
V.2.0 Addendum

HYDRASYNTH

✦ EXPLORER ✦



Polytouch®

WELCOME TO VERSION 2.0!

Ashun Sound Machines released our first synthesizers in 2019: the beloved Hydrasynth and Hydrasynth Desktop models. They quickly gained a devoted following among synthesizer enthusiasts around the world for their elegance, power, and simplicity. Within 2 years the product line grew larger (and smaller!) to include the Hydrasynth Deluxe and the Hydrasynth Explorer, each sharing many features with their predecessors, and each a formidable instrument in its own right.

The family resemblance is strong: each model offers an unprecedented combination of sound generation methods and processing power, coupled with hardware that is perfectly tailored for real-time tweaking, all at a very affordable price. On top of that, the Hydrasynths have set a *de facto* standard: musicians have come to expect that a polyphonic synthesizer should also provide polyphonic aftertouch, so the performer can shape the sound of every note as it is produced.

With the release of version 2.0 firmware the Hydrasynth product line continues its trajectory into unexplored timbral territories, while maintaining the ease of use for which they are known. And most importantly, this update confirms our commitment to you, our beloved customers and fellow musicians, to provide cutting-edge sounds and features that will continue to be a perpetual source of inspiration.

One caveat: This addendum is specific to the Hydrasynth Explorer. All of the version 2.0 features are also available for the Hydrasynth, Hydrasynth Desktop, and Hydrasynth Deluxe, but their locations sometimes differ within each module when compared to the Hydrasynth Explorer. If you own one of those instead (or also!) you'll want to download the v2.0 addendum for your unit from the AshunSoundMachines.com/downloads page.

And now without further ado, here's a brief overview of the great new features in version 2.0:

System Setup changes

- Individual FX bypass: Now you can enable and disable the Pre/Post FX, the Delay, and/or the Reverb as needed. See [Individual FX bypass \(p. 5\)](#)
- The new Lights menu lets you set independent brightness levels for the Tap Tempo LED, the Patch knob & wheels, and all other LEDs as a group. See [Light menu \(p. 5\)](#)

More Patch memory, faster Browsing and Saving

- We added 3 more Patch Banks to the Hydrasynth, Hydrasynth Desktop, and Hydrasynth Explorer in version 2.0. The Hydrasynth Deluxe already has 8 banks in Single mode, so now all 4 models have the same number of banks.
- There's a new Bank select parameter on page 2 of the Browse and Save menus, which is helpful when selecting a patch or a target location.

New performance options

- Each patch now has 3 settings for the Sustain pedal: Sustain, Sostenuto, or Mod source only. See [Sustain pedal: Two new features \(p. 6\)](#)
- Version 2.0 provides even greater resolution for the Mod strip Vibrato Amount. See [Mod Strip Vibrato Amount \(p. 7\)](#)
- The Glide feature now has a Glissando option! See [Glissando \(p. 7\)](#)

Arpeggiator

- Arp range has been expanded to 6 octaves. Hold [SHIFT] and press Arp [ON] twice to access Arp Edit page 2, then use Control knob 2 to adjust the range.
- The new Arp Step Offset parameter can offset the phrase or arp steps forward or backward +/- 32 steps. See [Arp Step Offset \(p. 7\)](#)

Sound engine

- The Oscillator Bit depth can be reduced to 2 bits, with many intermediate values. Perfect for adding a bit of grit to a patch, or a lot! See [Oscillators: Bit Reduction \(p. 8\)](#)

Per-voice Modulation

- The Voice menu has a new Voice Offset parameter that can introduce per-voice modulation of destinations via the Mod Matrix (tuning, filter, envelopes, LFOs, etc.). See [Per-Voice Offset Modulation \(p. 9\)](#)
- As a result, the Modulation Source list has grown! There are two new options (VoiceMod and VoiceMd+), for bipolar and/or unipolar modulation of destinations according to the Voice Offset values. See [New Mod Matrix Sources \(p. 9\)](#)

One-Shot LFOs: Step advance per trigger

- The LFO One-Shot mode now has a third option when LFO Wave = Step. When the new setting of "Step" is selected, the LFO will progress to the next Step with each LFO trigger. See [One-Shot LFOs: Step Advance \(p. 10\)](#)

New Quantize options

- Version 2.0 can quantize Envelopes and LFOs to provide a stepped output. Multiple resolutions are available. See [New Quantize Options \(p. 10\)](#) for a description.

