ANALOG ANTHEM

Wavetables & Presets for U-he HIVE2

DOCUMENTATION

PLUGMON
GUI & SOUND DESIGN

About the Package

“Analog Anthem” is a HIVE2 expansion featuring original wavetables.

How to Install Presets

- Open Hive
- Switch to the ***Preset Browser***
- Right-click on the ***User*** folder to show a popup menu
- Select the ***open in Explorer*** (Windows) / ***reveal in Finder*** (macOS) option.
- Drop the preset folder there.

How to Install Wavetables

- Open Hive
- Open wavetable loading menu
- Select the ***open in Explorer*** (Windows) / ***reveal in Finder*** (macOS) option.
- Drop the preset folder there, or any newly created folder inside there, with any name you like.

How does Hive manage wavetables? Here is what Urs says about that :

> Currently wavetables are identified solely by their filename and location. If a wavetable isn't found where it was when saving a preset, the engine looks into the preset directory first. Then checks any other directory within the wavetables folder.
>
> (Quoted from a KVR Thread)

So as long as it resides inside the "Wavetables" folder, a **folder** can be moved or renamed. But you can't rename wavetable **files**.

*UHM wavetables are not necessary for presets to be loaded. They are just for those who want to see the inside.

“Analog” in Wavetables

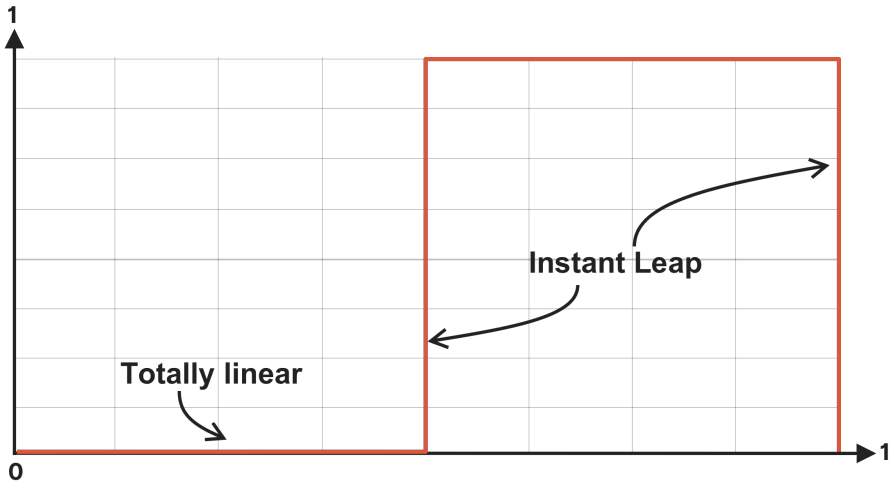
How do wavetables contribute to analog sound?

How do wavetables contribute to “analog”?

Many don’t think that a wavetable can evoke analog vibes. But it does matter, because it IS the very starting point of synthesis. Let’s think again of what is “analog”.

#Digital Wavetables

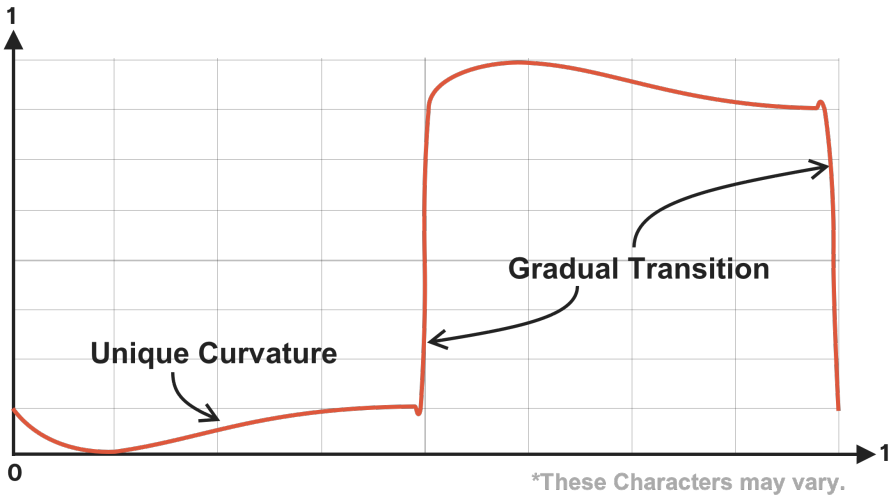
Hive’s default oscillator is totally digital. That means — (1) It leaps ***instantly*** between 0 and 1. (2) Its curve is totally linear. No ***curves***, no ***dips/hills***.



Analog synths, especially vintage ones, never oscillates as squarely as this, mostly due to its physical / technical limitations.

#Analog Wavetables

In analog world, each synth has unique curvature and transition speed.



