

User Manual



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Chapter 1. Installation / Setup

Minimum System Requirements

- ✓ Intel or AMD CPU with SSE 3 or higher instruction set, or Apple Silicon
- ✓ Mac OS X 10.9+ or Windows 7+
- ✓ 4GB RAM
- ✓ 10GB free hard disk space

Heavier7Strings is divided into two installers: one for programs, plugins and built-in effect presets/MIDI patterns; and the other one for samples. Both installers need to be installed to use Heavier7Strings, and the order of them is not fixed.

Mac:

To install Heavier7Strings for the first time, double click on:

- Heavier7Strings-programs-1.7.X-retail-en_US-universal-osx
- Heavier7StringsSamples-1.1.X-osx-installer

Then follow the instructions in them.

Windows:

To install Heavier7Strings for the first time, double click on:

- Heavier7Strings-programs-1.7.X-retail-en_US-x64-win.exe
- Heavier7StringsSamples-1.1.X-samples.exe

Then follow the instructions in them.

Chapter 2. Registration and Activation

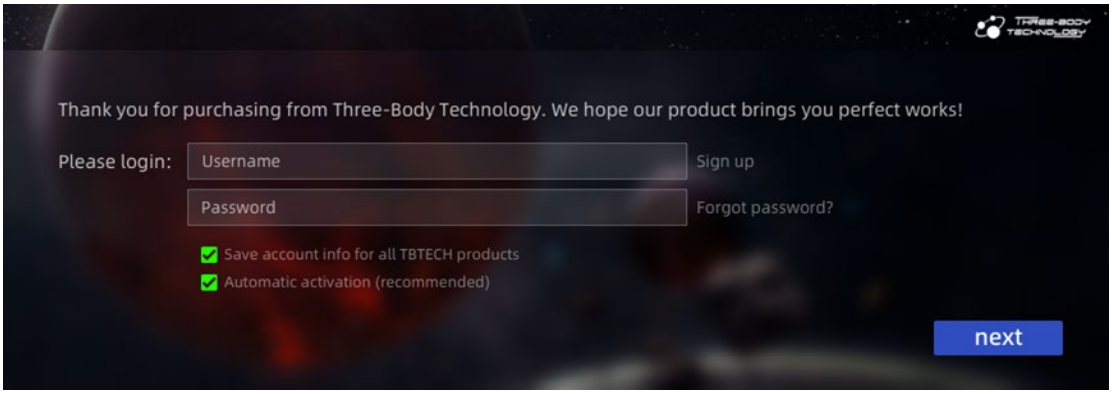
2.1. Binding Serial Number

To ease management of your purchased products, all products require to be registered to a Three-Body Technology account. Please visit https://my.threebodytech.com/register, follow the instructions to create your account.

After creating your account, please visit https://my.threebodytech.com, login to your account and then select the product you purchased in 'My Products' page, enter your serial number to bind it with your account.

2.2. Activation

When first launch the product, you will see the following interface:



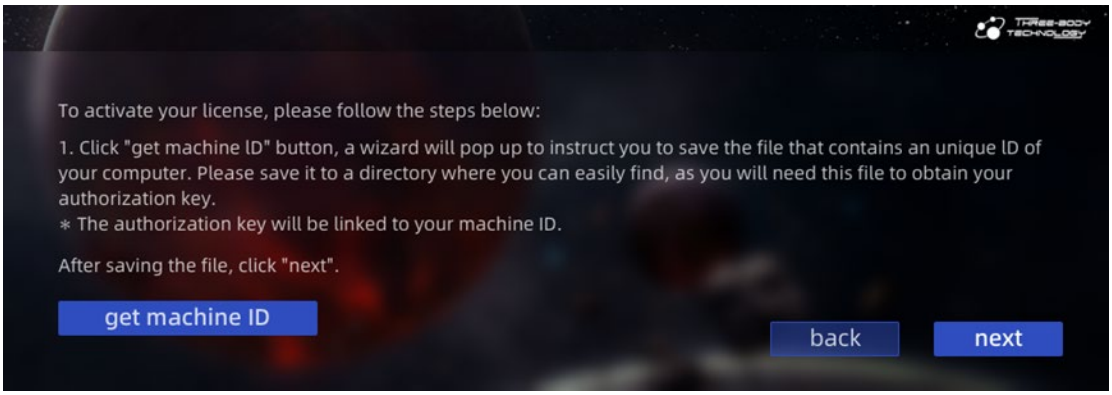
Now you have two choices: automatic activation or manual activation.

Automatic Activation

Please correctly enter the username and password of your Three-Body Tech account that you have bound your serial number with, keep 'automatic activation' checkbox selected, then click on 'next' button. If your computer has Internet connection, your product will be activated automatically online.

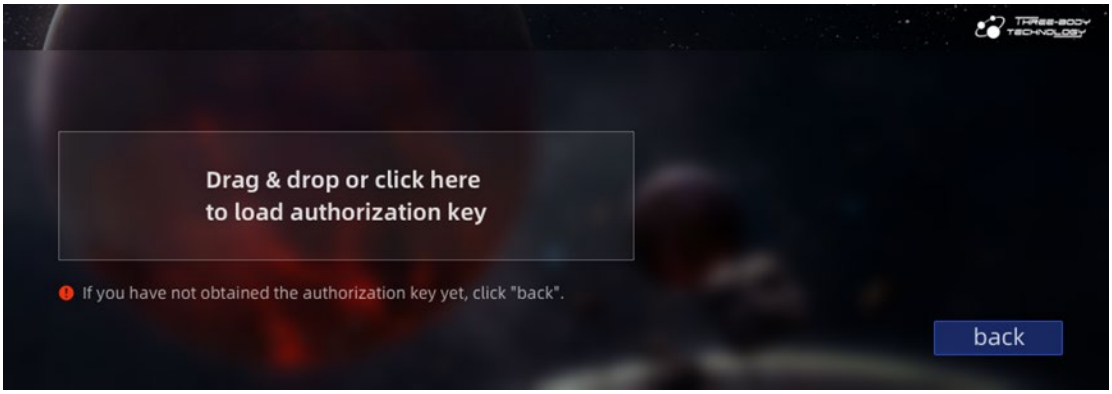
Manual Activation

If your computer does not have Internet connection, you can activate the product manually. Deselect 'automatic activation' checkbox and then click on 'next' button, you will see the following interface:



Now please follow the steps below to proceed manual activation:

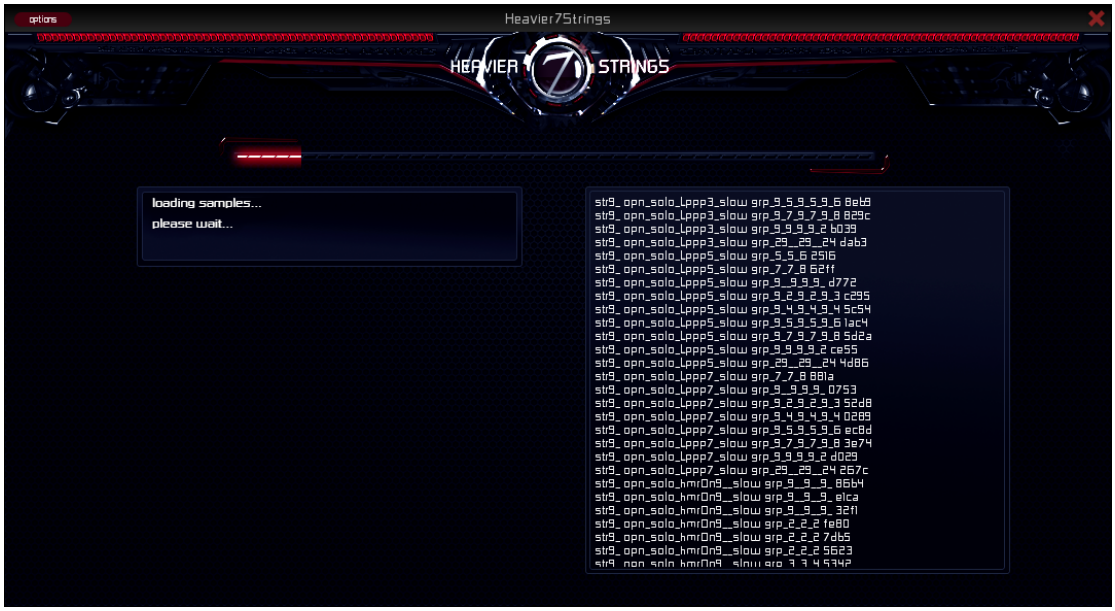
- First, click on 'get machine ID' button, to save a file that contains information to identify your computer.
- Copy the machine ID file into a removable drive. Take it to a computer that has Internet connection,
- Visit https://my.threebodytech.com on your online computer, login to your account and then select the product you want to install in 'My Products' page. Select an available serial number, then upload the machine ID file in 'Manual Activation' section below.
- The website would hint you to download a file that contains your authorization key. You may need to save it to a removable drive to take it back to the computer that needs manual activation.
- Return to the computer installed with the product, click on 'next' button, you will see the following interface:



Copy the file that contains your authorization key to this computer, and load it here.

No matter you chose to activate automatically or manually, when you see 'Thanks for registration', the product is activated successfully and ready to be launched now!

Chapter 3. Loading



After successful registration, the loading page will be shown each time the first instance of *Heavier7Strings* is opened in your DAW. It will tell you the current loading progress of the disk-stream buffer.

As the amount of buffer data is large, all *Heavier7Strings* instances in one host DAW progress shares one same buffer. In result, adding additional instances will not lead to additional buffer loading time. The buffer will start loading when the first *Heavier7Strings* instance is created, and will be released when the last instance is released.

Chapter 4. Overview

After *Heavier7Strings* is successfully loaded, everything will light up. This means *Heavier7Strings* is ready to rock! This chapter explains some technical details of *Heavier7Strings*.