Randomize and initialize more parameters

Start from scratch or let Hydrasynth decide! You can now use the [INIT] and [RANDOM] buttons to affect more parameters, such as:

- VoiceMod values: This new parameter lets you modulate each voice independently.
- WaveScan selections: Oscillators 1 and 2 can each hold as many as 8 different waveforms.
- Step LFO values: Each Step LFO lets you define up to 64 steps per cycle.

For more about these new features, see [page 11](#).

The next chapter provides more information about the new features and how to use them. For full coverage of every feature, please download the Hydrasynth Explorer manual from the [Ashun Sound Machines website](#).

And while you're there, check for firmware updates! Our passion for synthesizers continues unabated, and you don't want to miss out on any new features and fixes that we release. Plus you'll find new patches, more microtuning scales, helpful video tutorials, and more. Be sure to look for us on all the popular social media platforms too, where you can swap tips and patches with other Hydrasynth owners.

We know you'll be as excited about the new features as we are. Now go make some great music!

—The Hydrasynth team

Bank Selection: Browse & Save Pages

Version 2.0 adds a new way to select a different patch bank while browsing or saving patches.

- Press [BROWSE] or [SAVE] to access the desired menu.
- Press the Page Down arrow to access page 2.
- Use Control knob 1 to select the proper bank. Note: When Find By = Category this option is hidden.

For more details about Browsing and Saving patches, see the relevant sections of the User Guide.

New Performance Options

Sustain pedal: Two new features

Version 2.0 lets you choose one of three functions for the sustain pedal: Sustain, Sostenuto, and Mod Only. These options are on [VOICE] page 6, edit field 1. Your choice is saved with the patch.

Remember: It's always possible to use the Sostenuto or Mod Only settings with the pedal, and then sustain all of the notes by holding [SHIFT] and pressing [LATCH].

Sostenuto

Most grand pianos have a middle "sostenuto" pedal which can sustain a note or chord without sustaining all of the other notes. As long as that pedal is held down, whenever the selected notes are played they will sustain while all of the other notes play normally.

Now the Hydrasynth Explorer has that feature too! This makes it possible to sustain one or more bass notes while changing the upper chords, for example, or play a bass line beneath a sustained chord, etc.

Let's try it! Access page 6 of the [VOICE] module and use Control knob 1 to select "Sosten" for the SusPedal parameter. Then:

1. Hold the note or chord you want to sustain.
2. Press the pedal and release the notes. The selected notes continue to sustain.
3. Still holding the pedal, play other notes: only the pre-selected notes sustain, and the others don't.

As long as the pedal is held the pre-selected notes are sustained and their voices cannot be stolen by another note. For example, if you use sostenuto to hold 8 notes and then try to play another note, the new note does not play. The sostenuto voices are not released until you lift the pedal, after which those voices are available again.

Note: the sustain pedal sends MIDI CC #64, not MIDI CC #66, when SusPedal = Sostenuto.

