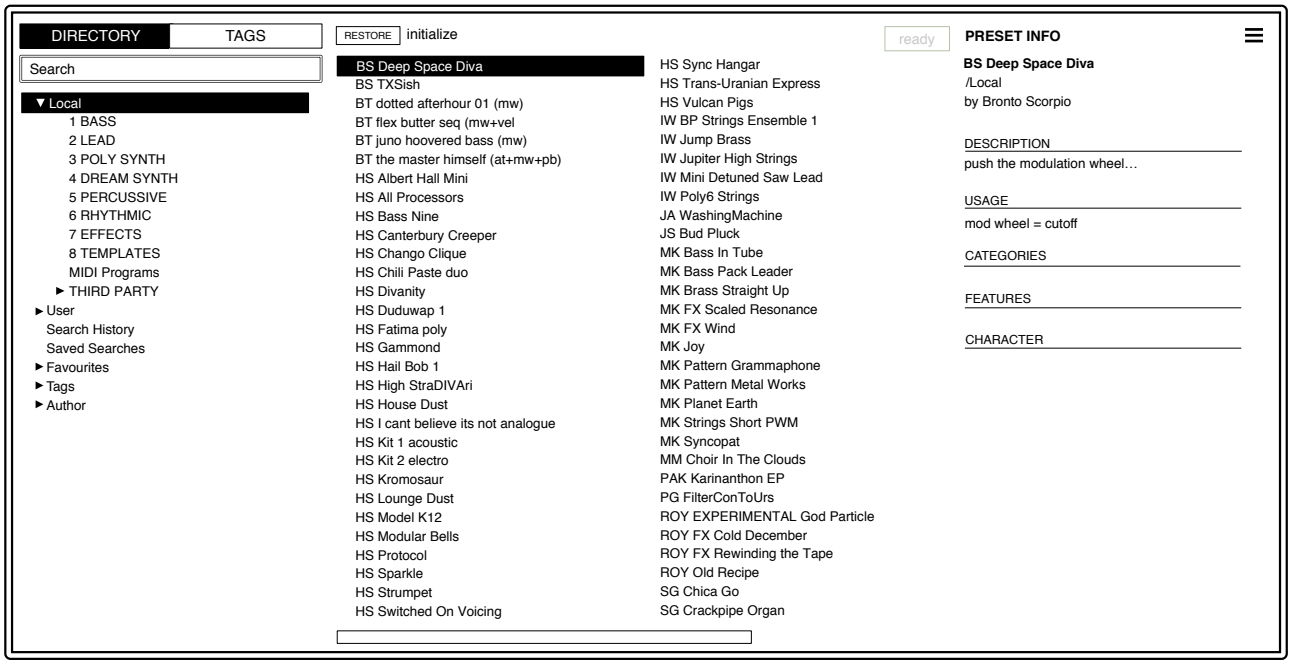
10. Swap the oscillator type: Click on the DCO label and select DUAL VCO instead. Click both Sawtooth icons to switch them off, and activate both pulse waves instead. Turn MIX to the centre. Click on the NO MOD label and select LFO 2 instead. Change the value of that knob to -20. Similarly, replace the VCF CASCADE with BITE. Experiment with the filter controls until you get a nicely grungy, resonant pulsating sound (note that REV 2 sounds fuller).

11. Start again from step 1, and take more liberties this time - experiment!

Preset Browser

Overview

Click on the PRESETS button at the bottom of Diva's window – you should see something like this:



Folders appear on the left, presets in the centre and information about the currently active preset on the right. If you can't see any presets at all, click on *Local*. If you don't see a PRESET INFO panel, click on the [≡] button in the top right and tick *Show Preset Info*.

The *Local* root contains a representative selection of presets copied from the subfolders. Note that a left-pointing triangle next to a folder name means that the folder is currently in its collapsed state. If you can't see the category folders (BASS, LEAD etc.), expand *Local* by clicking on that triangle. After loading a preset (click on its name) you can step through all the others using your computer's cursor keys, which makes it easy to audition them sequentially

The folders numbered 1 to 7 contain the main factory presets. The TEMPLATES folder contains some very basic presets for whenever you want to start designing your own sounds from scratch. THIRD PARTY contains presets kindly submitted by various sound designers, plus a subfolder called TREASURE TROVE! containing hundreds more sounds.

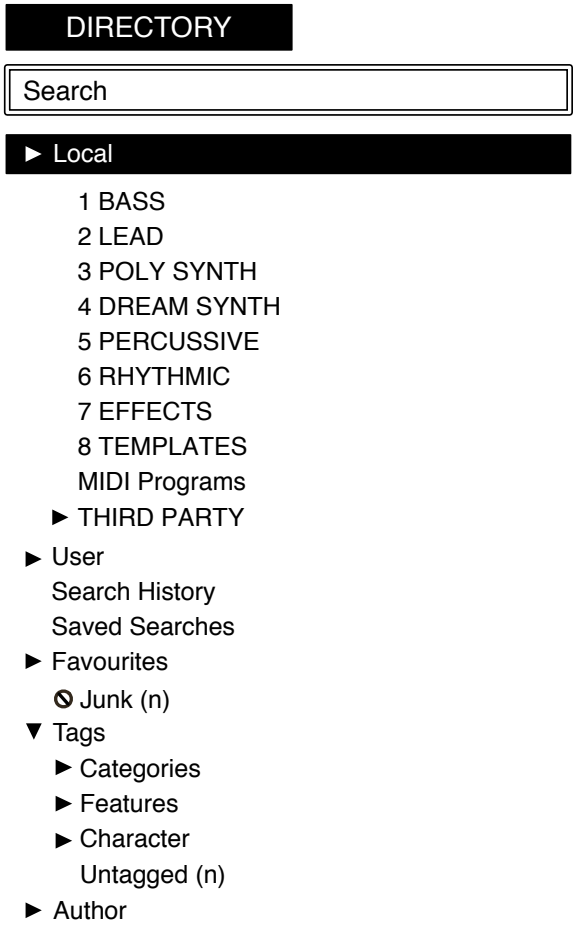
That's actually all you need to know for now. Diva's browser has many more features for users who want to dig a bit deeper: The file functions include drag&drop, a powerful search engine and more. For details, read the rest of this chapter!

Default preset

Whenever Diva 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: *default* will not appear in the browser.

Directory Panel

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



The 'Local' folder

Diva's factory presets are sorted into folders 1 to 8. We recommend that you do not add or remove any Local presets, but save all your creations and third party soundsets in 'User' (see below).

MIDI Programs

'Local' also contains a special folder called 'MIDI Programs' which is normally empty. When the first instance of Diva starts, up to 128 presets from that folder are loaded into memory, to be selected via MIDI Program Change messages. It is a good idea to call those presets e.g. '000 rest-of-name' to '127 rest-of-name', as they are accessed in alphabetical order.

But that's not all: the 'MIDI Programs' folder can contain up to 127 sub-folders, switched via MIDI Bank Select messages (CC#0). Send Bank Select first, then Program Change. 'MIDI Programs' is bank 0, sub-folders are addressed in alphabetical order starting with bank 1.

Changes to the MIDI Programs folder will only be updated after the host application is restarted. MIDI Program files cannot be a cannot be added, removed or renamed on the fly!

When Diva 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 e.g. Ableton Live, however, the first bank / preset is designated "1" instead of the correct "0".

To avoid another possible source of cvonfusion, make sure that there are no junked presets in the MIDI Programs folder. All files there are indexed, whether they are visible or not.

The ‘User’ folder

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 preference *Save Presets To*.

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 actually contain files, but display the results of querying a database of all 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 remove 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. 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. Presets 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

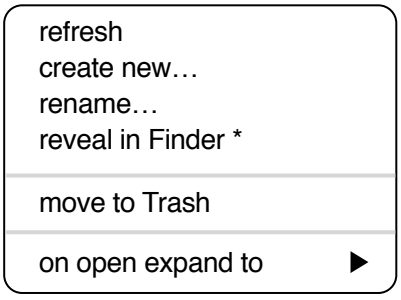
Smart folders for each *Category/Subcategory*, *Features* and *Character* tag. Presets dropped onto these folders will adopt the corresponding tag. Presets dropped onto the *Untagged* folder will have all *Category/Subcategory, Features* and *Character* tags removed.

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, you should use this feature with caution.

Directory context menu

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



refresh: Update the contents of the browser. For Windows users this will be necessary after you have moved, added, removed or renamed folders or presets using Explorer.

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. Wondows: if you add, remove or rename any preset files or folders there (i.e. outside of Diva’s browser), you should always *refresh* the directory afterwards.

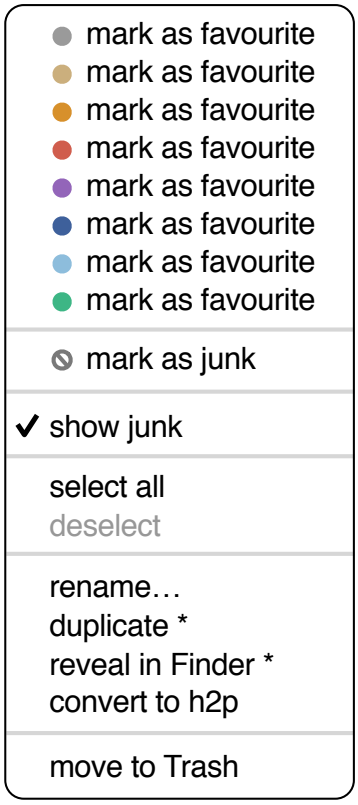
on open expand to: These options determine how deeply the browser will open subdirectories whenever the GUI is opened again or the *refresh* function is called. The first option (*none*) collapses all folders, while the final option (*all levels*) reveals all nested folders.

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 junk: Instead of deleting any unloved presets, you can mark them as 'junk' so that they (normally) disappear from the browser. See *show junk* below.

mark as favourite: Choose one of eight differently coloured dots. To remove the dot again, right-click on the preset(s) and select *unmark as favourite*.

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

show junk: Activate this option to display junked files (marked with a STOP symbol), which would otherwise disappear.

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.

duplicate / copy to User Folder: The entry here depends on the status of the preference *Save Presets To* as well as on whether the source presets are in the Local or User folder. Selected presets are copied with a number appended to the name, which increments (just like the 'Auto Versioning' option) so that presets cannot be overwritten by mistake.

reveal in Finder / **open in Explorer**: Opens a system window for the selected preset. Remember: If you change anything there, refresh the directory (see the the previous page)!

convert to native / h2p / h2p extended / nksf: Converts the selected preset(s) into the format previously selected via right-click on the [save] button. For that final option, see the NKS chapter.

move to Trash / Recycle Bin: Moves the selected preset(s) to the system trash.