Curves, ditches, gaps generates unique harmonics so in analog synths, Tri or Square waves actually contain even harmonics. And gradual transition makes similar effect to LPF, creating warm taste.

Can wavetables imitate such tiny things?

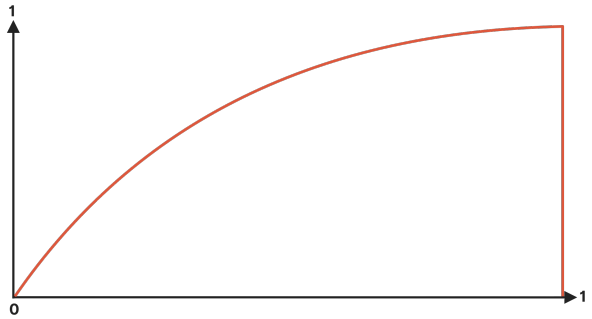
—With ***the power of UHM*** it can. U-he's UHM wavetables have 2048 samples resolution, which can readily replicate all those finest level characters.
Say you use the very last 8 samples for smoothening transition, even though it is only 1/256 length of a single wavetable, it creates warmth effect.

OK it looks like stairs but any audio signal on a computer is handled like this, when extremely zoomed. This means that, in this case, it takes 8 gradual steps to move from 1 to 0. This reduces the digital-ish buzz you hear on default OSCs.

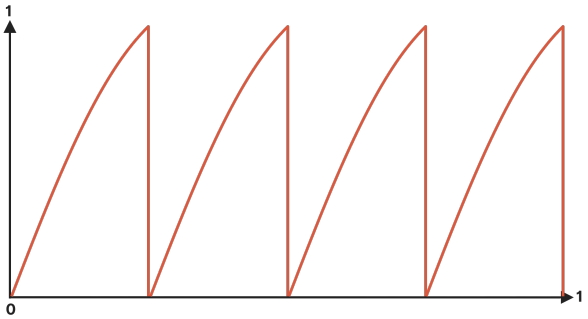
With UHM programming you can control transition length, depth, even the curvature *of this 8 samples*, which is how we characterized each wavetables.

What can NOT wavetables imitate?

Of-course, wavetables cannot replicate all the behavior of analog synths. For example, in analog synths lower notes have strong curves and they get straightened as notes go higher.



Lower notes = Strongly curved



Higher notes = More like linear

And there is a tendency that lower notes are rich in treble, which get *slightly* softened as notes go higher, making the impression that “fat bass line, warm lead sound” things.

But since wavetables are just static wavetables, these behaviors cannot be reproduced.

Referencing Point

We basically used a **lower note** as a reference of replication, because the lower a note goes, the more overtones we hear, the more seriously a waveform matters. But for **polyphonic-oriented** synths, we set relatively higher reference points, so that poly phrases in middle range can sound in the best quality.

As a result, waves based on mono synths tend to sound brighter, while ones based on poly softer — but anyway these characterizations are in very tiny scale.

Other analog-ish things

And following things are also cannot be done within wavetables.

Unstable tunings / Slight noises / Saturations

But you can mimic these nuances by utilizing other functions in Hive, such as detune, input gain, random modulation and so on. Our presets make full use of them.

Not all, but some

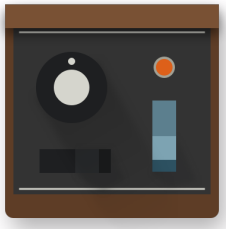
So it’s nonsense to think that waveforms alone can evoke full vibes of analog, but it’s also nonsense to think that waveforms have nothing to do with analog taste.

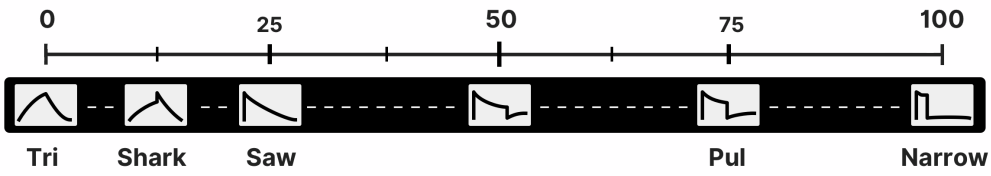
Now, let’s have a look at each wavetable!

Understanding Each Wavetable

Taming 1 wavetable
is worth more than
Merely having 100 wavetables.

Mini D





"***Mini D***" is modeled after the legendary, most famous 70s vintage synth.

Shapes and Morphs

Its original 6 waveforms, including "Sharktooth", are replicated. Below are the correspondence table of original waves / WT position in Hive. The model synth doesn't have continuous morphing. So they're originally made, in reference to U-he *Diva.*

Waveform	WTpos
Tri	0
Sharktooth	12.5
Saw	25
Square	75
Pulse1	90
Pulse2	100

Saw-Pul morphing is very unique in that **it moves a la PWM**. And WTpos 100 still remains 80%-20% Hi-Lo pulse, which means that PWM range is relatively narrow when compared to other WTs.