Mod Only

Until version 2.0 it wasn't possible to use the sustain pedal without also sustaining a patch. Now you can use the Sustain pedal as a mod source only. Here's an example:

1. Press [INIT] twice to start from ground zero.
2. Turn Cutoff all the way down.
3. Press [MOD MATRIX] and then Control button 2 to select the first mod route source.
4. Hold [SHIFT] and turn Control knob 2 until ExpPedal is selected.
5. Release [SHIFT] and turn Control knob 2 clockwise to select SusPedal as the source.
6. Press Control button 4 and then [FILTER 1] to select it as the Destination.
7. Turn Control knob 4 to a positive value of 30 or higher.
8. Play a note, press the pedal, and release the note. The filter opens and the note sustains.
9. Release the pedal, press [EXIT], and then press [VOICE] to access that module.

10. Hold [SHIFT] and press the Down Arrow button to access page 6.
11. Use Control knob 1 to select “Mod Only” for the SusPedal parameter.
12. Repeat step 8. The filter opens but the note does not sustain.

The possibilities are endless: the pedal can control an LFO, a Mutant, an effect time or level, etc., without sustaining a note.

Mod Strip Vibrato Amount

Version 2.0 increases the resolution of the dedicated Pitch LFO by a factor of 10! We’ve added a decimal point to the Vib Amt parameter value, so now its range is 0.0 - 12.0 in increments of 0.1. You’ll find this parameter on [VOICE] page 3.

Glissando

Glide has a new glissando option. This provides a “stepped” glide that follows the selected scale, rather than providing a smooth glide between the start and end notes. To find this new feature:

- Press [VOICE] and use the Page Down arrow to access page 4.
- Turn Control knob 1 fully clockwise. Gliss is the third option.

To experiment with glissando, try setting Glide Time to 80 or so. Then play a series of notes an octave apart, and listen as the pitch shifts chromatically from one note to the next. Use Control knob 1 to toggle between the Glide and Gliss settings if you’d like to compare the results while playing.

For extra fun, press [VOICE] again and select a non-chromatic scale. The glissando follows the selected scale in both directions. Remember that you can change the Key Lock setting if you’ll be using the current patch for song that is in a particular key. It’s on Voice page 5 also.

Arpeggiator Improvements

Arp range expanded to 6 octaves

The Arp Octave parameter range has been expanded to 6 octaves. It’s easy to find:

- Hold [SHIFT] and press [ON] twice to access page 2 of Arp Edit mode.
- Turn Control knob 2 clockwise to set the desired Octave range.

Arp Step Offset

This new parameter can offset an Arp pattern by up to 32 steps, forward or backward. It can be used with standard arpeggios or phrases.

Here are two examples:

1. Press [INIT] twice to initialize the patch.
2. Make sure the Arp is not running.
3. Use the top panel knobs to set Division to 1/4 and Octave to 2.
4. Hold 3 notes and press [ON]. The Arp plays notes 1, 2, and 3 in each octave and repeats.
5. Use [ON] to stop the Arp, then hold [SHIFT] and press [ON] to enter Arp Edit mode.
6. Press the Page Down arrow three times to access page 4.
7. Set StpOffset to 1 and hold the same 3 notes.
8. Start the Arp. It plays notes 2 and 3, and then repeats notes 1-3 in each octave.
9. Stop the Arp, set StpOffset to 2, and hold the same 3 notes.
10. Press [ON]. The Arp starts with note 3, and then repeats notes 1-3 in each octave.



When 3 notes are being held a StpOffset value of 3 sounds the same as an offset of 0, 6, or 9 (and all multiples of 3). But when 4 notes are held a StpOffset of 3 starts with note 4, and then repeats notes 1-4. In that case, all StpOffset values that are multiples of 4 sound the same.

In the next example you'll see how the Offset works within the boundaries of the Length parameter. Starting with an Init patch and Arp off:

1. On Arp Edit page 2, use Control knob 3 to set Mode to Phrase.
2. While you're on page 2, set Length to 16 steps.
3. On Arp Edit page 3 select phrase 14, which has 32 steps.
4. Press [ON] and play a note. You'll hear the Arp phrase play steps 1-16 and repeat.
5. On Arp Edit page 4 set the Step Offset to 8 using Control knob 4.
6. Play a note. You'll hear the Arp phrase play steps 9-16, then repeat steps 1-16 until you release the note.



