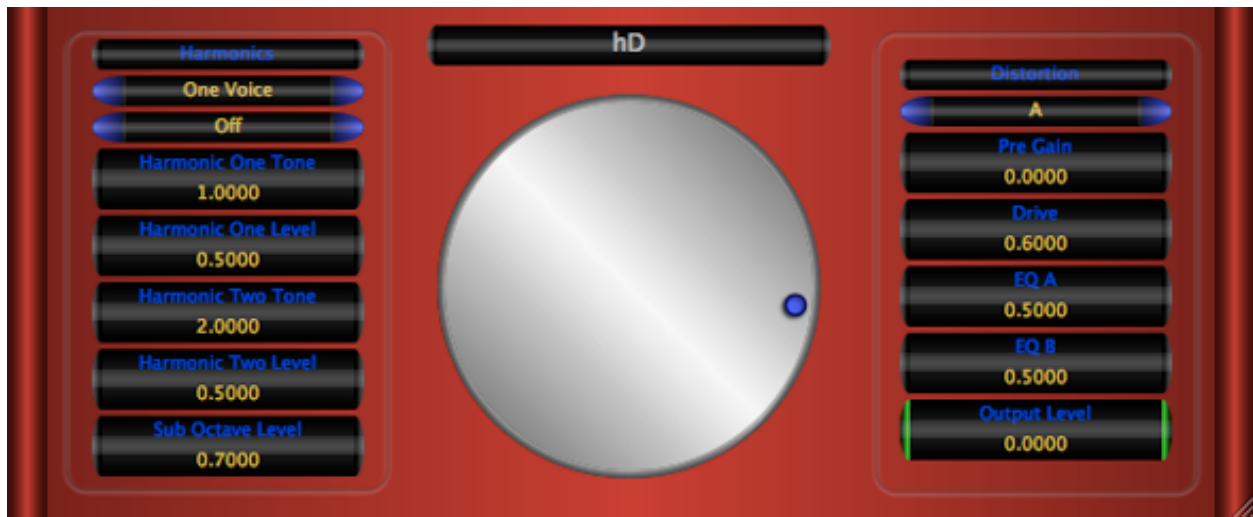


Music Unfolding hD Audio Unit User Guide



Requirements:

OS X 10.4 or higher is required. hD requires an Audio Unit (AU) capable host. A host that supports Cocoa user interfaces (UI) for AU's is preferred. Please check hD's operation in your host of choice for suitability before purchasing.

Installation:

hD can be installed in any of the standard Audio Unit component locations. These are commonly `/Library/Audio/Plug-Ins/Components` and `~/Library/Audio/Plug-Ins/Components` (where "~" stands for the user's home directory). Drag hD.component into the Components directory and relaunch your AU host software. The included presets also need to be installed into one of the standard locations (`/Library/Audio/Presets/MusicUnfolding/hD` and `~/Library/Audio/Presets/MusicUnfolding/hD`). If you already have a MusicUnfolding directory in your "Presets" directory, then drag the hD directory into this location. If not, drag the MusicUnfolding directory that contains the hD presets directory into the "Presets" directory.

To register hD, go to the Music Unfolding online store. After you have made the payment for hD, a registration number will be sent to you by email. This usually only takes a few minutes. Once you receive the registration number, copy the entire license string. It will be of the form "MU-hD-XXXXXXXXXXXX-YYMMDD".

Bring up hD in your Cocoa-capable host. Clicking on the hD badge/logo brings up the registration panel. Make sure the text box is active and then press the paste button. If the string has gone into the text box correctly, click the "Enter License" button." If the license is accepted as valid, the message will change to indicate that you are registered. If the string is rejected, please ensure that you've copied the entire string and that it doesn't include any leading spaces. Once the registration number is accepted, you need to get your host to reload the AU. In GarageBand, you can do this by setting the plugin slot that hD is in to "None" and then reselecting hD. The intermittent audio static from the demo version will now be gone. In some hosts it may be necessary to quit from the host and relaunch, to pick up the registration in the audio portion of the AU.