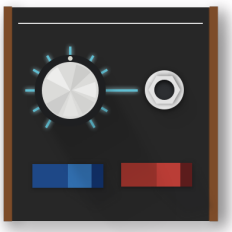
Sound Character

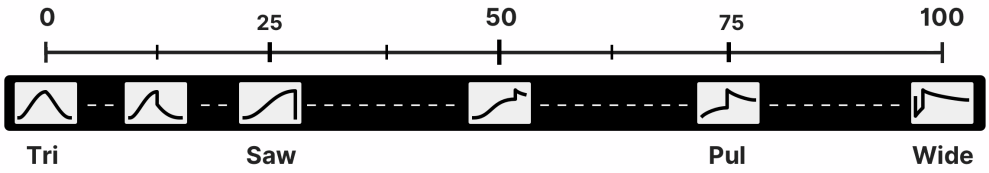
Strong in **low & mid** but also has enough high range. Basically tuned for monophonic sounds, it can easily go harsh when stacked. If you have any impression of "muffled" or "dusk" sound on this synth, it must be due to the filter or recording environment or hardware conditions. It by nature has strong brightness and cutting off it with strong resonance makes "*that sound*".

Standard Combination

Normal Engine + *24dB single LP*. The model has 3 OSC + Noise section, so Set *Mini D* for Osc1, 2 & Sub1 and white/pink noise for Sub2 will result in the closest sound. Strong resonance surely bring out the best in this WT. Note that Hive's Normal engine filter keeps its low-mid body even in high resonance. So in high resonance presets, cutting off low-mid range by EQ may sound closer to the original.

Mini Voyage





"***Mini Voyage***" is modeled after the 21st century's modern analog mono synth.

Shapes and Morphs

The model synth has continuous shape morphings, so simply they are replicated. Like *Mini D*, morph is done not by vertical crossfade, but by horizontal movement, so WTpos 25-75 again sounds like PWM.
Also WT around 26-27 has some glitchy sound, which is useful when you want some harsh high frequency.

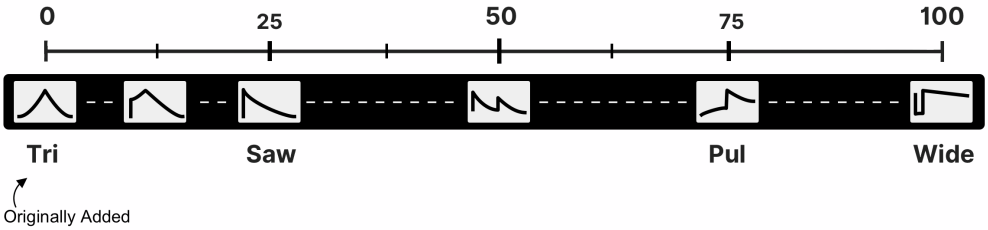
Sound Character

Although the model is manufactured by the same company as *Mini D*, the characteristics are totally different.
Very rich in **low~mid** end, and transitions are most strongly rounded among all the tables we made(= soft in **super-high**), which gives an impression of modernized, smooth touch.

Standard Combination

Normal Engine + *Parallel dual 24dB LP* or *Serial LP→HP*. The model has unique feature that in dual LP mode the signal of filter1 and 2 is separately sent to L/R respectively, creating stereo effect.

Oberton



"***Oberton***" is modeled after another 70s famous synth module.

Shapes and Morphs

The model synth doesn't have Tri wave. To align Saw's WTpos to 25, *Half sine* is added.

WT50, which is quite like octave higher saw, is also useful. Between 25-50 creates good blended sound of 2 octaves.

Also, note that **Pul duty** is not perfect 50:50, which makes it sound boomy overall in WT25-75. WTpos 76.5 is the closest to perfect square.

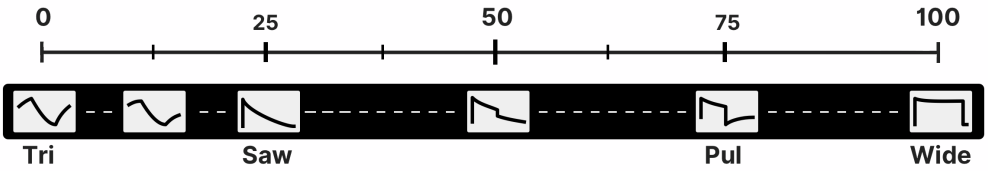
Sound Character

This one is chronologically closest to Mini D, but its character is different. Tuned for loose 12dB filter, **its high is by nature lessened**.
The typical situation where *Oberton* excels is the combination with semi-opened 12dB LP. Whereas *Mini D* sounds a bit harsh with its strong high frequency, *Oberton* still sounds sweet.