4.1. The Tonal/Harmonic Reconstruction and Shaping (THRASH) DSP Engine

This is where the magic happens. Our THRASH DSP engine is designed to provide a rich and authentic sound, while maintaining flexibility. Adjustment of tension, length, or using varied techniques to pick the strings causes the vibration to change slightly. The THRASH DSP engine enables you to adjust the harmonic content of the source materials freely, such as string-bending and resonance between strings. This is how *Heavier7Strings* achieves such a rich sound.

4.2. Vibrato Simulation

The vibrato performance imparts eternal charm to guitar playing. Many guitar players apply diverse vibrato skills to fuse with distinct rhythm, style, and tempo various songs. However, the imitation of vivid vibrato performance is challenging for virtual instruments. Many of them simply modulate pitch with sine-LFO to simulate vibrato. Although this method ease the modification of vibrato depth and frequency, it fails to produce authentic outputs. While some others use pre-recorded vibrato samples that are realistic but unable to adjust.

In order to provide both realistic and controllable vibrato in *Heavier7Strings*, we recorded and extracted the amount pitch shift along time when playing vibrato performances on real guitar, and use this data to modulate regularly played samples at playback. In addition, the THRASH DSP engine simulates volume and tonal change caused by pushing on strings. By combining these techniques, *Heavier7Strings* achieves both realistic playback and user adjustable vibrato depth & frequency.

When performing vibrato, guitar players tend to increase vibrato depth when playing bass strings, and smaller depths in treble strings. Besides artistic treatments, pitch changes are different under same vibrato force due to the difference on tension and thickness of guitar string. Heavier7Strings takes these characteristics into account: for same amount of vibrato modulation, lower pitch would receive deeper pitch change than higher pitch.

4.3. Heavier7Strings Mapping System

Heavier7Strings is designed to allow playing from keyboards as well as mouse composers to write guitar parts quickly and flexibly. Many refined designs have been made to map guitar performance to MIDI keyboard. This includes auto or manual assignment of fret positions, strings, and techniques. There are many ways to configure *Heavier7Strings* to best match every users' unique playing style. In this manual, you will learn how to get the most suitable mapping through MIDI messages or adjustment of parameters in the GUI later.

4.4. Disk-streaming Buffer

In order for the sampler to locate and read samples from the hard disk as quickly as possible, *Heavier7Strings* preloads some data of each sample into memory to raise read-speed. The more data you load into the memory, the faster speed of sample reading achieves, and less need for a high-speed hard disk, and vice versa. Multiple instances of *Heavier7Strings* share one disk stream buffer, thus loading arbitrary number of plugin instances with in same host DAW do not require expanding buffer size. Samples are loaded to memory when the first instance is opened, and releases memory usage when the last instance is closed, regardless of how many instances you use.

4.5. MIDI Mapping

The later chapters in this manual assumes that you are already familiar with the MIDI standard, and this chapter provides a brief overview on it.

MIDI contains a variety of messages, including Note On and Note Off describes key press and key release. MIDI also contains 128 continuous controllers (MIDI CC) that can be mapped to various parameters. Some of them have default assignments, as in the case of CC #64 controller which is normally used to control the sustain, while others do not. Like many virtual instruments, *Heavier7Strings* doesn't respond to standard MIDI controller messages, because they can be assigned to different functions freely. Apart from the standard 128 MIDI controllers, it also includes pitch-bend messages and after-touch messages.

Most parameters of *Heavier7Strings* can be controlled by MIDI CCs. You can also remap the configuration in almost any way you like. MIDI CC assignments can be found beside every parameter widgets of the GUI, which is a red rectangle with numbers inside. Please refer to the default MIDI CC unless otherwise specified.

To remap a parameter to a new CC number, click on the MIDI CC box and set the new MIDI CC number in the pop-up window. All unassigned MIDI CC numbers may be reassigned to other parameters. CC64 is special: if it is not assigned, it controls sustain pedal; once it is assigned to other use, the sustain pedal is completely uncontrolled.

Parameter automation from host DAW

Most parameters of *Heavier7Strings* can be automated by the host. Please avoid sending both host and MIDI CC automation to a single parameter, as this may cause both control events to be sent to the plugin and creates unwanted effects. Please check the instructions for your host if you are unsure how to use automation.

4.6. Doubling and Output Channels

Doubling of Electric Guitars

Recording the same part twice on the same guitar is an commonly used recording technique: separate panning to left and right channel creates slight variations in pitch and timing that

results in wider guitar sound. This is frequently seen on heavy metal songs.

Heavier7Strings provides a doubling function to simulate two guitars playing the same parts in the left and right channels respectively. Comparing with "fake" doubling that simply copy one track and delay some milliseconds or slight detune, our "real" doubling is to flawlessly reproduce the same parts twice: with slight adjustment in pitch, and a minor change in rhythm and different sample usage, each note played through the left channel is different from the note of the right channel. When we say doubling, it is like two authentic guitar players, each playing your riffs through a separate channel.

Output Channels of *Heavier7Strings*

However, the doubling function may not work properly when connecting *Heavier7Strings* with other guitar effect plugins. When doubling is enabled, the stereo output of Heavier7Strings' channel contain slightly different performances from two guitars, but many guitar effect plugins have only one mono input. In this instance, the input might combine both left and right channels to give unwanted effects such as phase cancelling.

To avoid this issue, we provide three pairs of stereo output channels for *Heavier7Strings*, in total of 6 channels. Their functions are described below:

- Channels 1 and 2 are master output channels. When doubling is turned off, these two channels produce identical output; when doubling is turned on, guitar #1 is on channel 1, and guitar #2 is on channel 2.
- Channels 3 and 4 are exclusively for guitar #1. When doubling is off, the sound image is on center of this stereo channel pair; when doubling is on, the sound image of this guitar is on left.
- Channels 5 and 6 are exclusively for guitar #2. When doubling is off, both two channels have no output; when doubling is on, the sound image of this guitar is on right.

Hence if you want to connect each guitar to effect plugins that only have mono input, you can merge channels 3 and 4 (or 5 and 6) into a mono channel, and connect it to effect plugin's mono input.

Different from most effect plug-ins, our built-in effect rack always works on stereo mode, including AMPs and cabinets. Due to our day and night hard work, they still has high efficiency though work load is doubled.

4.7. Delay Compensation

Delay Caused by Chord Detect Time

Heavier7Strings waits a few milliseconds to correctly detect the chords played by users, and all notes played within this time period are considered to compose a chord. This delay is inevitable. If you found this delay is perceivable and don't want it, you can turn down chord detect time; or add a negative delay time to the MIDI track that is connected to *Heavier7Strings*, if your host DAW supports it.

Delay Found in Real-world Guitar Playing

In real world guitar playing, there's a small time gap between the pick touches string and the string starts to vibrate. The time difference is about 10-50ms. Because there is already some low-level noise prior to the string beginning to vibrate, we have to keep it, and this induces time delay.

Based on your requirement, you can try to add negative delay time between 10-50 ms manually. Most hosts provide the ability to adjust negative track delay. Also, you can change this value in *Heavier7Strings* settings panel, please refer to section 5.7 for details.

Automatic Delay Notification to Host DAW

Since version 1.1.2, *Heavier7Strings* plugin notifies host DAW for its latency, so that the host DAW has a chance to automatically apply latency compensation.

The performance of this function differs on various host DAWs. When the notified latency changes, some DAWs instantly respond to it, while other DAWs may need restart playing, reload *Heavier7Strings*, or even restart the whole DAW. If you feel this function is insufficient, please manually modify track delay time.

Chapter 5. User Interface

The *Heavier7Strings* UI is designed to give you an overview and visual feedback of parameters as they change. The UI consists of multiple pages and modules, and this chapter will bring a tour among them.

Most GUI elements can be operated as they looks like: buttons can be clicked or switched, knobs and sliders can be dragged. Besides regular operations, we provide following special operations:

- Mouse **double click** on knobs, sliders and toggle switches would reset to their default value.
- Mouse **dragging** on knobs and sliders while pressing **Ctrl** key would make value being modified more slightly, allowing you to fine-tune their values.

5.1. Guitar Module

Volume



This parameter functions the same way as the volume knob on a real guitar: The higher the value, the louder the volume. Tune on this volume knob would have subtle changes in tone, which is different from the master volume slider in mixer section.

Tone

This is the simulation of tone knob in real electric guitars, which is generally a low-pass filter.

Pickup switch

This switch is similar to the pickup on a real guitar. It has three tap positions to switch between neck, mix, and bridge pick up. Different positions yield distinct sounds.

If you are not familiar with the effects of each pickup switch, here is a simple explanation: sounds become sharper as the switch approaches the bridge, and deeper when it's closer to the neck. We recommend using the bridge pickup for rhythm guitars and the neck pickup for solo.



Sustain

Finally, unlimited sustain on a virtual guitar! This function enables your performance to exceed mere guitar sounds. Turn it up to max and your notes will almost never end. Or perhaps reduce it a bit and adjust it to the length you prefer.

Mod

It might not be a good idea to sustain the same note for 10 seconds without any variation. Sometimes you want to add a vibrato or note bending, but if that's not enough, we created a mod knob. By increasing your guitar's second or third harmonic overtone, it creates a “dream-like” sound.

Muting Pressure



When a real guitar player plays palm-muting, the extent of muting can be varied, producing different sounds. This function in Heavier7Strings provides imitated muting pressure by DSP.

5.2. Guitar Performance Control Panel

Attack



Controls the attack volume. A lower value will sound like a “fade-in” at the beginning of a triggered note, and a higher value leads to a stronger attack.

Palm muting volume

It is hard to find the sweet spot between palm muting and open string playing's volume ratio, especially when using strong distortion effects. However, *Heavier7Strings* includes the option of controlling the palm muting volume using the P.M. Vol knob. The default ratio is 50%.

5.3. String Vibration Module

Tension



Many guitar players creates different sounds by using different strings. Although we cannot physically change a virtual guitar’s strings, our THRASH DSP engine can virtually adjust *Heavier7Strings*’ string tension and cause subtle variations in timbre. When low tension is applied, sounds become flabby and loose; while under higher tension, the sound becomes brighter.