Restore

While in the browser you can audition as many presets as you like in any folders without losing the one that was previously loaded: Clicking the **Restore** button will get you back to where you started.

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 very large preset library.

Multiple selection, drag & drop

A block of 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.

Preset Tagging

Categories“Tags” are elements of metadata i.e. information you can add to presets so that they can be found according to certain attributes.

I**MPORTANT**: Clicking on [save] isn’t required, as tags are updated automatically. The obvious advantage is that presets don’t have to be saved every time you edit tags. The main drawback is that you should **only edit tags after saving your preset**. If you edit tags while in the process of creating a new version of something, you would also be changing the tags in the original preset!

The Tagging Window

Right-click on the [save] button and select *Tag this patch*:

Categories

Bass	Acoustic
Pads	Atonal
Leads	Brass
Keys	Breathy
FX	Chords
Drums	Distorted
Seq & Arp	Drones
Stabs	Evolving
Other	Lo-Fi
	PWM
	Rhythmic
	Soundscape
	Strings
	Synth
	Vocal

Features

Mono	Osc Sync
Poly	RingMod
Duo	CrossMod
Chord	Creative FX
Arp	Percussive
HostSync	Soft Attack
Modulated	Slow Release
Unison	Glide

Character

Bright	Dark
Dynamic	Static
Constant	Moving
Soft	Aggressive
Harmonic	Inharmonic
Phat	Thin
Clean	Dirty
Wide	Narrow
Modern	Vintage
Acoustic	Electric
Natural	Synthetic

Categories describe a preset by analogy to instrument types or classic synth genres. Each one has its own 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

Open one of the numbered folders and load any preset. In the PRESET INFO panel, right-click on CATEGORIES, FEATURES or CHARACTER and select or unselect tags from the menu. Note that 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* searches for presets with ALL the same tags.

Tagging via the Tags subfolders

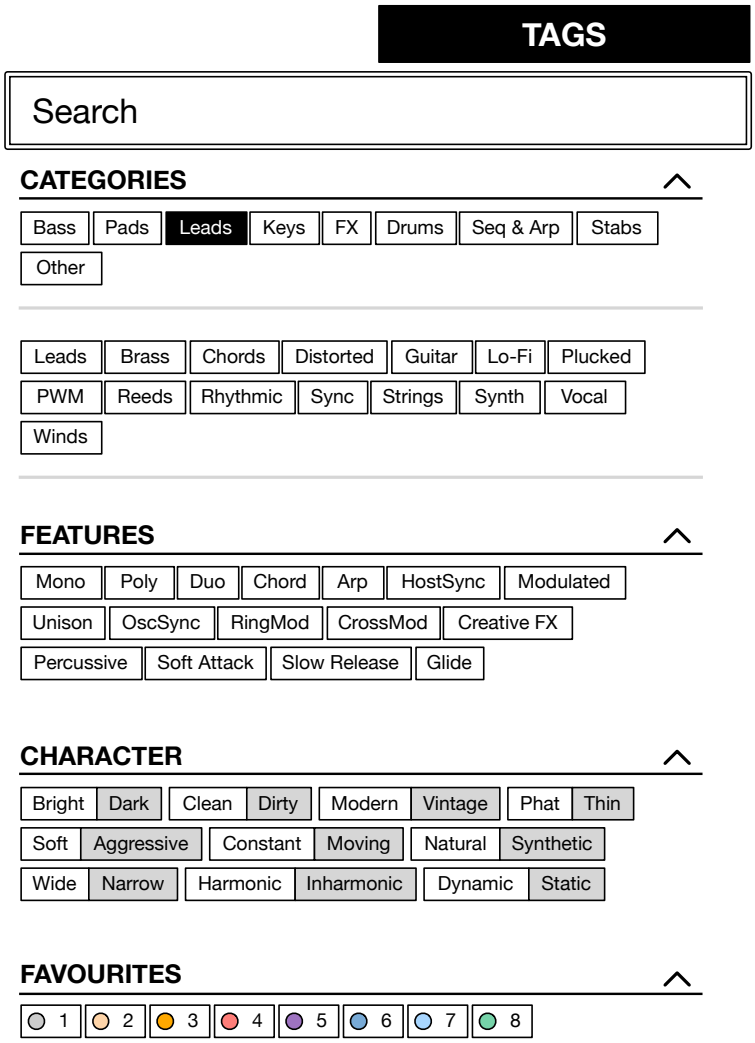
You can tag presets by drag & drop onto one of the *Tags* smart folders. To remove all tags, drag presets onto the *Tags*/*Untagged*/ smart folder.

Auto-Tag Features

In the Preferences page is a setting that can make adding Features tags more comfortable. Auto-tagging is temporary, but you can make the generated Features permanent using the *convert to* function in the context menu of the presets panel – any automatically generated Features tags will be written into the preset data.

Search by Tags

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



There are four sets of buttons. The first three correspond to the tags in the tagging window (see the previous page), and the bottom row lets you find presets tagged as ‘Favourites’. Clicking on the [^] icon to the right will hide the options for that type of tag.

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 of the Categories 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 the subcategory with the same name as the category means “show me presets tagged **without a subcategory**”. You will not find any of these in the factory presets.

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

Here's a practical tutorial

- Click on the **DIRECTORY** tab, right-click on the *Search History* smart folder and select *clear*. Double-click on *Local/2 LEAD* to restrict the scope of the search to that particular folder. The selected path */Local/2 LEAD* 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 *2 LEAD* that are tagged as [Bass].
- Now click on [Pads]. The [Bass] category is switched off, and the preset window is updated to list all presets in *2 LEAD* that are tagged as [Pads] - there are 8 of these. Note that you still haven't specified a subcategory yet…
- Hold **Cmd** (Mac) or **Alt** (Win) and select the [Bass] category again. Although no longer outlined, the previously selected [Pads] remains highlighted and the list shows all 12 presets in the *2 LEAD* folder that have either of those tags (disregarding any subcategories).
- Click on the **DIRECTORY** tab again: The text **#Bass:* #Pads:*** appears in the editable field as well as in the *Search History* smart folder, which also shows the number of found presets. The colon separates the category from the subcategory, and the star (*****) means "any subcategory, even none".
- Click on the **TAGS** tab again. Select the [Leads] category **without** holding down Cmd/Alt this time… the [Bass] and the [Pads] tags are removed from the search. Select [Chords] as subcategory. The result is a list of all 10 presets in the *2 LEAD* folder that have the Leads:Sync 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 [Distorted] subcategory. [Sync] remains selected, and the list of hits is updated to include presets which have **either** of those tags i.e. 45 in total. Click on [Chords] again and the tag search will find only 36 presets – all those that are tagged as [Leads:Distorted].
- Click the [Bass] category. Below the subcategories, the [Leads:Distorted|X] switch remains in place because that tag is complete (category plus subcategory). Check out the category tags in PRESET INFO by clicking on several presets in turn: Each one will have either a Leads:Distorted tag or a Bass tag (disregarding subcategory), or both.
- Click on the **DIRECTORY** tab. The text **#Bass:* #Leads:Distorted** appears in the search field as well as the *Search History* smart folder. If you are feeling adventurous, you can edit this and 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 i.e. change the search path from */Local/2 LEAD* to the */Local* root. The list of hits is immediately updated to 417 presets because the search now includes all of */Local*.
- Another click on [^] exits to the whole preset library i.e. */Local and /User*. Clicking on the [X] symbol to the right of the search path will exit immediately. Try that.
- Repeat the above a few times if necessary – you'll soon get the hang of it!

Features, Character

These tag types are simpler. For example, let's find all thin sounding presets with a slow release:

- Click on the TAGS tab. If any Categories are still highlighted, click them to disable.
- Select Features = [Slow Release] and Character = [Thin]. That's it.

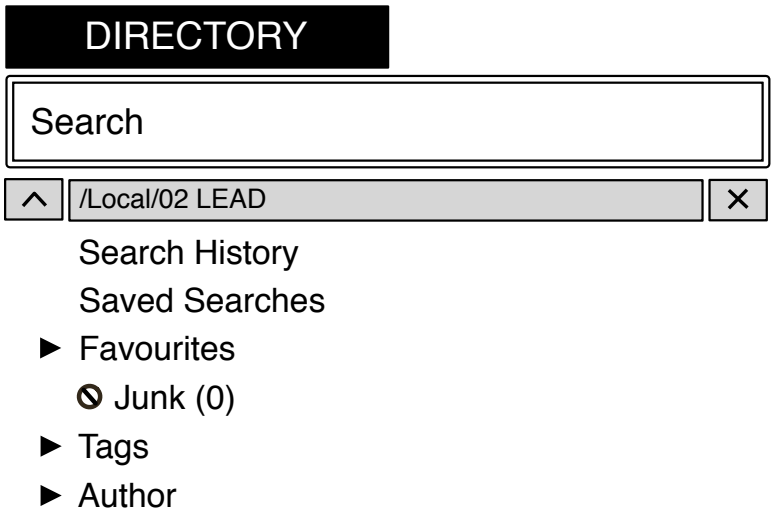
Summary

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 the **Cmd** (Mac) or **Alt** (Windows) key if you want to retain category tags that don't specify a subcategory. Select Features, Character and/or Favourites tags to refine the search. Exit any search path by clicking on the [X] to the right.

Search by Text

The editable field immediately below the DIRECTORY and TAGS tabs lets you search for presets according to a string of characters i.e. text. The search normally looks into the preset name, the author, the DESCRIPTION and USAGE (see the PRESET INFO panel). It is not case-sensitive, and quotes are not required unless you need to include spaces in the text.

If you want to restrict the search to a particular path e.g. *Local/4 DREAM SYNTH*, double click on that folder. The full path (from Local or User) appears immediately below the Search field, and all other normal folders are hidden except any subdirectories within that path (there are none in this example). Note that the smart folders also remain visible.



The grey field in the above image is the **Search Path**.

The [^] button to the left moves the search path up one level, in this case up to /Local. Alternatively, you can navigate directly to any higher level by right-clicking on the path.

The [X] button to the right expands the path to include all Hive presets (i.e. either in 'Local' or in 'User'), and all the regular preset folders will reappear.

Try a text search: Enter three or four letters then hit Return. For instance, *star* will find all files containing the text string *star* (e.g. *mustard* or *starters*). Entering *"star wars"* (with the quotes) would find e.g. *Battlestar Warship*, if such a string existed 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 wars* will find presets that contain *star* as well as presets that contain *wars*.

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

Tags

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.

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

Upper Panels

While checking out the presets you must have noticed that the main modules can be swapped out. Simply click on the label at the bottom of each module, then select from the list. You don't have to click on the grey triangle – anywhere on the label will do.