Standard Combination

Clean Engine + 12dB *LP,* and optionally + ***parallel Bandpass***. Since the model adopts State Variable Filter and it can continuously morph between LP-BP-HP, slight leakage of BP filter will make you feel "*Oh, I've heard of this sound!*".
Also, the model doesn't have filter keyfollow. So not using it is also a key.

Oberboss



"***Oberboss***" is modeled after mid 80s gorgeous analog synth.

Shapes and Morphs

Morphing is very standard. And its **Synced Saw** and **Synced Pul** are also included as independent files.

Sound Character

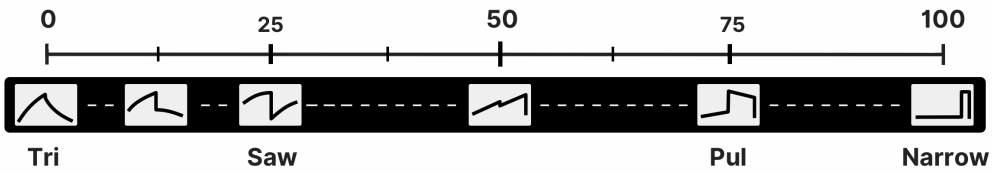
You can see *Oberboss* as a modern version, **brighter** version of *Oberton*. Higher frequency is not diminished, almost linear in spectrum, giving an impression of bold sound.

The sound is similar to the default saw, but still stronger in low and softer in super-high.

Standard Combination

Clean+12dB LP or *Normal+24dB LP* will sound fine, but the model has very various filter choices. *Dirty* engine also fits.

Jupitron



"***Jupitron***" is modeled after the very renowned 80s poly synth.

Shapes and Morphs

Tri wave is boomy because there's small vertical gap between left half and right half (like Sharktooth in *Mini D*). WTpos around 50, just as *Oberton*, sounds quite like octave higher saw.

Sound Character

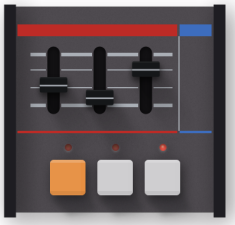
It's very soft, mild in super-high, hence the best player for **supersaw**, definitely (Though the supersaw is introduced not on this synth but the successor). You can create supersaw pad rich in middle range, without high getting too noisy.

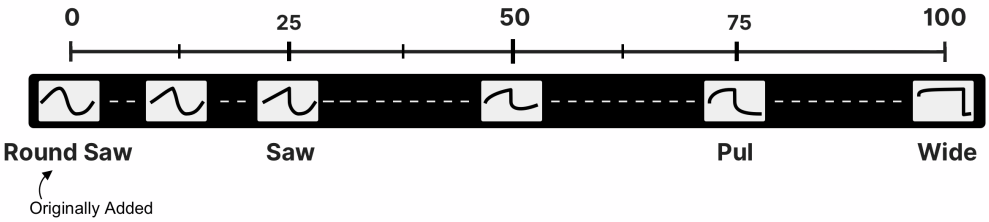
And by the same logic as *Oberton*, mild high range ensures a good combination with semi-open 12dB LP filter (cutoff around 75-90).

Standard Combination

Normal Engine, *HP→LP serial routing*. The model can switch 12dB/24dB. It has relatively strong low, so HPF is the key to control bottom end (but note that the model doesn't have resonance on HPF).

Juna





"***Juna***" is modeled after a little sister of "*JP*", more specifically, the "*106*" model's DCO.

Shapes and Morphs

The model synth doesn't have Tri wave. To align Saw's WTpos to 25, *Rounded Saw* is added. Waveforms are rounded here and there, which characterizes this synth.

The model has only 1 OSC (+1 Pulse sub OSC, for lowering manufacture cost). To keep firm body with single OSC, the Saw has really unique shape, by which **low** end is strengthened. In the original synth, HPF is utilized to cut these fattened low.

Sound Character

It has the **weakest mid range** of all (especially so in Saw). Its emphasis is separated to the edge — low and super-high. So it's suitable for pads without getting in the way of leads, theoretically.

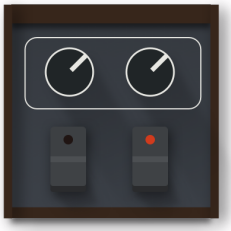
Since strong mid range is one of the typical characteristics of what we call "analog", *Juna* may feel to you the most remote from analog. But smoothed transition applied, it holds certain analog feel.

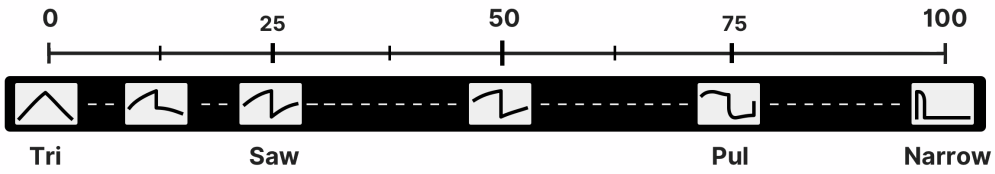
The model uses analog circuit, but its tuning is controlled by digital clock, hence "DCO". So "unstable tuning" is not a thing for this synth.