Resonance

When you pluck a string on your guitar, the other strings all resonate to some extent (except when the player mutes other strings). Resonance is quite low, but it interferes with the overall sound more or less, and might not always desirable. Turn the knob lower for less resonance, and the guitar sound will be clean but slightly unrealistic, whereas turning the knob to max will result in excessive resonance that muddies the sound. In the end, it's all up to you.

5.4. Mixer

You can adjust the master volume, pitch, and the volume of each 7 strings in the mixer module.



Master volume

The master volume in this panel is different from the volume knob on the guitar body. It's just an output level adjustment without any physical or circuit modeling.

Pitch

Pitch adjustment of -12 to +12 semitones.

Tune

This is a slight adjustment in pitch from -99 to +99 cents. It is not the same as real world guitar tuning, but just a minor adjustment in pitch and does not affect the tone. It also has no connection with the string instruments modeling engine.

String volume mixer

This controls the output volume of each string. You might notice that the numbers of the 7 sliders are reversed. That's because the 1st string of the guitar has the highest tone while the 7th string has the lowest. This arrangement fits the user's habits, low frequencies on the left, and higher frequencies on the right.

5.5. Doubling

Press down this button would make *Heavier7Stings* playing two slightly different guitars on same input, thus producing wider output sound. See section 4.6 for more details.



5.6. Preset Management

The preset file extension for *Heavier7Strings* is ".h7s". You can use any name with this extension to read the parameter settings from the file, including all parameter values, binded MIDI CC number of the parameters, and the whole effect rack. It also includes chord-detect time, but not include the disk-stream buffer size, because every instance of *Heavier7Strings* shares the same drive buffer and the parameter has a single global value but not difference for each one.



Load

Press the Load button and select a valid *Heavier7Strings* preset file. If the file you have chosen is an invalid preset format or has been damaged, you will get a prompt. Meanwhile, *Heavier7Strings'* status will remain unchanged unless you press the Load button.

Save

When you press the save button, a pop-up file selector will appear. You can choose any place you like to save the file.

Advanced Preset Management

Click the Settings button in the upper left corner and you will see a pop up window. A *factory reset* will restore all *Heavier7Strings* settings to the initial settings of a fresh install. You can reset your current status and parameters to default by revert to factory preset. Saved patches will not be affected.



By clicking *Save as Default*, the current parameters and values will be saved as a default preset and loaded automatically when an instance of *Heavier7Strings* is created.

5.7. Additional Settings

This section describes several parameters that are configured in **settings** panel. These parameters affect Heavier7Strings' low-level working mode, so you should modify them with caution.

Option Lock

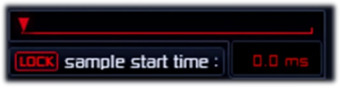
Some options have a **LOCK** button aside of it. If you press down this button, the corresponding option will not be changed when loading presets.

Chord Detect Time



This parameter adjusts the amount of waiting time for notes being recognized as a chord. A longer chord detect time would make notes easier to be considered to be chords but induces longer delay time, and vice versa. For more details, please see section 4.7.

Sample Start Time



This parameter adjusts the amount of time before a note's attack part. Turn this value up would reduce delay, but if this value is too high, sounds will be unnatural and like a synth! See section 4.7 for more details.

Legato Release Time



This parameter adjust the amount of tolerant time gap between two notes. If the time gap is smaller than this parameter, two notes will still be considered continuous when legato mode is turned on; otherwise they will be considered as two separate notes, and note-off sample will be played.

If you turn up this parameter too much, it will induce perceivable latency on note-off sample playing.

Disk-streaming Buffer Size



This parameter controls the amount of preload bytes for each sample. A larger amount of bytes would reduce potential sound break caused by slow hard disk, but would also significantly increase memory usage. See section 4.4 for further details.

* This parameter will take effects after you closed all instance of Heavier7Strings in a host DAW, and would affect all of them.

Resampling Quality



The sample rate of Heavier7Strings and your project may be different, thus resampling is required. This parameter adjusts resampling quality, and higher quality would consume more CPU power.

This option will take effect as soon as you change it.

Sus. Pedal off by Default



Since version 1.1.2, the initial state of sustain pedal button can be modified by user. Select this option would make sustain pedal turned off initially.

If you deselect this option, *Heavier7Strings* would perform like a guitar, where notes will keep playing until you play another note; if you select this option, *Heavier7Strings* would perform like a piano, where note-off will stop playing.

Interface Brightness



We made a dark interface to provide metallic style. But if you feel it is too dark, you can adjust this option to make it brighter.

Interface Zooming

If you feel the texts in UI are too small, you can adjust this option to make it larger.



Note: for plugins, it will take affect only when host DAW is closed and restarted, and only closing & restarting all plugin instances may not sufficient.

Chapter 6. Performance Control

6.1. Multi-Note Chords

When multiple notes are played simultaneously, such as a chord, Heavier7Strings will detect these notes and translate them into guitar performance methods, mostly strumming. For example, when you press the power chords like C-G-C, C-F-C or C-G-D etc., Heavier7Strings will automatically trigger the power chord strumming.

One Key Fifth

By clicking on **one key fifth** button, you can play the power chords more easily because it plays C-G automatically when you press down C.



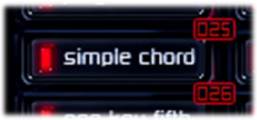
Play Octaves

By clicking on **play octaves** button, when you play two notes within chord detect time (or **one key fifth** is turned on), *Heavier7Strings* will automatically play the root note's high-octave note.



Simple Chord

Heavier7Strings supports many other chords besides power chords, such as C, Cm, Cm7, and virtually every other chord you can imagine. In addition, a chord mapping feature is also provided to play a chord from incomplete pitches. For example, when you press down E-G-B, which triggers the Em chord, the notes played will correspond to "E B E G B E" respectively. When you press down G-B-D simultaneously which triggers the G chord fingering, string pitches correspond to "G B D G B G" respectively.



Sometimes when you press down E-G-B, you may want to play the three notes rather than trigger the E chords fingering. In this case, you can turn off *simple chord* button, and chord mapping function will be turned off.

6.2. Multi-note Triggered Performances

Besides playing chords, *Heavier7Strings* use some fixed pitch combination to trigger specific performances. In later part of this section, these combinations are written on relative pitch intervals, and the *do* refers to the "target" or "affecting" pitch.

Slide-in

Pressing the keys *si* and *do* will make the note played in attack-up performance, which is a slight slide-up suddenly after strike on string.

Release

Pressing the keys *fa*, *sol*, *la*, *si* and *do* triggers an immediate stop on these notes' left edge. This note combination works same with pressing release key whose function is modulated by velocity

value. See section 6.7 for details.

Slide FX

Pressing the keys *do*, *re*, *mi* and *fa* triggers slide FX performance, and it will trigger different slide FX samples by different velocity value. This is same with pressing slide FX key described in section 6.6.

Feedback

Pressing the keys *do*, *#do*, *re* and *#re* triggers feedback performance, and it will trigger different feedback samples by different velocity value. This is same with pressing the feedback key that is described in section 6.13.

6.3. Muting Control

Control Muting Using CC #1

You can switch between picking noise, palm muting, and normal playing by using CC #1. When or before you trigger a note, you can switch to the desired technique by adjusting CC #1 to the corresponding position.

CC #1 Value[1]	Performance
0-37	Normal play
38-79	Palm muting
80-127	Picking noise

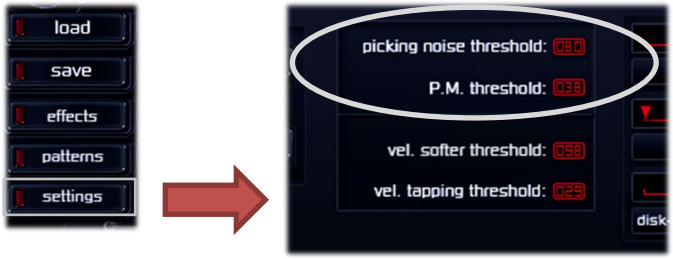
Specifically, when picking noise is triggered, velocity < 115 will get normal picking noise, velocity < 127 will get harmonic picking noise, and full velocity of 127 will get thrash sound.



Velocity Value	Performance
0-114	Normal picking noise
115-126	Harmonic picking noise
127	Thrash noise[2]

Thresholds on Muting Controls

Click the Settings button in the upper left corner to enter the settings page. You can adjust the thresholds of the picking noise and palm muting on this page. You can also control muting using velocity; see the following page for velocity muting.



Muting Pressure



[1] The number given on the left column is by default, CC #1 is changeable.

[2] Thrash is also a type of picking noise, but gives a more "thrash" feel. It's helpful when u play "evil" staff, and it's only available on some frets on the strings 6 and 7.

As described in section 5.1, the pressure of palm muting can be adjusted. Drag this slider to left will increase muting pressure, thus producing dulled sound.

The muting pressure can be controlled by MIDI CC. By default, this function is not binded to any CC, you may use any CC channel you like to bind with it.

In addition, muting pressure can also be controlled together by other parameters:

- click down **CC** button will make muting pressure controlled by muting controller (the one binded to CC #1);
- click down **VEL** button will make muting pressure controlled by velocity;
- click down **SPEED** button will make muting pressure automatically determined by playing speed (the frequency of incoming note-on MIDI events).

6.4. Velocity Control

Play Harder or Softer?

How do we decide to play harder or softer? Sometimes we think that it should always play harder to get a Heavy Metal Sound. This opinion is not always definite: when you play riffs, it's possibly true; but when you playing fast solo or some clean sounds, you may want to use softer velocity, because when you play fast on a real world guitar, there's almost no chance to play hard on all notes.