Some smaller labels within each panel also have grey triangles. Click on these labels to replace default modulation sources. Selected sources other than the default appear as *Dymo*™ tape – call us crazy, but we rather like the retro-look of sticky labels on custom-modified hardware!

Oscillators

Diva offers five different oscillator types: **Triple VCO** (morphing oscillators with FM, sync and filter feedback), **Dual VCO** (multi-wave oscillators with sync, PWM and cross mod), **DCO** (single two-wave oscillator with PWM and flexible sub-osc), **Dual VCO Eco** (CPU-friendly, pulse width, ring modulation) and the newer **Digital** ('megasaw' and much more). All models include a noise source. Some parameters, although practically the same, have different names in different models.

Note: The output levels of oscillators can have a significant effect on the tonal quality of the filters. The models that don't allow complete control over volume might get that in future versions – or the filters will include input gain controls (yet to be decided).

TRIPLE VCO

The most CPU-hungry oscillator model, Triple VCO stretches across two panels:

The **upper switches** on the left activate pitch (tune) modulation for each oscillator. To specify a modulation source other than the ENV2, click on that label and select from the drop-down list.

In this example, *modulation wheel* is controlling oscillator 2 pitch only, as only the middle switch is active (indicated by the white dot).

TUNE MOD specifies the amount of pitch modulation. This control is bipolar i.e. the amount of modulation can be either negative or positive.

Similarly, the **lower switches** activate waveform (shape) modulation – see WAVEFORM below. To specify a modulation source other than LFO2, click on the label and select from the list.

In this example, *envelope 2* is modulating the waveforms of oscillator 1 and oscillator 2, but not oscillator 3.

SHAPE MOD specifies the amount of waveform modulation. This knob is also bipolar i.e. the amount of modulation can be negative.

FM 1->2/3 sets the amount that oscillator 1 frequency-modulates oscillator 2 and oscillator 3 (both equally). Frequency modulation is useful for complex, dissonant or even bell-like sounds.

Note: FM 1->2/3 can be modulated from within the Modifications panel.

The octave switches (**32' to 2'**) and **DETUNE** (oscillators 2 and 3 only) determine the oscillators' pitches. These controls are self-explanatory except for one special feature: The DETUNE knob acts like a 5-turn potentiometer that can also flip the octave over – try turning it beyond 5 or -5 and see for yourself!

The **SYNC** switches enable hard-sync for oscillators 2 and 3 (they both synchronize to oscillator 1). The pitch of a synchronized oscillator should normally be higher than oscillator 1, or at least modulated upwards via TUNE MOD.

Tip: For the maximum range of sync sounds, set osc 1 to 32' and Transpose to 24.

Unlike in e.g. a Minimoog™, the **WAVEFORM** controls are not rotary switches. They are continuously variable – from ramp through triangle and sawtooth to square, followed by narrower pulse waves. For maximum PWM (pulse width modulation), set the waveform to 8.00 (25% pulse), switch on shape modulation (see above) for the oscillator and set the SHAPE MOD level to 10.00.

The **MIXER** panel contains volume controls for each oscillator as well as for the **NOISE** generator. Below the NOISE volume knob is a tone switch: **PINK** noise contains mostly low frequencies, while **WHITE** noise is full-range.

The **FEEDBACK** knob controls the amount of signal taken from behind the filter and fed back into the mixer – like the age-old trick of connecting the extra output on the Minimoog™ back into its audio input. Relatively low feedback values cause a subtle bass boost, higher values can create subharmonics or even wild howling noises. A natural side-effect of higher feedback is lower resonance, so you might have to compensate for that.

Although the mixer panel is an integral part of the *Triple* oscillator module, Feedback is also available for all the other oscillator types, as an alternative to high pass filtering – see there.

Note: The Feedback amount can be modulated from within the Modifications panel.

DUAL VCO

A slightly simpler model than Triple VCO, but with the advantage of independent (split) pitch control as well as multiple waveforms within each oscillator...

The **two faders** to the left both affect the width of pulse waves. **PW** sets the nominal width from very narrow through 50% to 100% (silence). The other fader adjusts the depth of pulse width modulation from the selected source (LFO2 by default), with zero in the centre. The switch below applies these settings to either VCO1 only or to both oscillators at the same time.

The octave switches (**32' to 2'**) and **DETUNE** knob (oscillators 2 only) determine the oscillator pitches. Again, DETUNE acts like a 5-turn potentiometer which can also affect the octave range.

The central **SYNC** button synchronizes VCO2 to VCO1. When switched on, the pitch of VCO2 should be set higher than VCO1 (or at least modulated upwards). Tip: For the maximum 'sync sweep' range, set VCO1 to 32' and Transpose to 24.

The 4-way switch (**1 / BOTH / 2 / SPLIT**) specifies pitch modulation targets for a pair of sources (ENV2 and LFO2 by default). To modulate VCO1 and VCO2 independently, select SPLIT here.

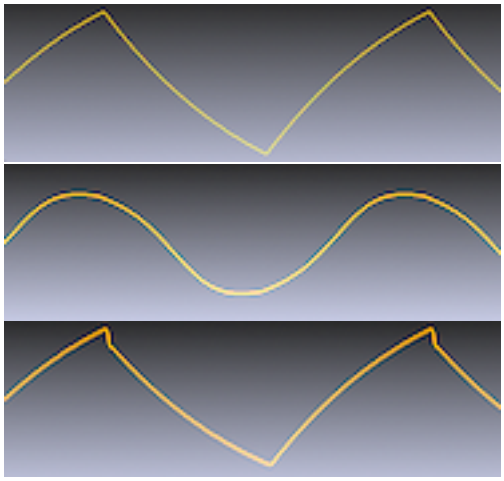
The two vertical rows of buttons select **waveforms**: Triangle, Saw, Pulse/PWM, Noise (VCO1) and Sine (VCO 2). Note that selecting multiple waveforms retains the overall volume.

CROSS MOD (cross modulation) is similar to *FM 1->2/3* in the Triple VCO module (see the previous pages). The main difference here is that the cross-modulation amount can be modulated directly from within the oscillator panel.

In this example, the amount of cross modulation is being (positively) controlled from the modulation wheel.

MIX balances the volumes of VCO1 and VCO2. Note: As VCO1 includes a noise generator, it made sense to allow MIX to be modulated in the Modifications panel (via *Noise & Dual VCO Mix*). This means you can use e.g. an envelope or LFO to crossfade between the two VCOs.

SHAPE gives you a choice of three Dual VCO 'hardware revisions'. Although this switch affects the sound of all waveforms, it is most noticeable with triangles:



ideal (the sweetest triangle)

analog1 (looks like a sine, sounds more like a triangle)

analog2 (brighter – like 'ideal' but with a 'tooth')

Note: These screenshots were made while playing the note C2. Like real analogue oscillators, however, the shapes of waves in Diva are not 100% the same at all pitches!

DCO

A single oscillator model (with sub-oscillator and noise), DCO delivers a more complex, brighter sound than the other analogue types...

The left half of this panel is the same as the Dual VCO but without the switches for VCO2. Cross-modulation is not possible without that second oscillator, but this lack is tempered by the DCO's ability to add perfectly synchronized waveforms together.

The output is the sum of four sources: **PULSE**, **SAWTOOTH, SUBOSCILLATOR** (each offering a choice of different shapes) plus **NOISE**. Even without noise, the result can be quite complex:

In the PULSE and SAWTOOTH selectors, the straight line means silence/off, and the 4th option from the top (in each case) is the one that reacts to pulse width settings:

these two are the only waveforms that react to pulse width settings

Similarly, the SUB-OSCILLATOR offers six different waveforms, all based on pulse waves. The top four are all one octave below the main oscillator, the others are both two octaves down.

At the top right of the DCO panel are two faders that control sub-oscillator and noise levels.

DUAL VCO ECO

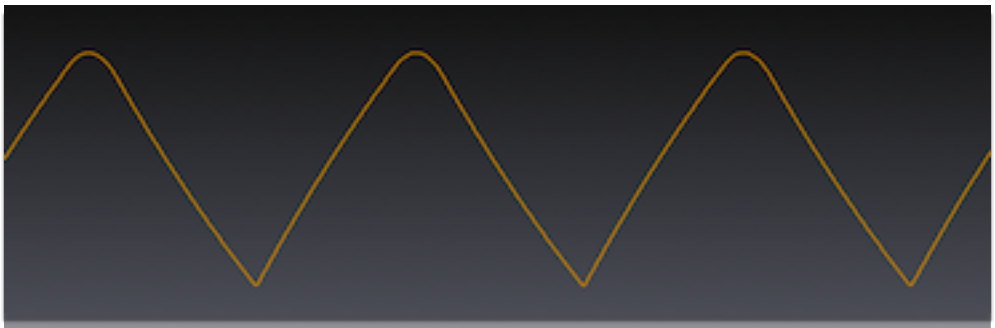
This one is fairly primitive because it emulates primitive hardware. There is no PWM or FM here but, as its name suggests, ECO has the lowest CPU-hit...

When switched to **RING**, the regular VCO2 output is replaced by *ring modulation* between the selected VCO1 wave and the VCO2 square wave.

Although the two oscillators can be tuned independently, both TUNE MOD sources (ENV2 and LFO2 by default) are applied to the overall pitch.

Because VCO1 includes noise, its volume can be modulated via *Noise & Dual VCO Mix* in the Modifications panel.

One more thing: the shape of the triangle wave is rather interesting...



DUAL VCO ECO triangle wave as seen in Diva's oscilloscope

DIGITAL

This model emulates a well-loved but unashamedly **digital**-sounding oscillator (including all the dirt and aliasing of the original) – plus a few extras:

Multisaw mode is 7 stacked sawtooth waves. DETUNE adjusts tuning spread, MULTI is the balance between the original wave and the detuned waves. Multisaw is great for fuzzy dance music sounds or for exceedingly rich pads.

TriWrap is a wrapped triangle wave – positive peaks appear at the bottom of the wave and negative peaks appear at the top. WRAP adjusts the threshold for the wrap function, BEND adjusts the horizontal symmetry.

Noise is ‘digital’ white noise with a resonant lowpass filter. TUNE adjusts cutoff, Q adds resonance (with significant loss of low frequencies).

Feedback is a saw sent through a short delay with feedback, creating tones similar to an electric guitar. TUNE adjusts the length of the delay, FEEDBACK sets the amount of feedback (also adds lots of digital distortion).

Pulse is a square/pulse mixture. PW adjusts the pulse width while SPIKE UP first turns the wave into a saw (at 3.00 already), then multiplies the saw for a complex 'pseudo-sync' effect. SPIKE UP can create some *serious* aliasing.