In item 5 above a StpOffset value of 8 or -8 yields the same results, because each makes the phrase start at the halfway point of the 16-step pattern. So either way, the phrase starts on step 9.

See the next chapter [The 64 Hydrasynth Phrases \(p. 12\)](#) for a musical transcription of all 64 phrases.

Oscillators: Bit Reduction

Bit reduction degrades a signal by reducing its digital resolution. At its extreme settings the resolution is so low that the original sound is unrecognizable. It's like a pixelated photograph for the ears!

We've added a new BitRedux parameter to all three oscillators. Let's try a simple example using Oscillator 1:

1. Initialize the patch by pressing [INIT] twice.
2. Press [OSC 1] to access its module.
3. Use Control knob 3 to set the Wave to Triangle.
4. Hold a low note and use the Down Arrow to access page 2.
5. Use Control knob 2 to audition the BitRedux settings.
6. Note how the sound first becomes 'crispy', and then gradually degrades as the value approaches 2 bits.
7. Experiment with different waveforms and BitRedux values. Every combination has its own character!

BitRedux includes standard binary values such as 16-, 8-, 4-, and 2 bits. But there are timbres ranging from the beautiful to the malevolent lurking in less-explored bit depths of 10, 7, and 3, etc. You may want to select your favorite patch, apply BitRedux to one or more oscillators, and see what happens!

For more information about the Oscillators, please refer to the relevant sections of the User Guide.

Per-Voice Offset Modulation

Version 2.0 has an intriguing feature that lets you dial in a certain amount of deviation per voice, per patch. This enables the Hydrasynth to exhibit varying levels of instability like your favorite analog synths of the past. The good news is that it only shows up when you want it!

The fun starts with the VoiceMod menu, located at [VOICE] page 6. It lets you define a per-voice offset that can be applied via the Mod Matrix to any destination. Use it to set each voice's filter cutoff to a slightly different value, for example, or to make each voice generate radically different Mutant values. Again, this can only happen if a VoiceMod source has been mapped to at least one mod destination in the Mod Matrix.

In this section we'll describe how to access and change the per-voice offset values; in the next we'll explain how to route them to a destination.

- Press [VOICE], then hold [SHIFT] and press the Down Arrow to access page 6.
- Press Control button 2 to enter the VoiceMod menu.
- Use Control knobs 1-4 to set a positive or negative value for voices 1-4.
- Press the Down Arrow to access the second page.
- Use Control knobs 1-4 to set a positive or negative value for voices 5-8.

The [INIT] and [RANDOM] buttons can be used to reset or randomize each value; hold one of those and press the Control button for the desired voice.

You can also initialize or randomize all of the VoiceMod values at the same time. Exit back to [VOICE] page 6, then hold [RANDOM] or [INIT] and press Control button 2 to perform that action on the entire VoiceMod menu.

New Mod Matrix Sources

The new VoiceMod feature also provides two new Mod Matrix sources: VoiceMod (bipolar) and VoiceMd+ (unipolar). They are found in the Source list between MPE-Yrel and CC 000. You'll need to use at least one of these in a mod route or else the VoiceMod feature won't do anything.

Here's a simple example that you can use as a framework for further explorations.

- Press [INIT] twice, then press [VOICE] twice to reach page 2.
- Use Control knob 1 to set StMode to Rotate.
- Hold [SHIFT] and press the Down Arrow to access page 6.
- Use Control button 2 to enter the VoiceMod Edit menu.
- Select values that are multiples of 10 on pages 1 and 2.
- Hold [VOICE] and press [OSC 1] to set up a mod route.
- Set a mod depth of 128 using Control knob 4.
- Play the same note 8 times. It plays a melody!
- Try different mod destinations and depths, like Filter 1 Cutoff and a depth -128, etc.
- To have zero modulation on a VoiceMod Edit value, first look at the selected mod source. If it is VoiceMod, set the value to 0 for that voice. If it is VoiceMd+, set the value to -128 instead.