Velocity Value	Performance
127	pinch harmonic
98-126	play harder
29-97	play softer
1-28	hammer on-pull off

Pinch Harmonic

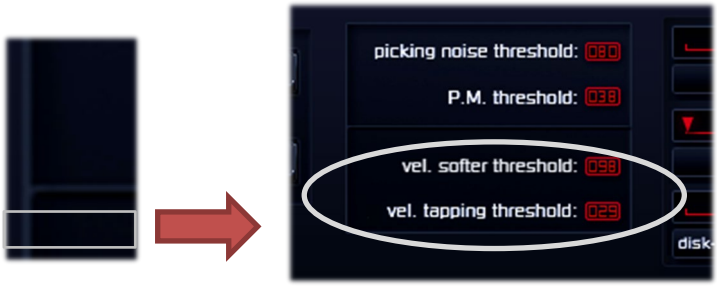
Heavier7Strings will play the corresponding pinch harmonic to the string/fret when velocity is set at 127. A guitar player can play different pinch harmonics on the same fret of the same string, but like most virtual instruments, *Heavier7Strings* records only one of those pitches.

Hammer-on / Pull-off

The hammer-on and pull-off techniques will be triggered when a note is played with a low velocity (1-28). if the pitch of current note is higher than previous one, the hammer-on technique will be triggered. Similarly the pull-off technique will be triggered if the second note's pitch is lower than the previous one. If the note you play is first note of this song and you have triggered hammer-on or pull-off. A hammer-on will play.

Please note that picking noise does not have hammer-on and pull-off techniques, because it is too short.

Thresholds on Velocity Control



Click the Settings button in the upper left corner to enter the settings page. You can adjust the velocity thresholds for tapping and softer.

6.5. Control Muting by Velocity



A MIDI CC can be used to control picking noise, muting, or normal picking. In some cases, the user may choose to use mouse to program guitar parts. In this case, the "velocity muting" function can be a very effective tool. Besides using a separate controller, we provide you the ability to control muting by velocity.

Clicking the **vel. muting** button will disable/override the muting controller, and allows you to use velocity to switch between picking noise, muting, and normal picking. You can easily create a rhythm guitar by adjusting velocity by mouse. Look at the following table to see how to control muting with velocity.

Velocity Value	Performance
1-29	Picking noise
30-83	Mute
84-111	Play softer
112-126	Play harder
127	Pinch harmonic

As shown in the table above, when **vel-muting** is activated, velocity is used to switch between multiple techniques. The trigger ranges of these techniques are so close that it would be difficult to use this mode when playing using a keyboard, so we recommend that you use **vel-muting** button only when you are using a mouse. In addition, you cannot play hammer-on and pull-off in this mode.

6.6. Legato & Slide

Legato Mode



When you turn on **legato mode** by click down this button, newly pressed notes will always stop previous playing notes, thus you always have at most one note (or chord) playing at one time. This is

usually used in solo and rhythm guitar playing.

Legato Slide

You can use a controller to trigger legato slide between two notes. By default, this is controlled by CC #5. When the range is between 0 and 21, *Heavier7Strings* won't perform legato slide. When the range is between 22 and 127, *Heavier7Strings* will play two notes by legato slide. You can also map other controllers to the legato slide control, but as we mentioned in the sustain control, if you map CC #64 to legato slide, you won't be able to control sustain any more.

CC value	Performance
0-21	No legato slide
22-127	Legato slide

It should be noted that palm muted notes do not have slide preference.

Soft Slide and Strong Slide

There are two types of slide: the soft slide and the strong slide in *Heavier7Strings*, and they are controlled by velocity: in lower velocity, *Heavier7Strings* will play soft slide, and in higher velocity, strong slide will be played.

Polyphonic Slide

If you play two or more end-to-end chords, you will trigger polyphonic slides. For example, if you play C and G together, and then D and A by legato slide, the bass C will slide to D and the note G will slide to A.

Polyphonic Auto Slide

A guitar player will unintentionally bring out slight slides when playing chords. We sometimes prefer it and sometimes not. The **auto slide** button in the UI can switch the automatic trigger of these slight slides.



6.7. Sustain Control

When playing a string instrument, the sound doesn't stop until the vibrational energy is depleted. Similarly, a virtual guitar should be designed to continue sounding after triggering a key, unless you use a key switch or other methods for left/right hand muting. This is helpful for users who play chords or very long notes.

For guitar styles like funk, a guitar player will perform muting a specific way to achieve the desired sound. Therefore, a guitar virtual instrument needs an easy method to control muting and the best way is to release the key on the MIDI keyboard to replicate the muting. We like both methods so we included both options!

Controlling Sustain Length with the Sustain Pedal

If the value of the CC #64 is less than 64 (pedal



lifted), *Heavier7Strings* will use MIDI Note Off as the signal for triggering guitar muting when a note is released. If you set the value greater than 64 (pedal pressed down), *Heavier7Strings* will sustain your note regardless Note Off message is received, until users press the stop key or set the value smaller than 64.

Release Notes / Slide Out



There will be 3 different results depends on how hard you press the MIDI key "#G0".

- Press it hard, the playing notes will be stopped by slide off technique.
- Press it moderately, the playing notes will be stopped just like when a player stops playing notes by his/her left hand.
- Press it softly, the playing notes will be stopped by right-hand muting.

Sustain Pedal Button



By default, the action of sustain pedal button is binded to the action of sustain pedal. This is achieved by binding CC #64 to sustain control function. The sustain function in Heavier7Strings works as most virtual instruments: when sustain pedal is pressed down, all note-off MIDIS events will be ignored, and the notes will continue playing until some new note replace its string occupation, or its sample is run out.

Since version 1.1.2, the initial state of sustain pedal button can be changed by user. If you want to have sustain function being completely controlled by MIDI CC, please initially turn off this button (see section 5.7 for details).

The binding of CC #64 and sustain control is special: the CC #64 is always mapped to sustain control whenever it is not mapped to other functions, and sustain control cannot be binded with any other CC.

6.8. Bending / Whammy Bar

You can control the whammy bar and bending using pitch-bend. Many samplers use simple resampling to simulate it, which makes the sound unrealistic. However, *Heavier7Strings* uses the THRASH DSP engine to recalculate the sound made by bending, which improves realism considerably.



You can control the pitch-bend range from GUI. The default maximum value of down bending is set as -12 semitones, which simulates the bending range of a whammy bar.

The default maximum value of up bending is set as +2. Although it can be set to a greater value, the value higher than +7 will

produce unnatural sound and is not recommended.

The pitch-bend controller is different from other MIDI CCs, as its contents are in 16 bit and have much higher accuracy. Due to this uniqueness, we don't allow you to bind this controller to other uses, or bind other CCs to bending function.

At current, the Heavier7Strings UI does not render string bending animation, because our current GUI architecture would take a lot of CPU time to do that. However, we still want to provide some visual feedback when users play left-hand bending, so we simply visualize both left-hand bending and whammy bar bending in whammy bar animation.

6.9. Vibrato

The **vib. speed** slider adjusts the number of vibrato performed in each second. It can be controlled using MIDI CC (by default #18). In addition, by pressing down sync button, vibrato rhythm will be binded to host DAW.



The depth of vibrato has two adjustments: the **vib. depth** slider (and its binded MIDI CC) controls **maximum** vibrato amount. And **vib. cc** (*channel pressure* by default) provides regular intense control: if you give a value of 127, the vibrato amount will be the value specified in vib. depth slider (or the value of its binded CC).

The level vibrato is also visualized in whammy bar animation.

6.10. Double / Unison Bend

Besides the bending or whammy bar technique, a guitar player may play two or more strings and bend them simultaneously. This is called double bend or multi-string bend. Sometimes the guitar player may strike two or more strings and bend only one of them, this is called unison bend. These two techniques cannot be used simultaneously. Fortunately, double bend and unison bend are not used simultaneously in most occasions.



When unison bend is deactivated, *Heavier7Strings* will use the double bend method to deal with double bend / unison bend; and when the unison bend button is activated, no matter how many notes you press simultaneously, altering the pitch-bend will only affect the lowest note. The unison bend button can be automated or controlled by MIDI CC.

6.11. Picking Control

Automatic Control on Up / Down Picking



Heavier7Strings will automatically determine to use up or down picking

when down picking is turned off. If you want as many down pickings as possible, turn on this button. But when playing at a fast tempo, *Heavier7Strings* adopts alternate up/down picking and it's closer to real life scenario.

The default MIDI control is CC #22, but can be changed to any MIDI CC which is not mapped to another parameter. Check next paragraph about how to use MIDI CC #40 for picking control.

Manual Control on Up / Down Picking

In addition to auto up/down picking, you can use a MIDI CC or the repeat key to control up/down picking. The default MIDI controller number for picking control is CC #40. You may also assign it to any other controller if you prefer.

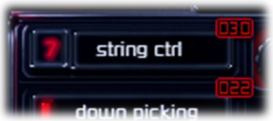
When its value is set at 0, *Heavier7Strings* will switch up/down automatically according to the status of the down picking-button. When its value is between 0-23, *Heavier7Strings* will remain down-picking to play notes. When the value is greater than 23, *Heavier7Strings* will remain up-picking to play notes.

6.12. String and Fret Position Control

String Control



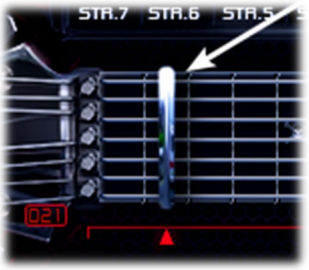
If manual string control is not set, Heavier7Strings will decide which string to play on, based on pitch being played and fret position preference. When you press down any note, the mapping system will select a suitable string and fret to play this note.



If you want to decide which string to play on, you can press down **string ctrl** button, and the label of the button on left will be changed from "A" to a number indicating current preferred string. Notes will be played on this string as much as possible, unless it is out of string's pitch range. Clicking on this number button will switch between all seven strings.

The preferred string can be controlled using MIDI CC (#30 by default). The range of 128 CC values are divided into 8 parts, each mapping to auto string control and manual prefer string 7 to 1 correspondingly.

Fret Position Control



You can choose the fret position you prefer, by dragging the "guitar capo" on the guitar neck. Notes are played on and above the frets specified by this widget, unless the pitch is out of range.

Fret position preference can also be controlled using midi CC to control it (#21 by default) or automated by the host.