Standard Combination

Normal Engine, *HP→LP serial routing*. The model can switch 12dB/24dB. Again HPF (without resonance) is the key to control bottom end. And Chorus effect is another characteristic of the model.

Professor V





"***Professor V***" is modeled after the late 70s great polyphonic synth.

Shapes and Morphs

Its morph style is very standard. Each intermediate section between Tri-Saw, Saw-Pul is the simplest kind.

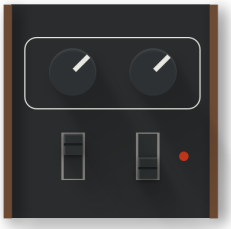
Sound Character

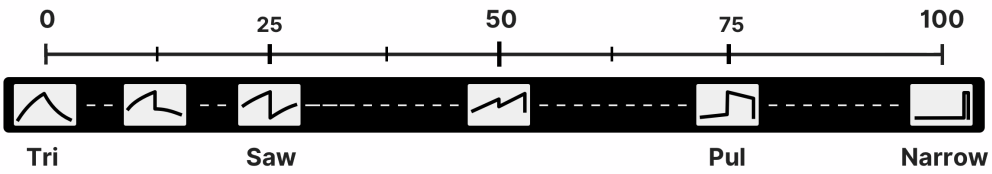
Very much **balanced**. Softness in super-high range creates some **warm** taste, but as that character is more subtle than *Oberton* or *Jupitron*, it gives **vivid** impression.

Standard Combination

Normal Engine + *24db LP*. Since the model synth has 2 OSC with no Sub OSC, simple 2 OSC combination will suit.

Professor I





"***Professor I***" is the brother of *Prof V*, modeled after early 80s mono synth.

Shapes and Morphs

While Tri-Saw is simple crossfade, Saw-Pul is interesting. Just as *Oberton*, midpoint sounds like octave higher saw.
And its **Synced Saw** and **Synced Pul** are also included as independent files. Compared to the counterpart of *Oberboss*, Its range of the tune movement is much narrower.

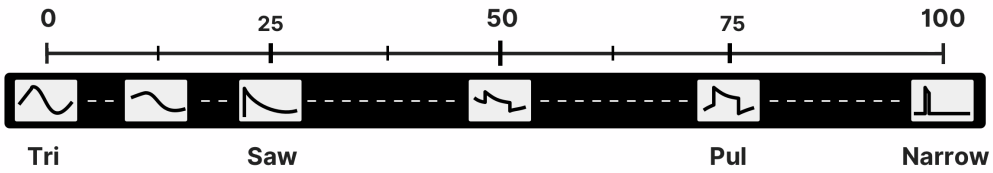
Sound Character

Solely tuned for monophonic sound, it has **stronger high** than *Prof V*. So using this for leads and basses while using *Prof V* for pads and keys will be a good assignment.

Standard Combination

Totally the same as *Prof V — Normal* Engine + *24db LP*. Since the model synth has 2 OSC with no Sub OSC, simple 2 OSC combination will suit.

K-20



"***K-20***" is modeled after 70's compact monophonic *MS*(=Modular Synth).

Shapes and Morphs

Morph style is standard, but Tri is unique — It's more like phase-modulated sine wave. And just like *Oberton*, **Pul duty** is not perfect 1:1. WTpos 75.5 is the closest position to 1:1.

Sound Character

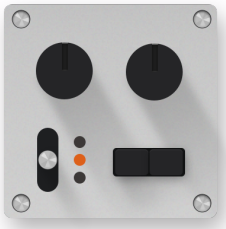
This one is special in that it is tuned for **Dirty** engine (All the others are mainly for Normal or Clean engine). As Dirty engine's filter can dramatically shape waveforms depending on input and resonance, some wavetables don't go well with it.

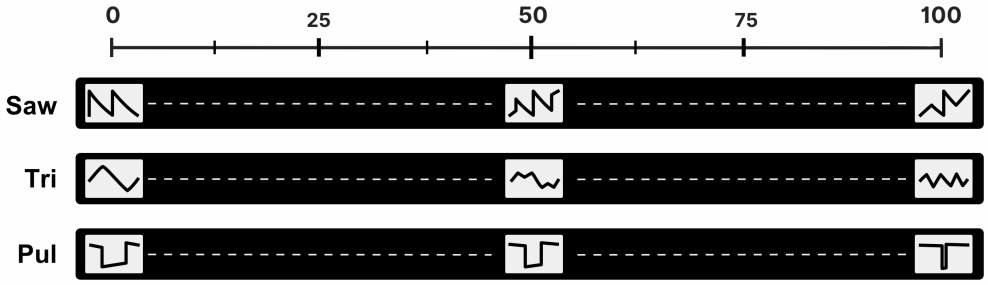
K-20, by nature, fits for Dirty engine and final fine adjustment is also based on Dirty engine.
When combined with Dirty engine, it creates good vibes of old school modular synth. It's balanced like *Prof. V*, but only a bit stronger in all harmonics.