This example barely scratches the surface. Please refer to the user manual for more information about the Mod Matrix, more examples, and a full list of the mod sources and destinations.

One-Shot LFOs: Step Advance

Version 2.0 gives the LFO One-Shot mode a third option: Step. When both the LFO Wave and One-Shot mode are set to Step, each time that LFO is triggered it advances to the next Step in the sequence.

Let's set up a crazy little Step LFO:

1. Press [INIT] twice, then press [LFO 1] to access page 1.
2. Turn Control knob 1 clockwise until Wave = Step.
3. Press the Page Down arrow twice to access LFO page 3.
4. Turn Control knob 2 clockwise until One-Shot = Step.
5. Press the Page Down arrow to access page 4.
6. Use Control knob 3 to set SemiLock to ON. This provides semitone values in the Step Edit menu.
7. Press Control button 4 to enter the Step Edit menu.
8. Select values between -12 semi and +12 semi on pages 1 and 2.
9. Hold [LFO 1] and press [OSC 1] to set up a mod route.
10. Set a mod depth of 128 using Control knob 4.
11. Play the same note 8 or more times. With each trigger the LFO sequence advances by one Step!

Here's some important information about Step LFOs:

- A Step LFO can contain up to 64 steps, each with its own value.
- The Step Edit menu is only visible on LFO page 4 when the LFO Wave = Step.
- Step LFOs advance differently depending on the Stereo Mode setting on page 1 of the Voice module. See the Voice Module chapter in the manual for details.

New Quantize Options

The Quantize options for the Envelopes and LFOs can add a stepped effect to their output. It's like what Bit Reduction can do to the waveforms: make them a little less pristine or brutalize them.

Envelope Quantize

In the following example the Quantize feature makes a complex attack very easily.

1. Press [INIT] twice and set the CUTOFF knob to minimum.
2. Press [FILTER 1] twice and set ENV1amt to 64.0 with Control knob 1.
3. Press [ENV 1] and use Control knob 1 to set the Attack to 272 ms.
4. Play the lowest C on the keyboard. You'll hear a basic brass sound.
5. Access page 2 and use Control knob 3 to set the Quantize to 9.
6. Play the same note and listen to its attack. It has a bit of "spit", like a real trombone.
7. Back on page 1, use Control knob 1 to set the Attack to 1.53 seconds.
8. Hold the note and listen. The quantized attack is easier to hear.
9. Try different Quantize values. OFF is completely smooth; other values have steps.

LFO Quantize

In the following example the Quantize feature makes a complex LFO out of a sine wave.

1. Press [INIT] twice.
2. Hold [LFO 1] and press [OSC 1] to create a mod route.

3. Set the mod depth to 120.0 with Control knob 4. Hold [SHIFT] to fine-tune the value.
4. Press [LFO 1] to access that module.
5. Use Control knob 2 to set Rate to 0.50 Hz.
6. Press the Page Down arrow twice to access page 3.
7. Hold a note and turn Control knob 3 slowly through the Quantize values.
8. When Quantize = 9 the LFO becomes a 2-octave diminished arpeggio.
9. Try other Quantize values, waveforms, and rates. The results can be very complex.

New Randomize Targets

Another change in version 2.0 is the ability to randomize even more parameters, including some of the new ones. Try these combinations:

- VoiceMod: On [VOICE] page 6, use [RANDOM] + Control button 2 to randomize the VoiceMod values.
- Wavelist: Set [OSC X] Mode to WaveScan, access page 2, then use [RANDOM] + Control button 1 to randomize the waveform selections.
- LFO Steps: Set the Wave type to Step on page 1, select page 4, then use [RANDOM] + Control button 4 to randomize the LFO Step values.