6.13. Keyboard Triggered Performances

Slide FX



Touch this key to trigger slide FX. Based on the velocity it will trigger different slide FX samples.

Using certain low range or high range keys as special performance, such as the trigger notes of slide FX is pretty common in virtual instruments, but the problem is the low range or high range keys are too far away from other keys and it's difficult to find on the piano-roll window. That's why we also give you an easy way to trigger slide FX via "multi-key". When you play any key with its major second, major third and perfect fourth, it will also trigger slide FX. For example, play C3, D3, E3, F3 all together or play D4, E4, #F4, G4 all together at the same time.

Tapping

Hold this key and touch other notes to trigger tapping. When you release tapping key, the tapping state will revert back to normal.



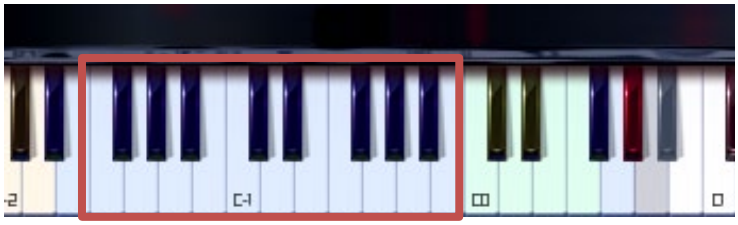
Tremolo

Hold this key and touch notes to trigger tremolo. When you release tremolo key, the tremolo state will revert back to normal.



Inspiration Key

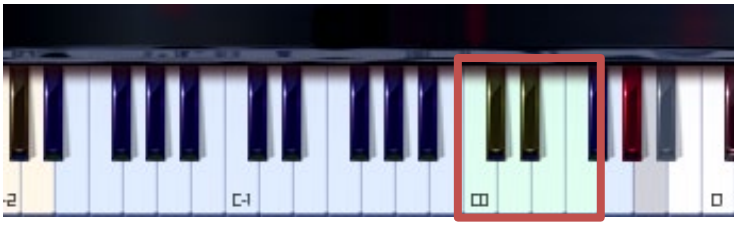
When you play a real guitar, there are so many performances such as bending, slide-in, legato-slide whammy bar. If you don't have an easy way to trigger all those performances in a virtual guitar, you'll have to draw complex MIDI CC curves to simulate them. So we make inspiration keys to directly trigger those performances. All performances here are real, recorded samples.



There are a total of 19 inspiration keys, each one of them can triggers one specific performance. It's hard to write down what all those 19 performances are, you have to listen to it by yourself.

Hold on one inspiration key and touch a note, you will get a specific performance on the note you are touching.

Repeat Key



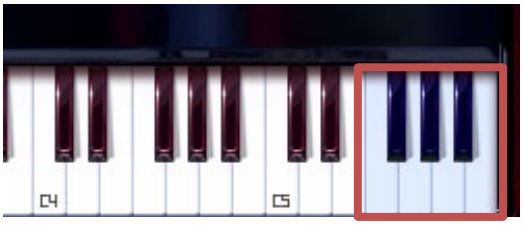
Pressing repeat keys will trigger a new note with same pitch. There are 3 sets of repeats keys: C0 and #C0 will trigger picking noise, D0 and #D0 will trigger muting play and E0 and F0 will trigger normal play.

Feedback

Touch this key to trigger Feedback. Based on the velocity it will trigger different Feedback samples. We also give you an easy way to trigger Feedback via "multi-key". When you play any key with its major second, minor third and major third, it will also trigger Feedback, see section 6.2 for details.



Natural Harmonic / Noise Key



These seven keys shown above from F5 to B5 are all mapped to natural harmonic samples. In addition, although keys above B5 are not shown in GUI, they also map to noise or natural harmonic samples.

Pickup Switch Key

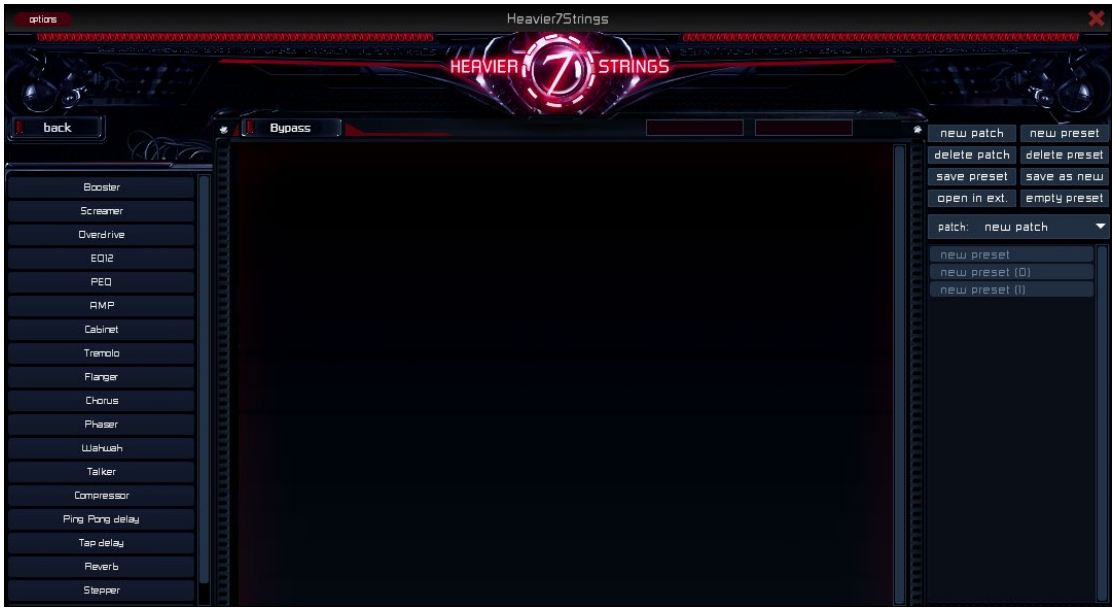
The leftmost 3 keys in GUI (C-2, #C-2 and D-2) control pickup switch function.



Chapter 7. Effect Rack

7.1. Overview

It is rare to play electric guitars only using "dry" sound, and a complete guitar tone is always processed by effects and AMPs. Hence we provide effect rack with commonly used effect components of professional sound quality, such as AMP, cabinet, compressor, etc.. The free build-in effect rack turns *Heavier7Strings* into a complete electric guitar solution.



Select effect

Click and drag the effect you'd like to use from the list on the left to the main screen. You can add the same effect 3 times.

Bypass all effects

You can simply click **Bypass** button in the upper left corner, then *Heavier7Strings* will bring you pure and clean sound.

7.2. Preset Management

The effect rack is composed of many effect components, each have tens of parameters. It is obviously grueling to setup from empty rack every time, so we provide functionalities to store the effect component arrangement and parameters to a file called effect **preset**. The panel on the right side of effects window is to manage effect presets.



New patch: create a new patch. A patch is like a folder where different set of presets are stored.

Delete patch: delete current selected patch. All presets in the patch will also be deleted.

Save preset: save the configuration and settings of current preset.

Open in ext.: open the folder containing this preset by file explorer (on Windows) or finder (on Mac).

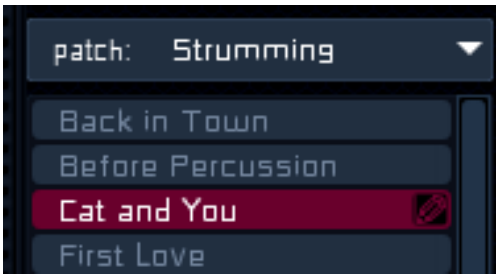
New preset: create a new preset under selected patch.

Delete preset: delete current selected preset.

Save as new: after changing the settings in one preset, save it as a new one, so you can keep both the new one and the original.

Empty preset: remove all effects in current preset.

Rename: you can rename a preset by clicking on the pen button on right side of current selected preset.



7.3. Compressor



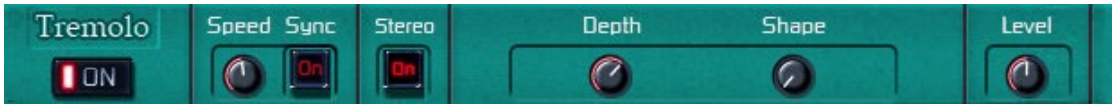
Description

A compressor can be used on both clean sound and post-effects sound. It comes with side-chain low-pass, high-pass and peak-gain filters.

Controls

- **Lookahead** delays the input signal but leaves detection signal non-delayed, and uses the non-delayed signal to drive the compression of the delayed signal. Applying this function could start to raise the extent of compression before a strong attack occurs, which could achieve optimum compressing effect and avoid unnatural sounds.
- **Thr.** Sets the threshold of the signal at the input of compressor. Turn down for more compression.
- **Ratio** controls the amount of signal that is attenuated when compressor is in action. The higher the ratio, the greater the amount of compression, and the more dynamics get evened out.
- **Attack** sets the time need for compressor to engage. Longer attack time retains more original dynamics of a signal.
- **Release** sets the time need for compressor to return to normal state after signal falls below the threshold. Short release times means compressor tracks slight level changes, thus may producing a choppy sound.
- **Level**: the master volume.
- **Low-Cut** sets the cutoff point of the high-pass filter of detection chain, higher value will result in avoiding compress low frequency sound.
- **High-Cut** sets the cutoff point of the low-pass filter of detection chain, lower value will result in avoiding compress high frequency sound.
- We also have an one band EQ which has **Freq., Q** and **Gain** to process detection signal. You can set the freq. you love, compressor will focus on compress those signal first.

7.4. Tremolo



Description

This component provides a periodic amplitude change that creates a pulsing effect.

Controls

- **Speed** sets the modulation tempo, and turn on **Sync** button will synchronize the tremolo rate with host tempo.
- **Stereo** activates a stereo tremolo effect, when the level increases in one channel, it decreases in the other one and vice-versa.
- **Depth** controls the tremolo effect depth.
- **Shape** sets the shape of modulation curve. When set to 0, modulation curve is a sine wave. When set to 1, modulation curve is a rectangular wave.
- **Level** sets the master volume.