Standard Combination

Dirty engine and *HP→LP(12dB)* serial routings. Both HP and LP have resonance. Making full use of input distortion and dual resonant filter is the key to create attractive sounds.

nanologue

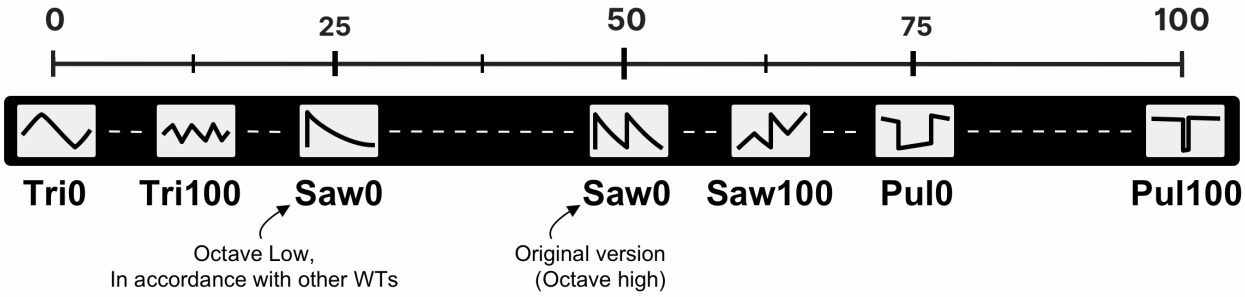




"***nanologue***" is modeled after the 21st century's new iconic analog poly synth. Each of Saw/Tri/Pul has unique shape morphing, so files are separated.

Unified version

Saw WTpos0 is octave higher by design, which makes morphing very unique. But it's cumbersome when you switch from other WTs to see if *nanologue* fits in the situation. So we made "Unified" version as well, with which you can take a look at all the waves.



But remember that all morph is *rushed*, which might well cause rough transition. Use independent ones for guaranteed sound quality.

Conversely, WTpos 25-50(= Similar to Hard Sync Saw) is available only in this WT. Also, WTpos 62.5-75 (=Saw-Pul mixed) is useful, saving another OSC.

Sound Character

Very warm and high range is restrained, **strongly aimed at polyphonic sound**. You can easily get quite attractive pads/keys with its soft high and unique shape morph.

Standard Combination

Normal Engine + *single LP*. 24dB/12dB is switchable in the model synth. Saw shape is so characteristic that modest stack is recommended, otherwise it could get harsh.

Summary

Below is the list of “standard combination” described above, and the released year of their model synths.

Name	Year	Engine	Filter
Mini D	1972	Normal	24db LP
Mini Voyage	2002	Normal	24dB Parallel Dual LP / LP→HP
Oberton	1974	Clean	12dB LP/BP/HP
Oberboss	1985	Clean	Any
Jupitron	1981	Normal	HP → 24/12dB LP
Juna	1984	Normal	HP → 24/12dB LP
Professor V	1978	Normal	24db LP
Professor I	1981	Normal	24db LP
K-20	1978	Dirty	HP (with reso)→12dB LP
nanologue	2016	Normal	24/12dB LP

Should WTs be used in “standard combination”?

The answer is Yes and No.
It is Yes because each wavetable is strongly optimized for its original environment. As you see above, OSCs of 12dB filter synth tend to be soft in super-high range, or, *Juna* has strong fundamental because it’s 1OSC synth, and so on.
But it is No because new combination may well create novel sound! You can enjoy trying new combinations just like Diva synth.

Miscellaneous Information

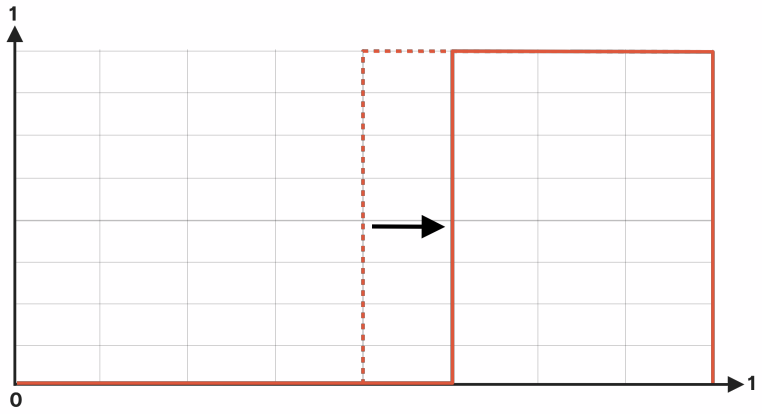
About “PWM” files

Independent “PWM” wavetables are bundled for 2 reasons:

(1) In normal wavetables, either “Narrow” or “Wide” is put in WTpos 75-100. But some synths has both direction controllable via PW knob. In PWM files, both direction is fully replicated.
(2) Since PWM files use all their 256 frames solely for pulse width modulation, better sound quality is expected.