Sawtooth is a sawtooth wave plus synchronized sine. HARMONICS adjusts the level and polarity of the sine wave (set 50.00 for a ‘pure’ sawtooth with no sine component), BEND continuously shifts the sine up an octave.

Triangle is a triangle plus synchronized sine an octave higher. HARMONICS adjusts the level of the sine, while BEND adjusts horizontal symmetry. You might like to watch what happens to the waveform in the ‘scope.

The **OCTAVE** rotary switch adjusts the pitch of oscillator 1 in octave steps. The **TUNE** parameter in oscillator 2 lets you adjust its pitch precisely within a range of +/- 30 semitones (for very fine tuning, hold down a SHIFT key on your computer keyboard).

The SYNC switch at the bottom of oscillator 2 activates hard-sync (oscillator 2 is synchronized to oscillator 1). To hear the effect, turn up both MIX and TUNE. Note: In Multisaw mode, sync is only applied to the 'original' wave, and has no effect at all in Noise mode.

The **central panel** specifies the modulation sources and amounts for each oscillator. Both oscillators share common modulation sources (so you can't modulate the two pitches independently, for instance).

Example: In this image, the pitch of oscillator 2 is being negatively modulated by pressure, the second parameter in oscillator 1 is being positively modulated by KeyFollow, and the third parameter in oscillator 2 is being positively modulated by LFO2.

Along the bottom are five more controls:

TUNE MOD lets you modulate the pitch of both oscillators at the same time.

CROSS (cross modulation) adjusts the amount that oscillator 1 frequency-modulates oscillator 2.

RING replaces oscillator 2 output with the result of *ring modulation* between the two oscillators (like in the DUAL VCO ECO oscillator model).

MIX adjusts the relative levels of the two oscillators.

HIGH QUALITY reduces aliasing artifacts at the cost of (usually) a bit more CPU…

On the subject of CPU usage: Please note that automating the Digital oscillator's WAVE switches (see previous page) can cause massive spikes and is therefore best avoided.

High-pass Filters / Feedback

While the Triple VCO oscillator includes a mixer, all other oscillator models allow the central panel to be swapped out. There is a choice of filter feedback or one of three high-pass filter models...

all four feedback / HPF panel options

NO HPF (just feedback)

The same as integrated into the TRIPLE VCO oscillator model (see there). The single knob controls the amount of signal taken post-filter and fed back into the mixer. Effects range from mild bass boost to subharmonics / low-frequency howling.

HPF | POST

Although located to the left of the main filter, this model actually comes *after* the main filter in the signal path. It doesn't affect the tone of the main filter by changing its input levels, but either boosts the bass (BOOST setting) or removes low frequencies from the already filtered signal.

HPF | PRE

A high-pass filter *before* the main filter, with continuous frequency control. HPF | PRE can affect the tone of the main filter by sending it fewer low-frequencies to work with. Use this model e.g. to tame the output of the DCO oscillator, or to thin out a noise source etc..

HPF | BITE

A complete high pass filter before the main filter, with cutoff modulation and resonance control. Unlike the similar-looking ECO oscillator, this is actually the *most* CPU-hungry option – so you can expect some powerful tonal shaping. Note: The resonance control is called PEAK here.

Two REV (revision) models are available, with different characteristics. But be warned: either of them can BITE…

Main Filters

This is where a lot of Diva's magic happens. The current version offers five main filter models, each based on a classic hardware filter (or two): *Ladder*, *Cascade*, *Multimode, Bite* and *Uhbie*...

VCF | LADDER

Classic 24dB per octave ladder filter based on the behaviour of a specific piece of monophonic hardware (the word on the street is that each unit that left the factory sounded at least slightly different – the one we borrowed is certainly special).

Either side of the **Cutoff** and **Emphasis** (resonance) knobs are three cutoff modulation sources with bipolar controls: Two user-definable (ENV 2 and LFO 2 by default) plus key-follow (KYBD).

In addition to the original specifications, VCF | LADDER offers bipolar **filter-FM** from oscillator 1 and a 12dB per octave (2-pole) option.

Note: Emphasis (resonance) and FM amount can be modulated from the Modifications panel.

VCF I CASCADE

A cleaner sounding filter than Ladder, CASCADE offers a very similar set of controls...

Purely in terms of available features, the only difference between Ladder and Cascade is the **Rough/Clean** switch. Apart from altering the overall tonal character, it has a noticeable effect on the amount of resonance at the top end of its range.

Cascade is an all-rounder, and is particularly good for big smooth pads without generating too much grunge when input signal levels are high.

The **12dB** per octave switch (click on the button) removes two of the four poles, resulting in a brighter sound while still retaining the overall character.

VCF I MULTIMODE

Featuring extra high-pass and band-pass options, the multimode model is based on the filter in yet another classic polyphonic synthesizer or two...

All controls except the switch in the middle should already be familiar (assuming you have been reading about the other filter models above).

LP4 is a 4-pole low pass model, **LP2** is a brighter 2-pole alternative.

HP is a high-pass (removes low frequencies) and **BP** a band-pass (removes both high AND low frequencies i.e. allows only a band of frequencies around the cutoff point to pass through).

VCF I BITE

Although VCF | BITE appears to have no distinguishing features compared to the other models, it actually sounds very different...

The tone is highly dependent on input signal levels, the selected revision (REV) and the value of PEAK i.e. resonance. Like the corresponding high-pass module, the lowpass BITE filter is a real character, able to deliver anything from solid 2-pole to screaming mayhem.

Tip: If you want to hear a lot of resonance (“Peak”), try low oscillator volumes! Even as little as 10% can be just right.

VCF I UHBIE

Another classic, but a latecomer to Diva: **Uhbie**, a silky smooth 2-pole state variable filter with crossfade between three different types (low-pass through notch or bandpass, to high-pass):

the Uhbie filter panel

Again, most of the controls should already be familiar (they are the same as in other models): We have Cutoff with two modulation sources/knobs on the left, resonance and key-follow in the middle, and the amount of FM from oscillator 1 at the bottom right.

The switch and pair of controls at the top right are what make Uhbie special:

BR / BP switches the central position of MIX to either bandreject (notch) or bandpass...

MIX crossfades from lowpass through bandreject / bandpass to highpass. The source selector and amount knob are used for modulating the mixture, as indicated by the arrow.

Envelopes

The righthand panel comprises two envelopes one above the other, each with its own model selector. Note that the curves of envelopes *within the same hardware synth* (i.e. those used for amplifiers vs those used for filters etc.) often differ. This important but often overlooked detail has also been carefully modeled in Diva.

ADS

Simplified ADSR with shared decay and release times. The Release stage can be switched off so that even a long decay will stop as soon as the note is released.

This envelope was modeled on that same “specific piece of monophonic hardware” mentioned above, but adapted for polyphonic use.

Tip: Before switching RELEASE on in envelope 1, make sure that DECAY is set to a value that is also a suitable release time.

VEL (velocity) determines how much the envelope level is modulated (scaled) by MIDI velocity.

KYBD (keyboard follow) scales the attack, decay and release times according to the MIDI note number. This makes the envelope of high notes shorter and low notes longer.

ANALOGUE

ADSR type modeled on the envelope of another famous but unnamed analogue synthesizer...

DIGITAL

Digital ADSR type modeled on a later (and significantly cheaper) successor to the above. The DIGITAL envelope contains two extra buttons labeled **Q** and **C**:

Q (quantize) gives you a slightly steppy sound (think e.g. Alpha Juno, Matrix 1000 envelopes).

C (curve) affects the overall curvature, giving the envelope more of an 'S' form...

*DIGITAL envelope without / with **C** (**c**urve) switched on*

Lower Panels

LFOs

At the bottom left of all windows except *Presets*, you will see a pair of *low frequency oscillators*:

LFO 1 is also used as the direct source of vibrato, and LFO 2 is connected by default to several parameters in Diva's other modules (hence the labels in brackets).

The **Waveform** selector opens a list of all available LFO shapes:

sine.....typical sine wave
triangle.....typical triangle wave
saw up.....rising sawtooth
saw down.....falling sawtooth
sqr hi-lo.....square wave that starts positive / high when *Phase* is at minimum
sqr lo-hi.....square wave that starts negative / low when *Phase* is at minimum
rand hold.....steppy random wave
rand glide.....smooth random wave

The **Restart** selector has four options specifying when the LFOs will be restarted:

sync.....never restarts. LFOs for all notes are in phase unless modulated apart
gate.....restarts per note at the specified *Phase* (see below)
single.....similar to *sync*, but restarts at the next note after all notes are released
random.....restarts at a random phase per note

Phase adjusts where (within its cycle) the LFO waveform will be restarted whenever a note is played. Ignored when Restart is set to *random*.

Delay fades the LFO in, with a range from 'immediate' to about 20 seconds.

Rate knob offsets LFO speed (negatively or positively) from the *Sync* value.

Rate Mod controls the amount of rate modulation from a source specified in the neighbouring selector (*none* in the above image – try e.g. *ModWheel* or *KeyFollow* here).

Polarity: Diva's LFOs are normally bipolar, but when this switch is enabled, they become unipolar – the entire waveform is shifted upwards so that only positive values are possible.

Sync is the rate / synchronization mode: 3 absolute times, plus 24 synchronized to song tempo.

Depth Mod controls the amount of LFO level modulation from a source specified in the neighbouring selector (set to *ModWheel* in the above image). Tip: If the depth modulation source is set to *none*, you can use the knob to reduce the overall LFO level.

Effects

At the bottom right of all windows except *Presets* you will see a pair of stereo effects. The upper selector specifies the kind of effect, and the square button at the top left is an **on/off** switch.

The two effects are arranged in series. This means that you can even set up two reverbs one after the other (e.g. one for complex early reflections and the other for the main reverb tail).

Chorus

Type *Classic*, *Dramatic*, *Ensemble* are based on real hardware effects. *Ensemble* is especially rich – it can turn a raw VCO into a classic 'string machine' sound.

Rate is the modulation speed. Use low values for slow stereo effects.

Depth is the modulation amount. Set to zero (with *Classic* or *Dramatic*) for static colouration.

Wet is dry/wet mix. Subtle Chorus can add stereo width without making the sound too "washy".

Phaser

Type *Stoned* or *Flanged* – also based on real hardware effects. The *Flanged* type is more

resonant, and is particularly interesting when applied to bright sounds.

Feedback is the resonance amount control.

Sync synchronize the Phaser's LFO to song tempo. See *Rate* below.