7.5. Wah



Description

A typical wah-wah effect.

Controls

- **Sync** will synchronize the modulation speed with host tempo.
- **Depth** controls the depth of modulation.
- **Speed** controls the tempo of modulation.
- **Mix** sets the ratio of wet and dry sound. Turn it up for more processed sound.
- **Level**: the master volume.

7.6. Talker



Description

Being processed by this component, sound will obtain tones like human talking. This effect is based on periodic shifting on resonance filters.

Controls

- **Speed** controls the modulation tempo, and **Sync** will synchronize the modulation period with host tempo.
- **Depth** controls the depth of modulation.
- **Mix** sets the ratio of wet and dry sound. Turn it up for more processed sound.
- **Level** sets the master volume.

7.7. Phaser



Description

A "colorful" phaser effect based on all-pass filter.

Controls

- **Speed** controls the tempo of the LFO causing the phasor modulation, and **Sync** will synchronize the modulation speed with host tempo.
- **Stereo** sets the width of sound. When turns on, the effect will produce a wider sound.
- **Depth** determines the intensity of the phasing.
- **Feedback** controls the amount of processed sound being transmitted back to input. Turn this up to obtain "stronger" effect.
- **Freq** controls the base frequency around which the LFO modulation will take place, and **Freq Width** controls the width of LFO modulation.
- **Mix:** sets the ratio of wet and dry sound. Turn it up for more processed sound.
- **Level:** the master volume.

7.8. Chorus



Description

A delay-based effect unit that generates chorus-like sound.

Controls

- **Speed** controls the tempo of the LFO causing the phasor modulation, and **Sync** will synchronize the modulation speed with host tempo.
- **Stereo** sets the width of sound. When turns on, the effect will produce a wider sound.
- **Depth**: controls the depth of modulation.
- **Delay**: sets the amount of delayed time between input and processed audio.
- **Mix**: sets the ratio of wet and dry sound. Turn it up for more processed sound.
- **Level**: the master volume.

7.9. Flanger



Description

Yet another delay-based effect unit, but it creates "flanging" frequency modulation.

Controls

- **Speed** sets the modulation tempo of the selected effect mode.
- Turn on **Sync** button will synchronize the tremolo rate with host tempo.
- Turn on **Stereo** button will create two opposite flanged sounds in left and right channel.
- **Depth** controls the depth of modulation.
- **Delay** sets the amount of delayed time between input and processed audio.
- **Feedback**: turn this up will strengthen the "sweeping" sounds.
- **Mix**: sets the ratio of "wet" and "dry" sound.
- **Level**: the master volume.

7.10. Stepper



Description

A simple stepping-in sequencer that can periodically control sound image position, volume and frequency of a low-pass filter.

Controls

- The red **Pan** bars control the period of stereo position. The bars range from leftmost to rightmost channel.
- The pink **Vol** bars control volume period. The bars range from off to 0 db.
- The yellow **Filter** bars control low-pass filter frequency. The bars range from the value specified by **Filter Freq.** knob to 20000 Hz.
- **Depth** knob in **Pan** panel controls the depth of pan modulation.
- **Depth** knob in **Vol** panel sets the master volume.
- **Filter Depth** controls the depth of filter modulation.
- **Filter Freq.** controls the base frequency of the filter.
- **Filter Q** controls filter sharpness.
- **Clock** controls the speed of Stepper.

7.11. Screamer



About

Screamer is a modeled effect based on a classic overdrive pedal, it produces overdrive sound from warm to intense. We adjusted its circuits modeling to make it more suitable for heavy metal and rock.

Controls

- **Drive** controls the amount of overdrive. Turn clockwise for more distortion.
- **Tone** sets the ratio of high frequency to low frequency. Turn clockwise raises the high frequency, turn counterclockwise lowers it.
- **Level:** the master volume.

7.12. Overdrive



Description

Overdrive is another overdrive effect that has different sound than Screamer.

Controls

- **Drive** controls the amount of overdrive. Turn clockwise for more distortion.
- **Level**: the master volume.

7.13. Boost



Description

Boost provides sub-woofer frequency and low/high frequency gain. You can use it as a boost before distortion unit, or use it as tone controller after distortion unit.

Controls

- The **Bottom** knob enhances ultra-low frequency response. You will love this if there's no bass player in your band.
- The **Low Freq** knob adjusts the low frequency response.
- The **Low Gain** knob adjust the gain of low frequency.
- The **High Freq** knob adjusts the high frequency response.
- The **High Gain** knob adjust the gain of high frequency.
- **Level** sets the master volume.

7.14. Utility



Description

Utility allows you to adjust stereo width, volume and delay.

Controls

- The **Left Delay** and the **Right Delay** knobs adjust delay of left and right channels.
- The **Left Gain** and the **Right Gain knob** knobs adjust the gain of left and right channels.
- The **Width** knob adjust the stereo width. It only works when you input stereo sound, and won't widen mono input sound.
- **Level** sets the master volume.

7.15. AMP



Description

To make it more adjustable for your tone, we modeled a variety of guitar AMP.

Controls

- The combo box on the left of AMP title switches AMP types. We provided 16 types of AMP.
- **Drive** controls the amount of distortion. Based on the current setting of different AMP, you'll get different adjustable range: some AMP has more distortion, some has less.
- **Low Gain** adjusts the gain of low frequency.
- **Mid Freq** adjusts the center of cutoff frequency for mid gain.
- **Mid Gain** adjusts the gain of middle frequency.
- **High Gain** adjusts the gain of high frequency.
- **Presence** boosts cut for the upper frequency.
- **Level** sets the master volume.

7.16. Cabinets



Description

Sound effects produced by cabinets are essential for a complete guitar tone. The frequency responses from a variety of common guitar speakers that are recorded using different microphone and angles, are used as convolution kernels in this effect.

It's pretty common to use multiple speakers and microphone to record guitar tones. For better simulation, we provide 4 channels of convolution, and each channel can select IR (Impulse Response) from many different types. They can be used to create a tone that combines different convolutions, which allows you to have a variety of tones.

Controls

- **On** buttons switch 4 convolution channels. Please note that the more channels you enabled, the more CPU usage it costs.
- **Delay** adjusts the delay time of every convolution channel. In real world, when using multiple microphone to record, there will be latency between each channel. This knob allows you to simulate this effect. **Please note**: when combining two similar IRs using tiny delay time, problem like phase cancellation may occur easily. Thus gets you unwanted tone.
- **Invert** bottom inverts phase. When you got a phase cancellation issue, this knob may solve the problem.
- **Pan** Controls convolution pan of each channel.
- **Vol** Sets the volume of each cabinet channel.

7.17. PEQ



Description

A 4-band parametric equalizer.

Controls

- **Freq** knobs set the center frequencies for each EQ stage.
- **Gain** knobs set the amount of boost or attenuation.
- **Q** knobs control the filter sharpness.
- **Level**: the master volume.

7.18. EQ12



Description

EQ12 is a 12-band graphic equalizer with bands centered at different frequencies.

7.19. Tap Delay



Description

Instead of a simple delay effect, tap delay provides a unique way to control the time, pan and spacing of separate delay lines.

Controls

- **Time** sets the time between delay taps of the current delay line.
- **Feedback** sets the feedback level from the final repeat to the input of the current delay line.
- **Low-Cut** sets the cutoff point of the high-pass filter of the current delay line. Higher values produce a thinner sound.
- **High-Cut** sets the cutoff point of the low-pass filter of the current delay line. Lower values produce a darker sound.
- **Pan** Controls the pan of the current delay line.
- **Vol** Sets the volume.
- **Depth** knob allows you to detune the delayed sound. A LFO will be used for control the pitch of delayed sound, so that brings a sense of chorus for the current tone. The deeper depth, the more the detuning. If it's too deep… Well, it may out of tune!
- **Rate** sets the frequency of LFO.
- **Mix** sets the ratio of wet and dry sound. Turn right for louder wet sound.

7.20. Ping Pong Delay



About

Ping Pong delay provides a special delay effect. The first delay will be in the left channel, and the second in the right, then back to left, then back to right (or vice versa). The delays would sound like a ping pong match if you were watching from the side of the table, right in front of, and facing the net.

Controls

- **Sync** matches the tempo with the speed of the host.
- **Time** sets the time between delay taps.
- **Feedback** sets the feedback level from the final repeat to the input of the delay line.
- **Low-Cut** sets the cutoff point of the high-pass filter. Higher values produce a thinner sound.
- **High-Cut** sets the cutoff point of the low-pass filter. Lower values produce a darker sound.
- **Depth** knob allows you to detune the delayed sound. A LFO will be used for control the pitch of delayed sound, so that brings a sense of chorus for the current tone. The deeper the depth, the more the detuning. If it's too deep…Well, the tone may be off!
- **Rate** sets the frequency of LFO.
- **Mix** sets the ratio of wet and dry sound. Turn right for louder wet sound.

7.21. Reverb



Controls

- **Room Size** Larger sizes correlate to longer reverb times and a wider stereo image.
- **Damping** Turn right for warmer sound.
- **Width** allows expanding or collapsing the stereo image.

7.22. HammerMetal



About

This is a heavy-metal style distortion.

Controls

- **DIST** sets the amount of distortion.
- **LOW** controls the strength of bass sound.
- **HIGH** controls the strength of high frequency sound.
- **LEVEL** sets the master volume of this module.

7.23. MainTank



About

This is a heavy-metal style distortion.

Controls

- **DIST** sets the amount of distortion.
- **LOW** sets the amount of bass sound.
- **MID FREQ** sets the dividing frequency point between **LOW** and **MID**.
- **MID** sets the amount of middle frequency sound.
- **HIGH** sets the amount of high frequency sound.
- **LEVEL** sets the master volume of this module.

7.24. WahX



About

The drop-down menu allows you to select several types of wah pedals, each with a different sound. The rightmost pedal controls the wah.