The VoiceMod feature is described earlier in [Per-Voice Offset Modulation \(p. 9\)](#). Please refer to the user guide for more information about WaveScan mode and the Step LFO.

New Initialization Targets

Version 2.0 also makes it easy to initialize each of the targets mentioned in the previous section. It can be useful to reset the values of a specific feature when you want to start over, but don't want to initialize the entire patch.

- VoiceMod: On [VOICE] page 6, use [INIT] + Control button 2 to reset the VoiceMod values.
- WaveScan: Set [OSC X] Mode to WaveScan, access page 2, then use [INIT] + Control button 1 to reset the waveform selections.
- LFO Steps: Set [LFO X] Wave type to Step on page 1, select page 4, then use [INIT] + Control button 4 to reset the LFO Step values.

The VoiceMod feature is described earlier in [Per-Voice Offset Modulation \(p. 9\)](#). Please refer to the user guide for more information about WaveScan mode and the Step LFO.

Other Improvements

Favorites page remembered

We've also made improvements to the Favorites section. For example, if you are on page 3 of your Favorites and decide to make some quick edits, it's easy to access the other modules. With version 2.0, the next time you use [SHIFT] + [BROWSE] to access your Favorites the Hydrasynth will take you back to page 3, rather than having to reselect that page with the Page Down arrow.

For more information about using the Favorites feature, please refer to the user guide.

Local On/Off status recalled

Local On/Off status is now saved with the other System Setup settings, and will be recalled when the unit is powered up.

THE 64 HYDRASYNTH PHRASES

Hydrasynth Phrases 1-16

Ashun Sound Machines

$\bullet = 120$

Phrase 01

Phrase 02

Phrase 03

Phrase 04

Phrase 05

Phrase 06

Phrase 07

Phrase 08

Phrase 09

Phrase 10

Phrase 11

Phrase 12

Phrase 13

Phrase 14

Phrase 15

Phrase 16

Detailed description: This image shows a musical score for 16 Hydrasynth phrases. The score is written in 4/4 time with a tempo of 120. Each phrase is on a separate staff. The phrases are numbered 01 through 16. The notation includes various rhythmic patterns, such as eighth notes, quarter notes, and sixteenth notes, along with rests and accidentals (sharps and flats). The phrases are arranged vertically, with Phrase 01 at the top and Phrase 16 at the bottom. The score is presented in a clean, black-and-white format.

Hydrasynth Phrases 17-32

Ashun Sound Machines

♩ = 120

Phrase 17

Phrase 18

Phrase 19

Phrase 20

Phrase 21

Phrase 22

Phrase 23

Phrase 24

Phrase 25

Phrase 26

Phrase 27

Phrase 28

Phrase 29

Phrase 30

Phrase 31

Phrase 32

Hydrasynth Phrases 33-48

Ashun Sound Machines

Phrase 33 $\text{♩} = 120$

Phrase 34

Phrase 35

Phrase 36

Phrase 37

Phrase 38

Phrase 39

Phrase 40

Phrase 41

Phrase 42

Phrase 43

Phrase 44

Phrase 45

Phrase 46

Phrase 47

Phrase 48

The image displays a musical score for 16 phrases, numbered 33 to 48. Each phrase is written on a single staff in 4/4 time. The tempo is indicated as 120 beats per minute. The key signature is one flat (B-flat). The phrases consist of various rhythmic patterns, including eighth and sixteenth notes, rests, and accidentals. The notation is clean and professional, typical of a digital audio workstation (DAW) export.

Hydrasynth Phrases 49-64

Ashun Sound Machines

$\bullet = 120$

Phrase 49

Phrase 50

Phrase 51

Phrase 52

Phrase 53

Phrase 54

Phrase 55

Phrase 56

Phrase 57

Phrase 58

Phrase 59

Phrase 60

Phrase 61

Phrase 62

Phrase 63

Phrase 64