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

Rate controls the modulation speed. If *Sync* (see above) is switched on, the value is measured in beats (i.e. quarter notes) so the rate actually gets slower as values increase. Example: For one cycle every 3 bars in 4/4 time, set this to 12.00 (3 times 4).

Phase controls phase offset, from 0° to 360°.

Plate (reverb)

PreDelay is a simple delay before the reverb starts. This is especially useful for retaining the 'closeness' of the original signal.

Diffusion adds a subtle chaos to the reverb, thus reducing metallic resonances.

Damp causes higher frequencies to fade more quickly than low frequencies. Damping emulates the 'warming' effect of carpets, curtains, wood etc. in a room.

Decay controls the time it takes for the reverb to fade out

Size ranges from tiny bathroom to huge cathedral. Tip: It is well worth experimenting with all combinations of *Decay* and *Size*!

Dry / Wet are level controls for the untreated and effect signals.

Delay

Left / **Center** / **Right** delay times across the stereo field, always relative to host tempo (BPM). Integer values are exact semiquavers (quarter-beats), and *Center* defines the Feedback time. This configuration is unusual – it lets you set a repeat rate without hearing that particular "tap" (simply turn down *Center Vol* to zero).

Dry is the level of the unprocessed signal.

Center Vol / **Side Vol** are separate levels controls for the center tap and the stereo (L/R) taps.

Wow emulates slow tape 'wobble', ranging from subtle/spacey to almost seasick.

Feedback is the regeneration amount. 100.00 will give you an infinite loop if HP is set to minimum and LP to maximum... well worth trying out!

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

Rotary

A realistic rotary cabinet i.e. Leslie™ emulation, with tube-like distortion.

Mix is a dry/wet balance control

Out attenuates or boosts the output level (whatever the *Mix* value)

Stereo controls stereo width (you could call this “microphone separation”)

Balance controls the relative volumes of the horn and bass speakers

Mode (unlabeled) selects ***Normal***, ***SyncBass*** or ***NoBass***. In *Normal* mode, the horn and bass speakers rotate independently, in *SyncBass* mode they are phase-locked. *NoBass* mode switches the bass speaker off – you might have to reduce *Mix* a little to bring back the bass

Controller determines which of the available modulation sources (mod wheel, control A, Control B or Pressure) will be used to modulate the speed

RiseTime adds a variable lag to the selected controller

Slow sets the *Slow* speed, with a range from about 10 seconds to 0.2 seconds

Fast sets the *Fast* speed, also with a range from about 10 seconds to 0.2 seconds

Drive is the amount of distortion. Note that distortion is also highly dependent upon the input level – if there is still too much distortion in the signal when *Drive* is set to minimum, turn down *Volume* in the *Amplifier & Pan* section, then turn up *Out* (see above)

Note: The following panels are switched via the 'radio' buttons at the bottom of Diva's window...

Tuning

This panel is visible when either **Main** or **Presets** is selected:

Vibrato controls the amount that oscillators are pitch-modulated from LFO1 (remember that LFO levels also depend on the value of *Depth Mod*).

Glide sets the basic portamento rate. **Glide2** is a bipolar offset applied to VCO2 (Dual VCOs and Triple VCO) as well as VCO3 (Triple VCO). **Range** is the portamento "strength", a u-he speciality. Lower values shift the beginning of the slur closer to the target note, which is great for sloppy intonation effects! **GlideMode** has two options:

time .....however far apart notes are, the glide will take exactly the same amount of time
rate .....when notes are further apart, glide is proportionally slower

Fine (fine tune) shifts the pitch over a range of +/- 1 semitone and **Transpose** shifts the pitch in semitone steps over a range of +/- 24 semitones. **Up** and **Down** set the pitch bend ranges, from 0 to 24, 36 or 48 semitones.

Microtuning: Diva supports the **.tun** microtuning format. Hundreds of tables are available online, most of them free. Put all your .tun files into the following folder:

WIN *...\Diva.data\Tunefiles* (specifically for Diva)
MAC *MacHD/Library/Application Support/u-he/Tunefiles/* (global for all u-he plugins)

After loading a microtuning file, switch it on by clicking the button.

Amplifier & Pan

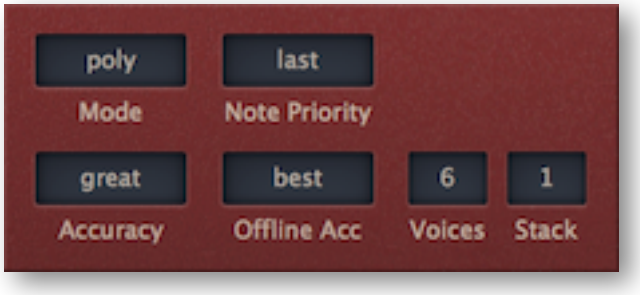
This panel is visible when either **Main** or **Presets** is selected

VCA selection: either envelope 1 or a simple gate (thus freeing up Env1 for other purposes!)

Volume is a bipolar gain control. Positive values can subtly overdrive the amplifier. **Vol Mod** is for gain modulation via the neighbouring modulation source. **Pan** shifts the voice(s) towards the left or right. **Pan Mod** modulates pan position – to pan stacked voices apart, use *StackIndex* here.

Voice

This (unlabeled) panel is visible while the **Main** or **Presets** tabs are selected:



Mode has five options:

Poly.....normal polyphonic
Mono.....monophonic, each new note triggers the envelopes
Legato.....monophonic, doesn't retrigger until a space is left between consecutive notes
Duo.....duophonic i.e. split voices. Osc 2 follows the highest note, Note Priority is ignored
Poly2.....a variant of Poly in which voices in their release stages are stolen before new ones

Note Priority only applies to *Mono* and *Legato* modes. The options are:

last.....plays the most recent note (digitally controlled synthesizers)
lowest.....plays the lowest note (most classic USA mono-synths)
highest.....plays the highest note (EMS as well as most Japanese mono-synths)

Accuracy is a very important global parameter, as it determines CPU-hit vs realtime audio quality (especially resonance). See page 6 for details.

Offline Acc determines the accuracy for offline audio rendering, and is also a global parameter.

Voices sets the maximum number (2-16) of voices before note-stealing occurs. Mostly used to guard against audio glitches while running CPU-intensive presets.

Stack sets the number of unison voices. Use *Stack Tuning* and/or the *StackIndex* modulation source to offset voices against each other. Note that stacking will eat up CPU!

Clock & Arpeggiator

This (unlabeled) panel is visible whenever the **MAIN** or **Presets** tabs are selected:

Clock

Clock selects a clock interval for the arpeggiator (and perhaps future additional features). Note that Diva's clock is always synchronized to host tempo, there are no absolute times.

Multiply scales the clock interval from 0.50 (half as long) to 2.00 (twice as long).

Swing factor, 50% = 2:1 (triplet time), 100% = 3:1 (dotted note / strongest shuffle).

Arpeggiator

Arp switches the arpeggiator on/off.

Mode

played .....in the order the notes were originally played
up .....from lowest to highest
down .....from highest to lowest
up+dn 1 .....normal up & down
up+dn 2 .....up & down, repeating the top and bottom notes
random .....chaotic order

Progression determines when the arpeggio will proceed to the next octave:

serial .....plays all notes, then jumps octaves up (set *Octaves* to 2 or more)
round .....same as *serial*, but also jumps octaves down again (set *Octaves* to 3 or 4)
leap .....plays a note, jumps octave up for next note etc. (set *Octaves* to 2 or more)
repeat .....like *leap*, but repeats the same note for all octaves before playing the next one

Octaves (*1 to 4)* transposes the arpeggio according to the *Progression* setting (see above). The current octave is indicated by the vertical row of LEDs.

Restart (*none, 4 – 10, 12, 14, 16, 24, 32):* This sets the number of notes the arpeggiator will play before it starts from the beginning again, as indicated by the bottom LED in the row. The idea is to help keep arpeggios musically 'in meter' e.g. 4/4 time.

Experiment with the setting '8' first. Note that setting low values here can cause the arpeggiator to restart before all your notes have been played.

Note that the results of arpeggiation depends on the selected voice mode: multiple overlapping release phases (*poly*), single overlapping release phase (*poly2*), single retriggering of the same voice (*mono*) or single trigger i.e. no retrigger (*legato* as well as *duo*).

Modifications

Many synth enthusiasts like experimenting for hourson end with the more esoteric features of their chosen instruments. Diva doesn't disappoint – click on **MODIFICATIONS** to open this panel:

The upper half includes options that aren't available in the module panels (for instance resonance modulation), plus a few that are only available in certain modules. The lower half contains a bunch of simple modulation processors with input selectors – see below for details.

VCO

FM & Cross Mod Depth lets you modulate the *FM amount* in the TRIPLE VCO (and perhaps future oscillator models) from the selected modulation source. Note that this feature mirrors the extra *Cross Mod* parameters in the DUAL OSC model.

Noise & Dual VCO Mix lets you modulate the level of *Noise* (or the oscillator also responsible for noise) in all oscillator models, from the selected modulation source. For the *Triple VCO* and *DCO* models, this is easy because the noise generator is a separate audio source in both cases. In *Dual VCO* and *Eco* models, however, it modulates VCO1 level because noise is an integral part of VCO1. In the *Dual VCO* (not *ECO*) model, it does this by modulating *Mix* – great for cross-fading between the two oscillators. For the sake of consistency, *Mix* is also modulated in the DIGITAL model – although both oscillators are capable of generating noise.

Filter

Resonance Mod lets you modulate *Resonance / Emphasis / Peak* from the selected modulation source. There is no equivalent within the main oscillator panels.

Filter FM Mod lets you modulate the amount of filter *FM (OSC1)* from the selected mod source.

Feedback

Feedback Mod lets you modulate the amount of *Feedback* from the selected source. This only applies if the oscillator model is *Triple VCO,* or *Feedback* is selected as the central module.

parameters modulated here

This isn't a button or knob, but a reminder that wherever the (M) symbol appears in the main panels, the neighbouring parameter is being modulated from within *this* panel.

Modulation processors

rectify converts all negative values in a modulation source to positive values

invert turns a modulation source upside-down – negative becomes positive, and vice versa

quantize creates discrete steps – the value is a division factor: the lowest value 2.00 means two steps if the input is unipolar (e.g. envelope), and four steps if it is bipolar (e.g. LFO)

lag slows down abrupt changes in the source e.g. makes square waves more rounded

multiply outputs the product of two modulation sources

add outputs the sum of two modulation sources

Trimmers

The TRIMMERS panels let you detune voices, add a variable degree of 'slop' to cutoff frequencies, envelope times, pulse width and glide times – and more.