Controls

- **Env.** envelope tracker.
- **Peak** peak detection sensitivity.
- **Depth** controls the degree of wah.
- **LFO** low frequency oscillator.
- **Speed** controls the speed of LFO.
- **Depth** controls the depth of LFO.
- **Min** controls the lowest frequency of the wah
- **Max** controls the highest frequency of the wah
- **Q** controls the sharpness of the wah

7.25. PitchPedal



About

Module for controlling pitch changes.

Controls

- **Level** volume.
- **Low** adjust the lowest position of the pitch.
- **High** adjust the highest position of the pitch.
- **Pedal** to control the pitch change, you can set a midi cc number for it.

7.26. Octave



About

Produce two new sounds that are different from the original pitch.

Controls

- **Voice1** controls the pitch of the first sound.
- **Mix1** controls the volume of the first sound.
- **Voice2** controls the pitch of the second sound.
- **Mix2** controls the volume of the second sound.
- **Level:** controls the volume of two sounds.

7.27. DriveSound



About

Modeled from a classic overload module.

Controls

- **Drive** degree of distortion.
- **Tones** set the tone, turn right for higher high frequency and lower low frequency, turn left for higher low frequency and lower high frequency.
- **Level** output volume.

7.28. SuperDrunk



About

Modeled from a classic overload module.

Controls

- **Drive** degree of distortion.
- **Tones** set the tone, turn right for higher high frequency and lower low frequency, turn left for higher low frequency and lower high frequency.
- **Level** output volume.

7.29. Metalball



About

Modeled from famous heavy metal guitar AMP.

Controls

- **Drive** adjusts the preamp distortion.
- **Pwr Drive** adjusts the poweramp distortion.
- **Low Gain** adjusts the gain of low frequency.
- **Mid Freq** adjusts the center of cutoff frequency for mid gain.
- **Mid Gain** adjusts the gain of middle frequency.
- **High Gain** djusts the gain of high frequency.
- **Presence** boosts cut for the upper frequency.
- **Level** sets the master volume.

7.30. GoldenPlate



About

Hall type reverb

7.31. DualRectangle



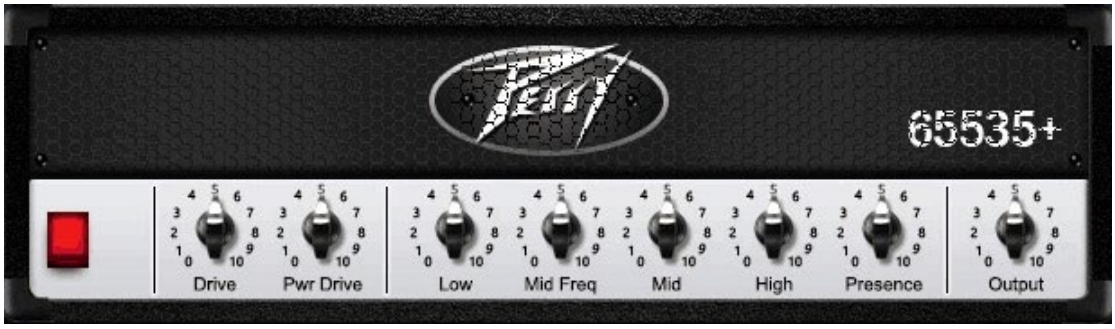
About

Modeled from famous heavy metal guitar AMP.

Controls

- **Drive** adjusts the preamp distortion.
- **Pwr Drive** adjusts the poweramp distortion.
- **Low** adjusts the gain of low frequency.
- **Mid Freq** adjusts the center of cutoff frequency for mid gain.
- **Mid** adjusts the gain of middle frequency.
- **High** djusts the gain of high frequency.
- **Presence** boosts cut for the upper frequency.
- **Output** sets the master volume.

7.32. Perry



About

Modeled from famous heavy metal guitar AMP.

Controls

- **Drive** adjusts the preamp distortion.
- **Pwr Drive** adjusts the poweramp distortion.
- **Low** adjusts the gain of low frequency.
- **Mid Freq** adjusts the center of cutoff frequency for mid gain.
- **Mid** adjusts the gain of middle frequency.
- **High** djusts the gain of high frequency.
- **Presence** boosts cut for the upper frequency.
- **Output** sets the master volume.

7.33. Solo1000



About

Modeled from famous heavy metal guitar AMP.

Controls

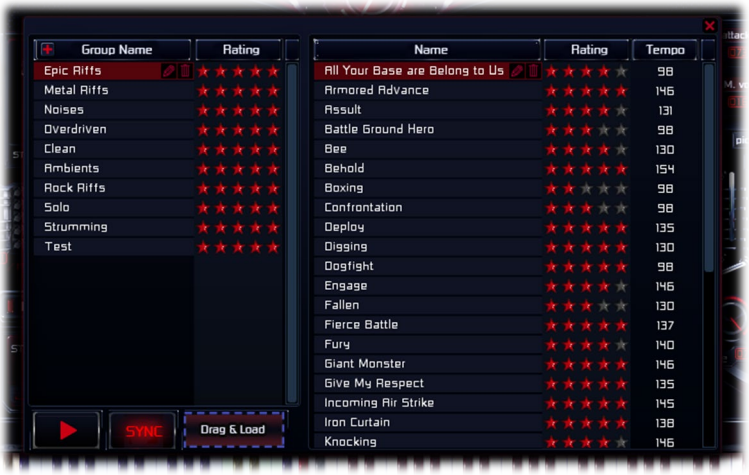
- **Drive** adjusts the preamp distortion.
- **Pwr Drive** adjusts the poweramp distortion.
- **Low** adjusts the gain of low frequency.
- **Mid Freq** adjusts the center of cutoff frequency for mid gain.
- **Mid** adjusts the gain of middle frequency.
- **High** djusts the gain of high frequency.
- **Presence** boosts cut for the upper frequency.
- **Output** sets the master volume.

Chapter 8. Patterns

8.1. Overview

Patterns are predefined bundles of short rhythm, and instrument and effect rack presets. You can use patterns to ease your work on music arrangement. Furthermore, by using patterns, you can take a brief tour on what *Heavier7Strings* can perform.

To use patterns in *Heavier7Strings*, click **patterns** button on the left of main user interface, and an embedded window will pop up like this:



The patterns window has three major parts: the *pattern groups list* on the left that organize patterns in a more clear way; the *patterns list* on the right of window that display currently selected group; the *pattern preview panel* on bottom left corner.

Pattern Group Management

When you select a line in the *pattern groups list*, it will update the *pattern list* on right with current group's contents. The list has two columns: *Group Name* column, and *Rating* column that shows your preference of each group in star numbers. The stars can be clicked to be modified.



On the left side of *Group Name* column, there is a button with "+" icon for creating new pattern groups. Clicking on it will generate an empty new pattern group.



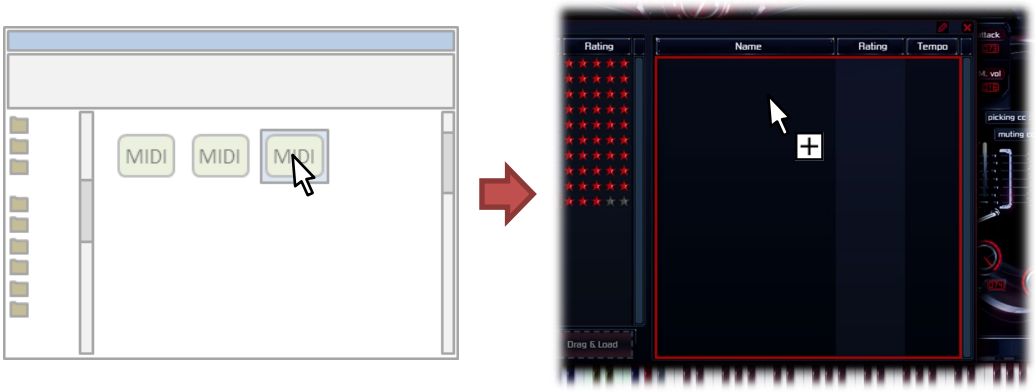
When a group is selected, there will be two additional buttons shown on the right side of it: the button with pen label is used to modify group name, and the garbage bucket label is used to delete this group. As deleting a group will also delete all patterns in it, please use this function carefully.

Pattern Management

The *patterns list* on right side



has similar layout: clickable stars to mark your preference, and two buttons on selected pattern to modify name or delete it. In addition, there is a *Tempo* column that shows playing speed of each pattern.



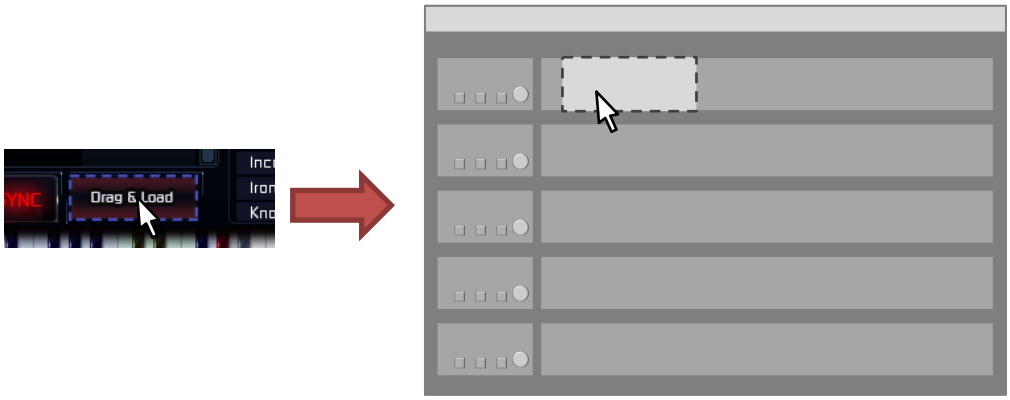
Users can create their own patterns by dragging MIDI files from system file browser into *pattern list*, and a new pattern will be created using contents of the first non-empty track in this MIDI file, together with current *Heavier7Strings*' instrument preset, effect rack configuration and CC binding status.