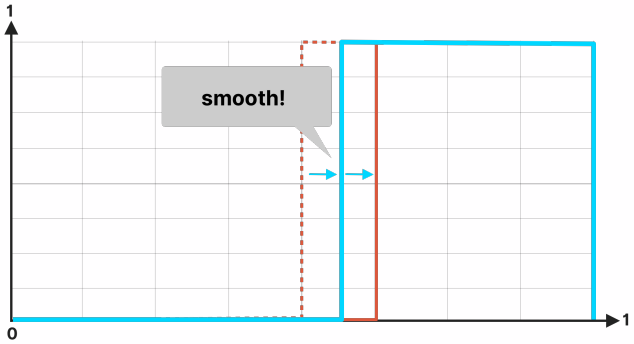
About Interpolation

Remember that **Switch** interpol is recommended whenever there is a steep, solid vertical line moving horizontally e.g. PWM, Synced Pul.

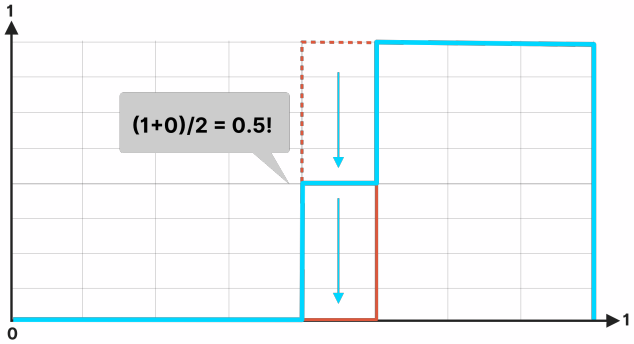


“Solid vertical line moves horizontally”

If you choose *crossfade* in these cases, unwanted interpolation happens. You would expect that HIVE intelligently connects between two, by smoothing its horizontal move. But the reality bites. Since crossfade calculates the *average voltage* of contiguous 2 frames, a strange step is produced.



What you expect to happen



What really happens

So *switch* interpol sounds more natural, paradoxically. Switching 256 frames is the best quality you can have for now. Oh, that may be far from “analog”, but practically it sounds smooth enough (And there could be possibility that uhm system will be updated).

About uhm files

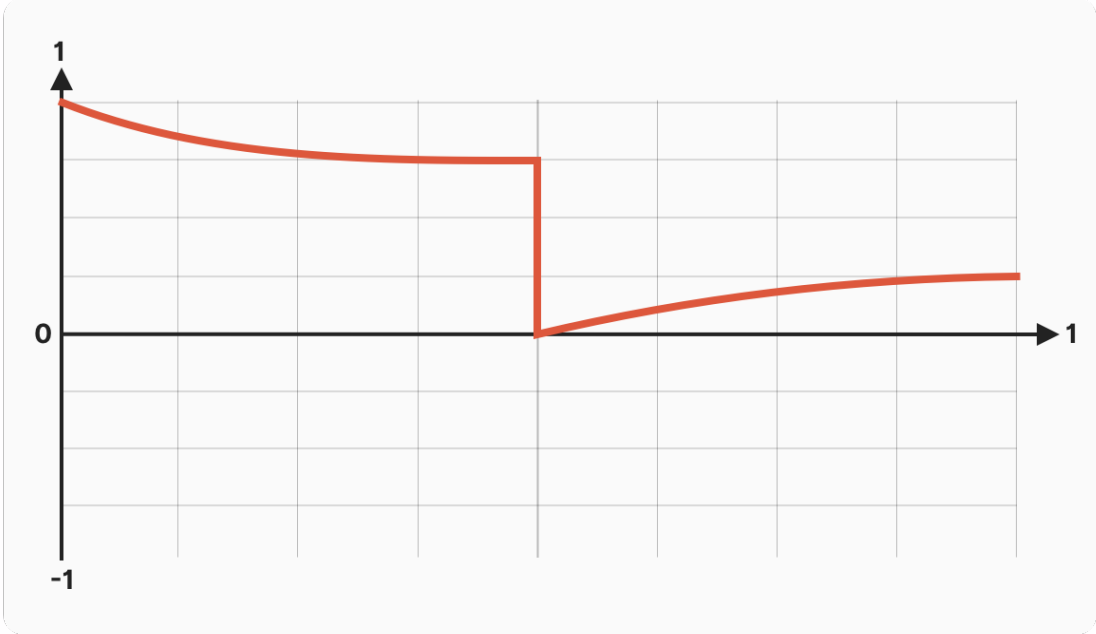
Why all WTs are converted to wav?