OSCILLATOR VOICE DETUNE lets you detune voices (per oscillator!). Double-click to reset. LEDs indicate which voices are currently being played. They are arranged in pairs (01/09, 02/10, 03/11, 04/12 etc.)

Voice Map Modulator specifies values for the modulation source *VoiceMap.* Use *VoiceMap* for any offsets you like, e.g. panning, cutoff, resonance.

Note: The Oscillator Voice Detune and the Voice Map Modulator have 8 knobs (per row) for all 16 available voices. Presets with more voices than 8 'reuse' those values.

Detune Amt (amount) is a scaling factor for all the OSCILLATOR VOICE DETUNE knobs. Keep this low for "good tuning"!

Voice Drift is a slow wavering of the overall pitch. Again, keep values low for "good tuning"

Voices and **Stack** are the same as in the Main / Voice panel. They are included here for your convenience while adjusting STACK TUNE.

VARIANCE applies random offsets ('slop') to cutoff, envelope times, pulse widths and glide times. Similar to OSCILLATOR VOICE DETUNE (see above), but instead of having individual knobs per voice, each parameter has an associated button which randomizes the 8 values.

LED Colour determines the colour of all indicator lights in Diva. An automatable parameter!

RESET PHASE only works if *Transient Mode* (see below) is set to *osc reset*. The 3 knobs set the phases at which the 3 oscillators will be reset every time a note is played. This feature is particularly useful for sounds in which the attacks need to be very consistent. Tip: the most percussive setting is seldom zero – you will need to experiment!

Transient Mode options affect how the first few milliseconds of new voices are handled in all voice modes except *Legato*. The effect is seldom obvious, but when attack times are set to minimum, the choice of transient mode can make all the difference between *punchy* and *clicky*.

The *analog* option means that nothing is reset (like in old analogue synths) – oscillators retain any direct current (DC) component. With the *dc reset* option, DC offset is removed. The *vcf reset* option also causes the filter to reset, ensuring that previously played notes have no effect on the current voice. The *osc reset* option also resets the oscillator phases to the RESET PHASE values.

Bipolar Noise is best left switched on. Included for reasons of compatibility with early presets.

STACK TUNE sets the pitch of each stacked voice within a range of +/- 2 octaves. Set *Stack* (see above) to a number other than 1, and use these knobs to create 'megasaws' (set all values very close to 0.00), one-finger chords etc..

Scope

Every synth needs an oscilloscope...

Frequency controls horizontal resolution, and **Scale** controls vertical resolution

Note that Diva's 'scope takes its signal from *before* the effects.

Context menu

Right-clicking anywhere within the oscilloscope window lets you switch the drawing mode. The options *glow, fire* and *wind* add different fade-out effects at the cost of extra CPU. These modes are also a bit more sluggish than *eco* or *fast*. Tip: If you need to keep CPU-usage down to an absolute minimum, select the *eco* (economy) option.

Configuration

Clicking on the cogwheel icon opens the global configuration pages where you can adjust the window size and brightness and connect Diva parameters to MIDI continuous controllers.

The 4 buttons are Close [X], MIDI Learn [L], MIDI Table [≡] and Preferences [tools].
Tip: Right-click within the button area to set the currently selected page as default.

MIDI Control

MIDI Learn

The MIDI Learn page is where you can connect MIDI CC to Diva parameters. The CC data can be generated by knobs or sliders on your hardware controller, or by a track in your host sequencer etc.. Click on the configuration button and select the ‘L’ MIDI icon:

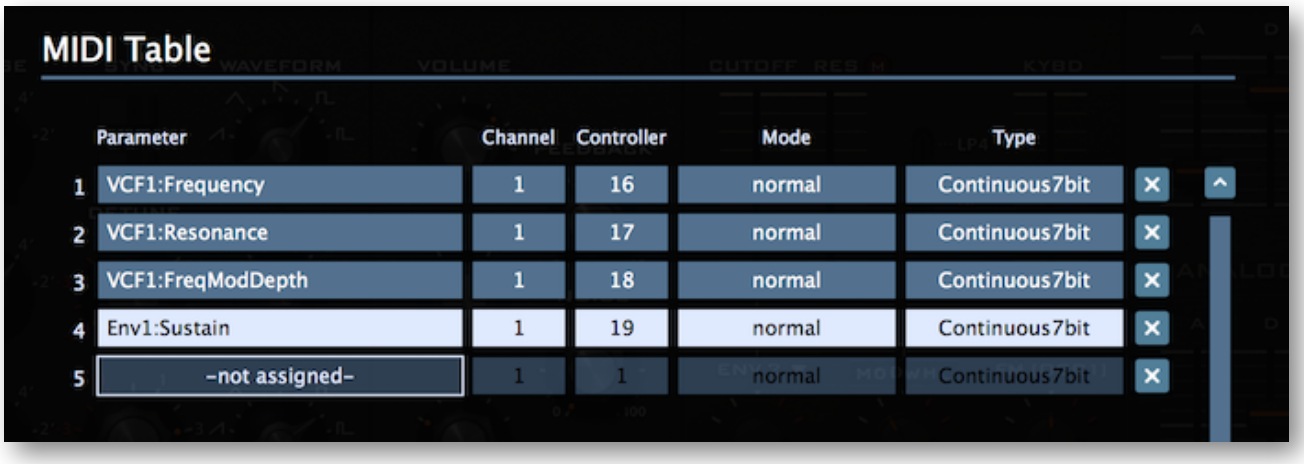
The MIDI Learn window is a translucent overlay, with MIDI-learnable elements shown as selectable outlines. Controls that are already connected appear filled (like 3 sliders and a knob in the image). The outline of the currently active control is highlighted (like the oscillator 'MIX' knob in the image).

You can still select MAIN, MODIFICATIONS etc. here, but not the module panels. As 'Digital' has a very different parameter set than 'Triple VCO' (as an extreme example), to MIDI learn everything in Diva you will need to exit configuration mode and swap the modules out.

Try this: Click on the **CUTOFF** knob/slider and send Diva some MIDI CC data (move a knob or slider on your hardware MIDI controller). Then switch to the MIDI Table and check the list…

MIDI Table

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



Parameter

The first field displays/selects one of Diva's many parameters, which are sorted into sub-menus according to module. Click on the 'Add' button at the bottom left and experiment with this field, then delete the assignment again by clicking on the [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. Diva is channel-sensitive, you can map up to 16 channels of controller 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

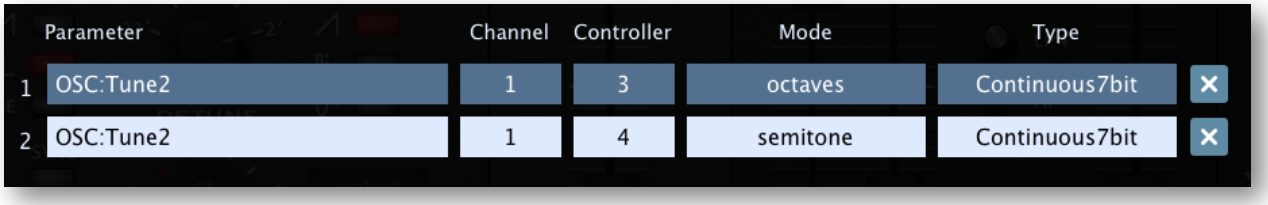
The next two options are only useful for adjusting oscilllator pitch via a **pair of controls**:

octaves.....5 discrete values
semitone .....+/- 6 semitones

Setting these up isn't particularly straightforward, but if you have done it once you can easily do it again – see the next page for a quick "learning-by-doing" tutorial.

Tutorial: Oscilllator pitch control via two CC

- Load INIT Jupe-6 from the TEMPLATES and set the oscilllator MIX fully clockwise (VCO2 only).
- Click on the configuration button and enter the MIDI Learn page. Click on VCO2 octave rotary switch – note that the DETUNE knob will also be highlighted. Move an unused knob on your controller hardware, preferably one that that has another unused knob next to it (you will be assigning that one manually).
- Exit the Configuration pages and test the setup so far. The learned control (CC) will sweep **both** rotary knobs smoothly through the entire range. Several users will prefer this behaviour.
- Click on the cogwheel and open the MIDI Table. The OSC:Tune2 assignment will appear there. Set its Mode to *octaves* instead of *normal*. The learned knob will now only switch the the octave.
- Use the Add button to create a fresh assignment. Set Parameter to *OSC / Tune2* (i.e. the same as the learned knob), Controller to the CC corresponding to that other unused knob, and the Mode to *semitone*. Move the newly assigned knob to its central position.



- Exit the configuration pages and test the final setup. The first knob (CC #03 here) will only affect the octave rotary switch, while the second knob (CC #04 here) smoothly adjusts the semitone offset. Bazinga!

Type

Specifies the type of hardware. By far the most common is Continuous 7-bit.

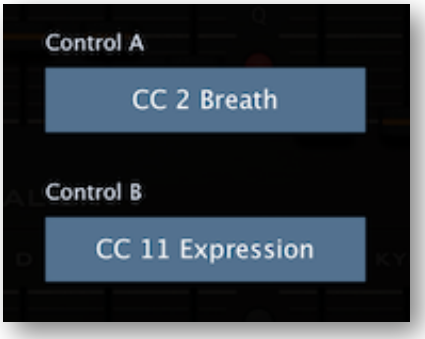
Encoder 127 .....unipolar encoder
Encoder 64 .....bipolar encoder
Continuous 7-bit .....7-bit MIDI CC (standard resolution, most common)
Continuous 14-bit .....14-bit MIDI CC (high resolution, quite rare)