8.2. Pattern Previewing



- Click on **Play** button that has red triangle icon will start to play current selected pattern. As patterns may have bundled configurations such as instrument presets, rack effects and CC binding, when you start to play a pattern, it will temporarily replace your own stuffs. But don't be scared: when you stop playing or close patterns window, your previous configuration will be restored.
- Click on **Sync** button will enable/disable playing speed synchronization with host. If previewing is not synchronized, it will play using the speed marked on the 3rd column in *pattern list*.

8.3. Using Patterns



To use a pattern, firstly select it in *patterns list*, then click and hold **Drag & Load** widget using your mouse, move mouse cursor into DAW's target MIDI track and release it. If the DAW supports dragging in MIDI files, this pattern's content will be pasted into DAW as a MIDI clip, and the pattern's bundled rack effects and instrument presets will be permanently applied.

Chapter 9. Advanced Features

You can find "ThreeBodyTech/Heavier7Strings" folder in your application configuration folder to set some advanced features.

- In Windows, this folder is located at: *C:\Users\[your_user_name]\AppData\Roaming*.
- In Mac, this folder is located at: *~/Library*.

Most configuration files mentioned in this chapter are plain-text files, and you can edit them using any text editor.

Please note: unless you know exactly what you're doing, don't edit the content in this folder.

9.1. Sample Path

During *Heavier7Strings* installation, you have a chance to select the path to store sample files. However, you may still need to move samples to some other places after installation. For example, when you bought a new large and fast disk, and want to move all big sample files into it. *Heavier7Strings* reads sample files' folder path from file "SamplePath.txt", and you can modify it to point to the path storing sample files.

9.2. Up Sampling

The file "upsample_factor.txt" stores up sampling rate for some rack effects like AMP. By default, the value is 4, which means 4 times up-sampling in that effect unit. The minimum allowed value is 1, which is no up-sampling. You can manually adjust it's to 1, 2 or 4. The greater the number the better the sound quality you'll get, and more CPU usage. If the number you put there is anything other than 1, 2 or 4, *Heavier7Strings* will ignore that value and use 4 as up-sampling multiple.

9.3. Customized Chord Performance Setting

The file "chords_mapping" includes all chords supported by *Heavier7Strings*. You can edit its content to add, edit or delete chords. If there's error in this file, *Heavier7Strings* won't accept your revision, and will restore the content to factory settings.

9.4. Customized Cabinet IR

You can copy wav files to "user_cab_dsp" folder to add your own cabinet IR. Currently only mono sound files with 96000Hz sample rate are supported, otherwise *Heavier7Strings* will ignore it. When valid wav files are added into "user_cab_dsp" folder, a cabinet type with name same as file name will be listed in cabinet effect's combo box.

9.5. Rendering Mode

The user interface of *Heavier7Strings* has two rendering modes: software rendering and hardware-accelerated rendering. The software mode is rendering using CPU that is slow but reliable; and the hardware mode is powered by OpenGL, which is much faster but buggy in some platforms. By default, *Heavier7Strings* uses different mode in different platforms. If you find UI rendering is too slow or incorrect, you can try to switch rendering mode by editing file content of "GPUConfig.txt". This files contains only a single number: the value of 0 means software rendering, and the value of 1 means hardware rendering.

Chapter 10. Appendix

10.1. Default MIDI Mapping

Parameter Name	Default CC Number	Parameter Name	Default CC Number
Doubling	cc20	Resonance	cc15
Vol Knob	cc11	Strumming Speed	cc17
Pickup	cc2	Vib. Speed	cc18
Tone Knob	cc74	Vib. Depth	cc92
Sus. Knob	cc72	Play Octaves	cc24
Mod. Knob	cc71	Simple Chord	cc25
Fret Position	cc21	One Key Fifth	cc26
Down Picking	cc22	Legato Mode	cc27
String Ctrl	cc30	Unison Bend	cc28
Attack Vol.	cc73	Auto Slide	cc29
P.M. mix	cc16	Master Vol.	cc7
Drop-A	cc51	Master Tune	cc3
Tension	cc14		

10.2. Default Chord Mapping

Chord Name[3]	Pitch Interval on Semitone Number	Chord Name	Pitch Interval on Semitone Number
Csus2	0,2,7	C7sus4	0,5,7,10
Cm	0,3,7	C7(#5)	0,4,8,10
Cmaj	0,4,7	Cmaj7(b5)	0,4,6,11
Csus4	0,5,7	Cm(maj7)	0,3,7,11
Caug	0,4,8	Cmaj7	0,4,7,11
Cm(add9)	0,2,3,7	Cmaj7(#5)	0,4,8,11
Cadd9	0,2,4,7	C69	0,2,4,7,9
Cdim7	0,3,6,9	C9(b5)	0,2,4,6,10
Cm6	0,3,7,9	Cm9	0,2,3,7,10
C6	0,4,7,9	C7(b9)	0,1,4,7,10
C9sus4	0,2,5,10	C9	0,2,4,7,10
Cm7(b5)	0,3,6,10	C7(#9)	0,3,4,7,10
C7(b5)	0,4,6,10	Cm7(11)	0,3,5,7,10
Cm7	0,3,7,10	C7(add13)	0,4,7,9,10
C7	0,4,7,10	Cmaj9	0,2,4,7,11

[3] Chords on other keys has same pitch interval.

10.3. MIDI Keyboard Mapping

Pitch Number	Function
0	Switch to neck pickup
1	Switch to mixed pickup
2	Switch to bridge pickup
3	Feedback
4	Slide FX
5-23	Inspiration Keys 0-18
24, 25	Repeat picking noise performances
26, 27	Repeat palm-muting performances
28, 29	Repeat open performances
30	Tremlo control
31	Tapping control
32	Release all
33-88	Common pitches A0-E5
89-95	Natural harmonic at fret 12
96-102	Natural harmonic at fret 7
103-109	Natural harmonic at fret 9
110-127	Noise and FX

Chapter 11. F.A.Q.

How many computers can I activate with one serial number?

Each serial number can activate the product on **three** different computers. You can launch the program on both activated computers at the same time.

Visit Three-Body Technology Online Account System (https://my.threebodytech.com), login to the Three-Body Tech account that you have bound your serial number with, select your product, then you can manage the computers that was activated with your serial number. Activated computers can be deleted (deactivated) in the account system. There is a capacity of available times to deactivate computers on user's end. If the system hints you that the deactivation was failed, please contact us by email with description: support@threebodytech.com.

Why my serial number don't work?

The serial number of Heavier7Strings looks like **xxxx-xxxx-xxxx-xxxx**. If your serial number looks like **xxx-xxx-xxx-H7S-nnnnnnnnnn**, it is a code to use at Best Service. You need to visit Best Service's website, and exchange Heavier7Strings serial number using that code.

What size should I set disk-stream preload?

If you can run *Heavier7Strings* without encountering any problems, then just keep the default values. If you get broken sound like clicks, pops or very short notes, try to set it to a larger value to lower the load on your hard drive. If you set a greater value but problems continue occurring, please check if other applications are occupying the drive at the same time, such as anti-virus or other sampler softwares.

Can Heavier7Strings instances from multiple hosts share sample usage?

No, unfortunately not. Only *Heavier7Strings* instances in the same host can share samples. That's because different host DAWs are in different processes, and sharing memories from multiple processes may cause problems like extra delay or CPU usage. For the same reason, multiple computers, or *Heavier7Strings* stand-alone program and its plugins can't share memory either. If you need to ReWire multiple DAWs together, we suggest loading *Heavier7Strings* into whichever DAW is master host.

How do I set the chord detect time?

You should adjust the chord detect time to suit your playing habits. Please check *section 5.7* for reference.

Can I get more realistic strumming sounds by intentionally induce delays when pressing MIDI notes?

NO! *Heavier7Strings* will play the strumming automatically, like a real guitar when chords are detected. If users create a delay on purpose, it will interfere with the chord- detector, so we don't suggest you do so!

When using the doubling button, instead of getting a wider sound, I got something like phase cancellation.

In real world, an electric guitar only has mono output, thus many guitar effect plug-ins and hardware only accept mono input. However, when doubling is turned on for *Heavier7Strings*, it outputs two slightly different sounds into stereo channels. If you connect doubling-enabled *Heavier7Strings* to a mono-input effect plugin, the two channels will be mixed and result in disturbed sound, such as phase cancellation.

To solve this issue, we provide additional two pairs of channels for the doubling guitar duplex. Please refer to section 4.6 for further details about *Heavier7Strings* output channels and their typical usage.

Does Heavier7Strings only support whammy bar vibration/bending? How can I make left hand vibration/bending?

Actually, *Heavier7Strings* don't distinguish between whammy bar bending and left-hand bending. We didn't add an visual effect for left-hand bending, but we do have visual effects for whammy bar bending. So users can always get reflection from the whammy bar of *Heavier7Strings* GUI. Please check previous sections 6.8 and 6.9 for further details.

Why does the mod knob change the pitch?

In fact, the mod knob doesn't change the pitch, it changes the levels of the 1st, 2nd and 3rd harmonic overtones. It's similar to the principle of artificial harmonic overtones. When some harmonic overtones have a high volume, human ears would consider that this pitch to be closer to that of the harmonic overtones. So in this sense, the mod knob does appear the pitch.

I pressed 8 notes but only 7 played?

Well, a 7-string guitar can only play seven notes at one time.

Can I use third-party effects?

No problem! *Heavier7Strings* is built for any effects.

If you already have configurations in our built-in effect rack and don't want to lose it, you can switch effects to bypassing, and *Heavier7Strings* will bring pure and clean sounds.

When using 3rd-party effects, there may be issues in output channel number. Please refer to section 4.6 for further details.

How do I contact with you?

If you need technical support or want to report issues, please send email to support@threebodytech.com. We will respond as soon as possible. Any suggestions for our products are welcome!

Chapter 12. Credits

Product Design

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Meng Ke, Wang Lei and Zhang Xiaopeng

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Our friends and family

Heavier7Strings User Manual

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