Firstly, note that the sound quality of uhm wavetables is **identical** to exported wav files. when you load a uhm file on Hive, it generates wavetables **on load**. On load it generates 256 frames of wavetable. So the difference is solely “storing it on computer as wav” or “generating it every time on load, for saving disk space”.

And since our wavetables are extraordinarily long, it takes some time to generate a wave, which is very stressful and sacrifices UX. So we choose to export as wav, while serving uhm files as an option for those who want to see the inside.

What’s happening inside uhm? How do these codes work?

Read the documentation by U-he. Our codes are long, but primitive. One note, however, is that codes are basically written in 0~1 scale, not -1~1.



Wave “select((phase<=1/2), 1-1/4*sin(phase*pi) , 1/4*sin((phase-1/2)*pi))”

Then they are bipolarized with the command Spectrum lowest=0 highest=0 "0".

Can I modify these uhm files?

Of-course yes. But please do not upload it public! —because they are part of product, part of what customers pay for. As to the details of the usage, please read the Terms and Conditions.

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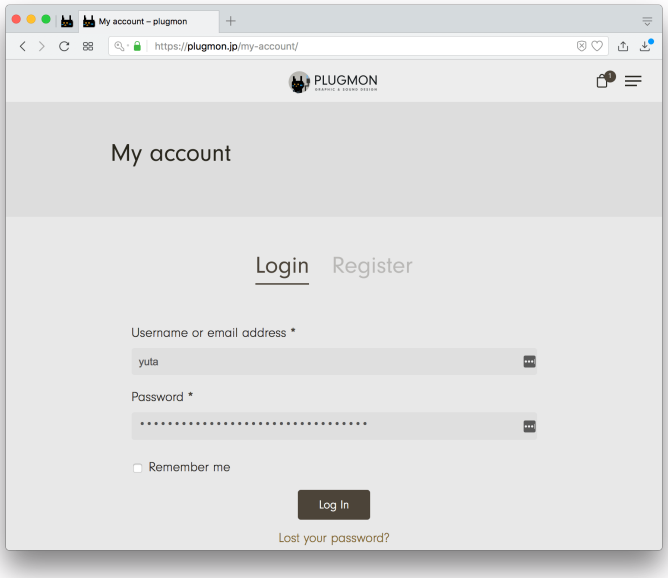
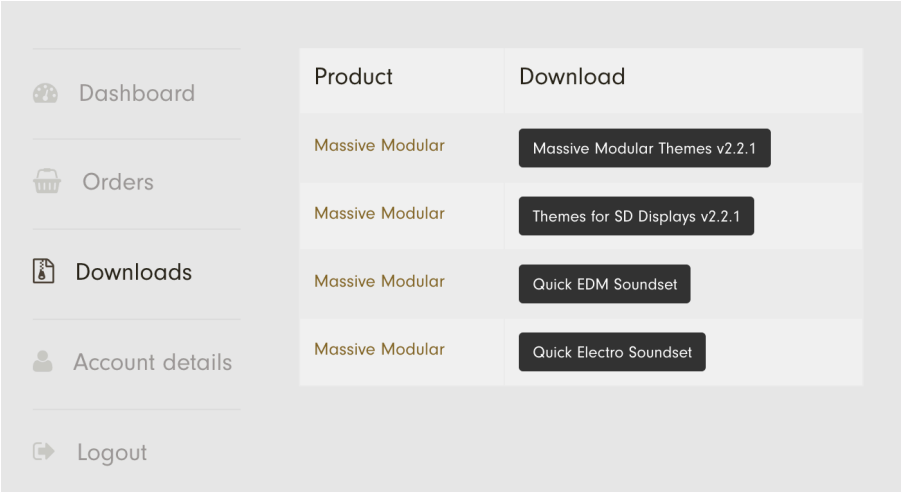
Your account page is : https://plugmon.jp/my-account/

Please login with your e-mail and password. **If you don't have account yet, you have to create one** (When creating, make sure that you enter the same address as you used on purchase).



After login, go to "**Downloads**" tab, where you can download your purchased products.



*If you have any troubles, please contact us.

List of Wavetable

Juna.wav	PWM Juna.wav
Jupitron.wav	PWM Jupitron.wav
K-20.wav	PWM K-20.wav
Mini D.wav	PWM Mini D.wav
Mini Voyage.wav	PWM Mini Voyage.wav
nanologue.wav	PWM Oberboss.wav
Oberboss.wav	PWM Oberton.wav
Oberton.wav	PWM Prof I.wav
Professor I.wav	PWM Prof V.wav
Professor V.wav	Sync Pul Oberboss.wav
nanologue Pul.wav	Sync Pul Prof I.wav
nanologue Saw.wav	Sync Saw Oberboss.wav
nanologue Tri.wav	Sync Saw Prof I.wav