Remove

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

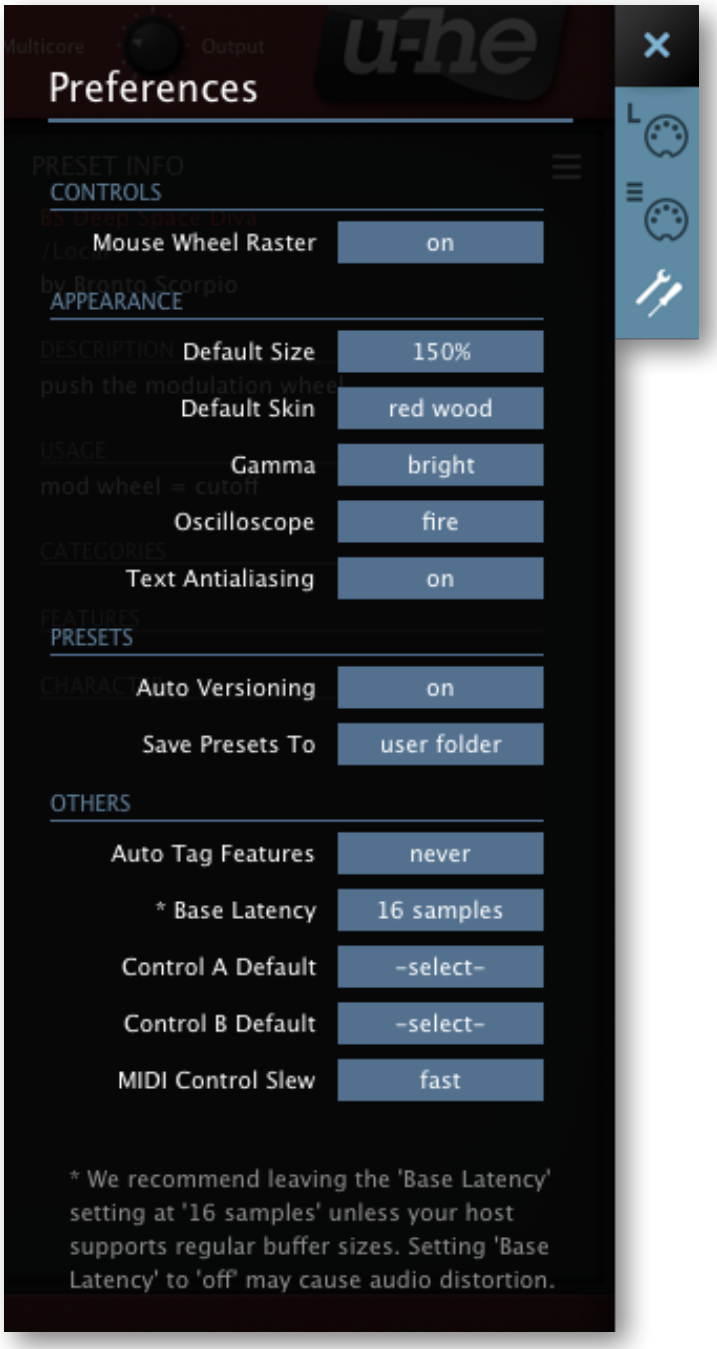
Control A, Control B

Local versions of the Preference settings *Control A Default and Control B Default* (see below). These replace *Breath* and *Xpress* used in previous versions of Diva. Note: The assignments here are saved per instance with the project, **not** with presets.



Preferences

To open the Preferences window, click on the ‘tools’ icon:



CONTROLS

Mouse Wheel Raster: If the wheel on your mouse is rastered (you can feel notches as you roll), activate this. Each notch should then increment any parameter in Diva by a ‘sensible’ step.

APPEARANCE

Default Size: The GUI size for each new instance of Diva. Note that you can temporarily change the GUI size without entering the *Preferences* page – right-click in the background.

Default Skin: This option will only appear if Diva finds at least one alternative skin when it loads. Change this to set the global default.

Gamma: The overall brightness of the Diva GUI (*brighter*, *bright*, *neutral*, *dark* or *darker*).

Oscilloscope: This setting (*eco*, *fast*, *glow*, *fire* or *wind*) affects the appearance of waves in the oscilloscope. *Eco* is the most CPU-friendly, *wind* the most CPU-intensive.

Text Antialiasing: Normally *on*. In rare cases, switching this *off* will 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 Diva is started, e.g. when you reopen a project.

OTHERS

Auto-Tag Features: Setting this preference to an option other than *never* can make tagging presets less of a chore. The *on load* option causes Diva to generate appropriate 'Features' tags whenever a preset is loaded, hiding any existing tags. The *if empty* option is similar but doesn't hide existing tags. See the NKS chapter a few pages on.

Note that auto-tagging is temporary. To make the automatically generated 'Features' permanent, you can (mis)use the *convert to h2p* function in the context menu of the presets panel. Exporting to a different format also writes any generated Features tags into the preset data.

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 respective documentation), you can safely disable Diva's base latency here. Otherwise leave it set to '16 samples' to prevent crackles. Note that a new *Base Latency* setting will only take effect when the host allows e.g. on playback or after switching the sample rate. Reloading Diva will always work.

ABOUT THOSE BUFFERS

Diva processes audio in chunks of n x 16 samples. This so-called '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, Diva processes the first 32 and keeps the remaining 9 in a small buffer (16 samples is large enough). Those 9 samples are then processed at the start of the next call… and so on.

The extra buffer is only necessary if either 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 Diva can process latency-free.

Control A/B Default: The list of modulation sources in previous Diva versions included the fixed MIDI controls *Breath* (CC#02) and *Xpress* (CC#11). While retaining backwards compatibility, we replaced them both with the user-definable *Control A* and *Control B* sources.

MIDI Control Slew sets the strength of parameter smoothing for all performance controls – pitch bend, modulation wheel, Control A/B and Pressure. The default setting is 'fast'.

MIDI Specialities

Multichannel MIDI

This feature supports a growing class of expressive ‘performance’ instruments (e.g. Haken Continuum, Eigenharp, Roli controllers, Linnstrument) that can send each note on a separate MIDI channel. For Diva to respond correctly, your host application must be able to route multiple MIDI channels to a single instance of a plug-in. Each voice/note will then react *individually* to the following performance controls:

Pitch bend
Pressure (aftertouch)
Modulation (MIDI CC #01)
Control A (user-definable MIDI CC)
Control B (user-definable MIDI CC)

If multichannel MIDI is received, the voice modes *Poly*, *Mono* and *Legato* are practically identical. In each case Diva behaves like several (up to 16) mono synths set to the same preset. The *Voices* setting still applies, as voices can be ‘stolen’ across multiple channels.

Note: The *Duo* voice mode is not ‘channel aware’ i.e. all MIDI channels are merged.

Polyphonic aftertouch

As well as the much more common *Channel Aftertouch*, Diva recognizes and reacts appropriately to *Polyphonic Aftertouch*. Both types are combined in Diva’s ‘**Pressure**’ modulation source.

Unlike channel aftertouch, poly aftertouch acts on each played note individually (so you can articulate each note within a chord). Unfortunately, MIDI hardware capable of generating such data is considered a niche product these days, and is therefore quite expensive.

Caution: Polyphonic aftertouch can cause very dense MIDI data streams, often enough to choke older systems.

Tips and Tricks

So bite me!

The *BITE* models are based on relatively cheap but (as I only recently started to realize) extremely characterful Japanese hardware – perhaps BITE stands for “Big In The East”?

Let’s take a look at a preset that uses the BITE highpass: Load POLY SYNTH / **HS Ecobite Clav** and play that sound for a while. Use your pitchbender.

One thing you might have noticed is that the HPF cutoff has *glide* while the oscillator pitch doesn’t. This is because HPF cutoff is modulated by *KYBD2* (keyboard follow 2) with Glide2 set to 32.

Go to the Main page and change the HPF to e.g. *POST*. The sound has lost all its bite (the main ladder filter has little to do with the character of this preset). Change the HPF back to *BITE*.

You can make this sound ‘honk’ a bit more by switching the VCF to 12dB mode. Try that...

Still not gritty enough? Select *Rotary* in Effect 1 and switch it on. Turn *Drive* up to maximum and *Balance* down to minimum.

Bass boost

The BITE highpass can also be used to boost bass frequencies – see *1 BASS* / *HS Model K12*. Note that much of the actual ‘bite’ in that preset comes from the lowpass ladder filter.

Twin effects

Diva’s two effects are arranged in series, and they offer the same options... which means you can even use the same type of effect in both slots:

Twin reverb

Load PERCUSSIVE / MK FX Zapper (if it works with sharp percussion, it works with anything!)

Turn Effect 2 *Wet* up to 50 and Decay to minimum. Compare by switching Effect 2 off and on. Try adjusting the *Size* parameter slightly, but leave it somewhere between 15 and 35.

Select *Plate* in Effect 1 and switch it on. Take Effect 1 *Wet* to about 15.

Note that the first effect in the signal chain is responsible for the tail and the second is for the early reflections – a richer sound than the more obvious “early reflections first”, as long as the tail’s *PreDelay* is very fast.

Twin rotary

Load TEMPLATES / INIT Alpha

Take envelope 1 **S**ustain to zero and adjust the decay until you get your preferred organ-type click (even 0 works). Turn **S**ustain back up to 50 and **R**elease to zero.

Set up the effects to look just like this image. Rotary1 is responsible for removing some high frequencies (via *Balance*) as well as for the strong distortion (via *Drive*). Effect 2 is a typical stereo Rotary – push your modulation wheel up while performing.

This preset can be improved by adding vibrato, by using different waves, adding SUB etc..

Stereo without effects

Diva's signal is basically mono (with pan) until processed by the effects. However, stacked voices can be panned apart – try this:

- Load TEMPLATES / INIT Alpha. Go to the TRIMMERS panel and set *Stack* to 2. Turn the second (2) *Stack Tune* knob up to 4.00 – a major third interval. Play your keyboard and watch the voice activity LEDs light up in pairs. Note that you can only play 3-note chords before voice-stealing occurs. If your system can handle it, set *Voices* to 16 for 8-note polyphony.
- In the MAIN panel, click on the selector next to *Pan Mod* and select *StackIndex* as source instead of LFO2. Slowly turn the knob to maximum and hear how this pans the two notes apart.

StackIndex doesn't have to be used in such a static manner. It could be multiplied with an LFO, for instance: Go to the MODIFICATIONS page, select *LFO2* and *StackIndex* as the two multiplicands. Then go back to the MAIN panel and replace the Pan Mod source (currently *StackIndex*) with *Multiply*.

Also try modulating cutoff with Multiply instead of LFO2. Your VCF and Amp panels would then look something like the image here.

LFO as ramp generator

If you don't need both LFOs for cyclic modulation, you can use one of them as a ramp generator (a simple envelope). It's all about the LFO's *Delay* parameter:

- Load TEMPLATES / INIT Jupe-6 and turn the oscillator MIX up to 50.
- Turn VCO2 pitch modulation (the knob below VCO1 octave range, labelled *LFO2*) up to exactly 1.00. The pitch of VCO2 now wanders in a drunken stupor around a central pitch. Change the LFO2 *Waveform* to *sqr hi-lo*. VCO2 now jumps a semitone above and below.
- Turn LFO2 *Rate* down to minimum and set VCO2 detune to exactly -1.00. Everything is now back in tune. Finally, turn LFO2 *Delay* to about 20 – yes, it's all about the *Delay* parameter!

Of course it would have been easier to use envelope 2, but it's good to have that envelope free for cutoff duties. On the other hand, we could have used LFO2 for cutoff and envelope 2 for VCO2 pitch instead. Hmm... that would have been easier (envelopes are unipolar), and perhaps more interesting (full-spec ADSR instead of ramp)…

Voice map tricks

Looking through the presets in Diva, the Voice Map Modulator isn't used very often. Perhaps all the other 'slop' parameters are enough to get by, but to surgically 'detune' any modulation target you like over a wide range, you do need those knobs...