Introduction:

First, a quick introduction to the editing controls for hD. All controls are set using the same knob. Click the desired control readout to select and then move the knob to control. The active (selected) control is indicated by the green end caps. The knob works with a circular control motion. The closer to the center you are dragging the knob, the rougher the increments. Moving farther out makes the increments finer. You can even click the surface of the knob and drag out of the surface of the knob and then move in a circular motion if you want finer control. To set a parameter to an exact value, double-click the parameter readout. This brings up a text box where the parameter value can be set exactly. Double-clicking the knob sets the selected parameter to its default value. The knob will act with a linear, logarithmic, or power response depending on the parameter that is selected.

The controls also support click-and-drag directly on the surface of the readout. Clicking-and dragging in a vertical direction changes the parameter values. Dragging in a horizontal manner causes the value to change ten times slower. The control behavior (linear, log or power) is the same as it is while using the knob for parameter control. In addition, hovering the mouse over the control and using the scroll wheel also changes the control value. If you have a mouse with a horizontal scroll wheel motion, scrolling horizontally changes the parameter value with 10 times finer control.

The colors of the parameter displays can be changed in the preferences/registration panel. To bring up the panel, click on the name tag/badge for the AU. Select the colors of your choice and then to see the new colors in effect, you must close and reopen the AU. The preference is applied in all hosts for a given user. Note that these color preferences apply to all of the Twister series AUs. Setting your color preference in one will apply this preference to all of the Twister AUs.

hD is principally a distortion effect. It includes the ability to directly add note harmonics (up to two octaves higher) and it contains a sub-octave generator. It should be noted that these effect sections are optimized and located to enhance the distortion. They can be used in other ways, as some of the presets demonstrate. hD is not an amplifier simulation. Distortion is best served with plenty of EQ. A good EQ can do magic with distortion. The ideal situation is to sandwich the distortion between two EQ's. Think of it as a preamp's tone controls and a speaker cabinet's frequency response. If you are running direct into your DAW, placing an EQ on your instrument's signal before any distortion to emulate a tone stack is really important. If you are preamping before you record, this may not be needed. Putting an EQ after the distortion is even more important. One neat way to use hD is as you would place a stomp box before an amplifier. If you are running into an amp simulation effect, then this will handle the EQ requirements. If not, placing a parametric EQ after hD set to emulate a speaker cabinet's frequency response curve is an effective choice. To help with EQ, we've released a tone control/parametric EQ

unit. It is called Music Unfolding xEQ and it is available for free at www.MusicUnfolding.com.

The Sections:

Harmonics: The Harmonics section allows for the addition of harmonic overtones and sub-octave generation. hD can generate one or two pitch shifted copies of the input up to two octaves above the input signal. The volume level of the two voices can be set independently. The purpose of these voices is to enhance the distortion. So, they are mixed with the signal before the distortion stage. We developed the sub-octave generator specifically for hD. The algorithm we developed is optimized specifically for this application. It adds no latency to the effect and we think it sounds pretty cool. Sub-octave generation occurs after the distortion stage. This lets you get a good rumble without sounding like you've run a bass through a fuzz box.

Distortion: The distortion unit consists of a pre-gain and wave shaper with a selectable set of EQ filters and oversampling models. The choices are described in the table below. The amount of the distortion is largely set by the pre-gain and drive settings. The EQ filters mainly provide tone coloring.

Mode	Over-sampling	Filter Model	EQ A	EQ B
"A"	none	Low Pass	Q	F
"B"	2x	Low Pass	Q	F
"C"	2x	Contour	Q	Gain (Adds peaks at 600 and 1200 Hz with gain set by EQ B)
"D"	4x	Resonant LP	Q	F (Set wah pedal drive effect)
"E"	8x	Contour	Q	Gain (Adds peaks at 400 and 1000 Hz with gain set by EQ B)

Hints:

Detuning the harmonic voices by a small amount, 0.005 to 0.01 provides a nice doubling effect.

To aid in the setting of harmonics:

Table of Harmonic Ratios

Tone Factor	Note Ratio	Example
0	1:1	C
0.125	9:8	D
0.25	5:4	E
0.3333	4:3	F
0.5	3:2	G
0.6667	5:3	A
0.875	15:8	B
1	2:1	C
1.5	5:2	G2
2	3:1	C2

For any given note ratio, the formula to determine the Tone Factor for a ratio N:M is
Tone Factor = $N/M - 1.0$.