Chord inversions

- Load TEMPLATES / INIT Jupe-8 and go to the Trimmers page
- Set the Voice Map Modulator values to -100, 0, 100, 0, -100, 0, 100, 0
- Use *VoiceMap* to modulate oscillator pitch, amount = 12.00 (or 7.00 if you like Jazz)
- Switch the Effects on, adjust filter settings to taste etc. and play simple triads

Cutoff offset

- Load TEMPLATES / INIT Minipoly, then and change the Voices parameter to 4. Double-click on Cutoff and turn EMPHASIS up to about 80.
- Replace the second cutoff modulator (currently LFO2) with *VoiceMap* and turn it up to about 30.
- Adjust the first four Voice Map Modulator knobs to taste while repeatedly playing the same note.

Dual oscillator crossfade

Two of the oscillator models in Diva have a balance (MIX) control instead of individual oscillator levels – **DUAL VCO** and **DIGITAL**. In the Modifications page, modulate *Noise & Dual VCO Mix* to crossfade between the two oscillators.

Modulation processor tricks

Mastery of the modulation processors in the Modifications page is the key to making seemingly impossible sounds in Diva, and a fantastic playground for experimentation. A few examples:

Quantize

- Load TEMPLATES / INIT Mongrel-2, turn envelope 1 Sustain up to maximum.
- In the oscillator, turn the lower of the two TUNE MOD knobs up to maximum. You should hear a cheap “alarm siren” sound caused by LFO2.
- Open the Modifications page and specify *LFO2* as input for the QUANTIZE processor. In the oscillator panel, replace that LFO2 modulation with *Quantize*. Change the LFO2 Sync to *1/2*.
- Specify *Quantize* as input for the LAG processor, go to the oscillator and replace *Quantize* with *Lag*. Turn the Lag time up to about 22.
- Experiment with different LFO2 waveforms, Sync and Quantize values.

Rectify

Here are a few examples of what you can do with the rectifier – try them out!

- Double the speed of a triangle or sine LFO
- Change a saw LFO into a triangle
- Change a square LFO into a constant (DC)
- Make your pitchbender unipolar

All processors

Load *HS All Processors* from the *Local* folder, and open the Modifications page. This preset uses all of the modulation processors, but it’s still fairly easy follow:

- LFO1 > **Lag** > feedback modulation
- LFO1 > Lag > **Add** with **Invert**ed Mod Wheel > cutoff modulation
- LFO2 > **Quantize** > shape modulation of VCO1, cutoff modulation
- LFO2 > Quantize > **Rectify** > pitch modulation of VCO1
- LFO2 > Quantize > **Multiply** with LFO1 > resonance, filter FM

NKS

Diva supports Native Instruments “NKS extensions” format so that it can be integrated into the *Komplete Kontrol* software or *Maschine* environments. Diva’s factory presets are optionally installed as tagged **.nksf** files. A few pages of performance controls mapped to common parameters are automatically generated and saved together with each .nksf preset.

Saving as .nksf is only possible in the VST2 version

Mac owners can use – temporarily if necessary – any host application that supports VST2 e.g. Cubase, Ableton Live, Cockos Reaper, Presonus Studio One, Bitwig Studio…

Saving in NKS format

While the *native*, *h2p* and *h2p extended* options cause Diva to save presets into the currently selected preset directory, nksf files go directly into the preset location used for Komplete Kontrol or Maschine (so .nksf files do not appear in Diva’s preset browser). To make them visible in Komplete Kontrol, open its preferences and rescan the preset locations.

Batch conversion

First, right-click the [save] button and set the target format to **nksf**. Via cmd-click (Mac) or alt-click (Win), select all presets in the current folder you want to convert, then right-click any of the selected presets and choose *convert to nksf*. Note: The original files are not affected.

What to do if Diva doesn't show up in Komplete Kontrol / Maschine.

First of all, make sure your NKS software is up to date: Komplete Kontrol V1.5+ or Maschine V2.4 are the minimum requirements for u-he.

In Windows, Komplete Kontrol must know the *Vstplugins* folder containing Diva: Open Komplete Kontrol preferences, go to *Locations* and add your Vstplugins directory if necessary, hit *Rescan* and check whether Diva appears.

Maybe the NKS preset folder is empty? If so, please reinstall Diva with the correct VST path and the NKS-option checked. Here are the preset folder locations:

Mac *Macintosh HD/Library/Application Support/u-he/Diva/NKS/Diva/*

Win C:\Users\[you]\Documents\u-he\Diva.data\NKS\Diva\

Perhaps the XML-File is missing from this location:

Mac *Macintosh HD/Library/Application Support/Native Instruments/Service Center/u-he-Diva.xml*

Win *C:\Program Files\Common Files\Native Instruments\Service Center\u-he-Diva.xml*

A re-install with the NKS-option checked should also remedy this issue.

What to do if Komplete Kontrol / Maschine is unable to load Diva

Either Diva wasn't installed as VST, or it wasn’t installed with the correct path. The default VST path is fixed in MacOSX, but can be set during installation in Windows:

Mac *Macintosh HD/Library/Audio/Plug-Ins/VST/u-he/*

Win *<User VST Folder>/* (path for the VST plug-in set during installation)

If Diva’s VST plug-in cannot be found in one of these locations, run the installer again making sure that you set the correct path and have activated ‘VST’ as installation option.

Troubleshooting

Intermittent crackling sound?

That's Diva's only demo restriction. To purchase a license, go here and click on the shopping cart symbol. If you already own a license, click on Diva's data display and select *"enter serial number"*.

File permission problems?

Windows 10 doesn't like files and folders being moved around after Diva has been installed, so please specify suitable paths during installation. If you try to set a "Data directory" path in one of the *Program Files* areas, please **do not ignore the warning**!

Our plug-ins can reside anywhere, but the Data directory must have unrestricted read/write access (for instance, *C:\Users*YOU*\Documents\u-he* should be fine). The cure for most file permission problems is to completely uninstall Diva, then reinstall following the above advice.

CPU overload?

Diva is very demanding, especially in 'divine' mode. You will need quite a powerful computer. Even if your system only delivers one or two voices before the CPU starts complaining, there are still a few things you can do before thinking about upgrading your hardware:

- Lower the *Accuracy* setting – it really doesn't have to be 'divine' all the time!
- Lower the polyphony and/or switch the *Mode* (Main panel) to Poly2, then resave the preset.
- Try activating *multicore*. This is not an adequate replacement for freezing tracks etc., its main purpose is to let users play *one instance* of Diva with as many voices as possible. If a project includes many instances of Diva, please check that as few as possible have *multicore* enabled. In certain combinations of hosts, drivers etc., *multicore* can even cause drop outs and stalls.
- Use Diva purely as a monophonic synth, e.g. by locking the 'legato' voice Mode. Remember that many treasured classics are "only" monophonic.
- Avoid automating the 'Digital' oscillator's WAVE switches, which can cause serious CPU spikes.

Out of tune?

First of all, you have good ears! Diva emulates classic analogue hardware, and many of the presets (including some of the template files) have been programmed to sound very similar to wobbly old synthesizers. Some people actually like that...

However, the amount of *slop* is optional: Go to the *Trimmers* page and turn down *Detune Amt* as well as *Voice Drift* before saving a sound. Then read all about the Trimmers.

Missing switch automation?

Host automation of several 'switch' type parameters in the middle of a track would almost inevitably cause CPU spikes, crashes, loud noise bursts and other erratic behaviour. So we decided not to expose these parameters to host automation. Note that you can still *MidiLearn* the switches.

Other problems?

If you are truly stuck, you can contact us via our support page. You could also help us improve Diva by sending us a log file: To set this up, create a new text file and name it ***Diva.log*** (not *Diva.txt*). Once the problem occurs, quit your host application and send a copy of *Diva.log* to support@u-he.com together with a short explanation of the problem. Please also state your operating system and host application. Thanks in advance!

List of Modulation Sources

These are divided into two alphabetically sorted lists. The upper half is for regular MIDI data, envelopes and LFOs, while the lower half is reserved for the more esoteric stuff…

default	A modulation source chosen to suit each target... but often “none”.

Control A	User-definable MIDI CC, default is 02 (breath control)
Control B	User-definable MIDI CC, default is 11 (expression pedal)
Env1	Envelope 1 (amp envelope)
Env2	Envelope 2 (modulation envelope)
Gate	MIDI gate i.e. whenever a note is being played
KeyFollow	MIDI note pivoting around E2, including any Glide
KeyFollow2	Ditto, but includes Glide2 offset
LFO1	Diva’s vibrato LFO
LFO2	Diva’s ‘mod’ LFO
ModWheel	Modulation wheel, MIDI CC #01
PitchWheel	MIDI pitch controller (wheel, stick, ribbon... depending on the hardware)
Pressure	Channel pressure or key pressure (aka mono or poly aftertouch)
Velocity	MIDI note velocity

Add	Adds two mod sources together
Alternate	Flip-flop per voice i.e. two alternating (extreme) values
Invert	Inverts the mod source – negative to positive and vice versa
Lag	Slows down all changes in the mod source, e.g. makes square waves round
Multiply	Multiplies two mod sources together e.g. LFO2 x modulation wheel
Quantise	Creates discrete steps – the value is a division factor (try 2.00, 4.00, 8.00...)
Random	A random value per played MIDI note
Rectify	Converts any negative values within a modulation source to positive values
StackIndex	Voice number (use for e.g. Pan). For detuning, use the *Stack Tuning* knobs instead. *StackIndex* values are evenly spread between +1 and -1
VoiceMap	Voice Map Modulator (general-purpose voice offsets – see *Trimmers* panel)

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none	nothing at all!

Credits

Team 2020

- Urs Heckmann (boss, concepts)
- Sebastian Greger (GUI design, 3D stuff)
- Thomas Binek (QA, bug-hunting, presets)
- Howard Scarr (user guides, presets, necessary grump)
- Rob Clifton-Harvey (IT admin, backend development)
- William Rodewald (student life-support code)
- Viktor Weimer (support, presets, the voice)
- Jan Storm (framework, more code)
- Sascha Eversmeier (code, bad puns)
- Frank Hoffmann (more framework, new browser)
- Alexandre Bique (all things Linux)
- Henna Gramentz (office supervision)
- Jayney Klimek (office management)
- Alf Klimek (tagging & repairs)
- Melina Garbisch (studio attendant)
- Oddvar Manlig (everything else!)

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