OWNERS MANUAL

Version 1

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1. Features at a Glance

2 oscillators per voice - Saw, Sqr, Tri, Sin, Pink/White noise
1 sub-oscillator per voice for extra fat basslines
Hard sync, hidden sync oscillators give each main osc it's own hardsync sound.
Trigger sync, restart each oscilator for each new note.
Detune, with detune copy/paste quick buttons
Oscillator mix
Unison modes - mono, stereo, or chorus modes adds 1, 2, or 5x the voices.
Unison detune, 2 different detune styles, "dirty", and "clean"
Smart voice allocation:

- monophonic and polyphonic modes
- aggressive constant time slide
- polyphony limiter - take control over CPU usage
- legato monomode (polyphony == 1) enables constant time slide, skips attack phase of envelope
- legato polymode (1 < polyphony) true legato, skips attack phase of envelope

Envelopes

- 3 envelope shapes - linear + 2 different curves
- Amplitude ADSR
- Filter ADSR with Amount and Velocity sensitivity

Filter

- 4 pole moog style filter with cutoff and resonance, can self resonate, cutoff is envelope controlled.
- Keyboard Tracking of the cutoff parameter (3 modes off, normal, bright)

Distortion unit

- Wet/dry mix
- Gain
- 3 types, Tube, Thin, Hardclip

Volume Output Level
Preset Manager featuring many built in presets with save/load and rename functions.

2. Oscillator Section

Mantis has 2 main oscillators, and 1 sub oscillator, per voice.

2-1. Waveform

Sound design in Mantis starts with 2 waveform selection knobs (each knob selects between Saw/Sqr/Tri/Sin/Pink/White Noise).

2-2. Sync

For each oscillator in Mantis, there is a hidden sync oscillator.
Sync creates a raw rippy sound. Sync restarts the oscillator at some interval. When sync is active, the detune knob changes into a 'sync' knob which lowers the freq of the osc waveform. The hidden sync waveform will restart the lowered osc waveform at the note frequency, so that 1.) the pitch stays the same, and 2.) the restarting creates a raw metallic sound.

Trigger Sync: Restarts both oscillators on note trigger. Click the  light between the 2 oscs to enable. This makes the attack of every note more predictable.

2-3. Detune

The detune knob under each oscillator changes the pitch offset of that oscillator. It's useful when you want a more dirty (or complex) sound. Use the "->" and "<-" lights to copy the detune setting from the other knob. Useful for when you want them perfectly the same as each other. Clicking the "s" light 2 times will reset the detune knob to it's 'zero' point.

2-4. Mix

Use the mix knob to select how much of each oscillator ends up in the final output.

2-5. Sub Oscillator

Mantis has a square wave sub oscillator for extra fat basslines. Configure how much subosc to mix in by turning the knob  , and configure what sub octave the square wave plays, either –1 octave below, or –2 octaves below (click down  for -2).

3. Unison

Unison is sort of like a chorus. With this feature, you may not need a traditional chorus or stereo enhancer effect.

3-1. Modes

The unison stacks 1, 2, or 5 voices together for mono, stereo, or chorus type of stereo effect. This is selectable using the 125 button  in the unison section.

3-2. Detune

Use the knob for greater stereo difference in pitch. The setting is sensitive, so a little does a lot!

4. Voice

Mantis has flexible allocation of voices. Use this section to make mantis into a bassline monosynth or full polyphonic performance synthesizer.

4-1. Monophonic and Polyphonic Modes

Use the "voices" knob to select number of possible voices. 1 for monophonic mode, and more than one for polyphonic.

4-2. Constant time slide

Portamento is an effect where the frequency is swept from one note to another. In most modern synthesizers this sweep takes longer the farther the two notes are from each other. The analogy is like traveling a distance, where you expect the travel time to increase with distance. This is not the real world, this is not some strange physical simulation of car travel time budgeting. Mantis is not like most synthesizers, which have this frusterating and unpredictable increase in time the farther apart the notes. Mantis realizes that to have notes sound on time and on beat, there needs to be predictability. So Mantis has "constant time slide", which means that for _any_ two notes, it will always take the same amount of time to sweep the frequency as any other two notes. This lets us make predictable sweeps, keeping swept notes sounding in time with the rhythm, no matter what, which can create very aggressive and predictable sweeps anywhere on the keyboard.

Constant time slide happens only during a monophonic Legato transition between 2 notes (see following section how to enable Mono-Legato). The timing of the slide can be adjusted using the "Slide" knob.

4-3. Polyphony limiter

Use the "voices" knob to limit number of possible notes active at one time. Useful for managing CPU load When all voices are used, and one more is requested, the voice allocater in Mantis will steal the oldest voice in use, and give it to the use of the new note.

4-4. Legato (Mono)

Turning on "Legato" when in mono mode (voices == 1) skips the attack portion of the Amp and Filter ADSR envelopes, when a note is activated while another was sounding. If Slide is on, you will also hear *constant time slide* (portamento) during the transition between legato notes.

4-5. Legato (Polyphonic)

Turning on "Legato" when in poly mode (voices > 1) skips the attack portion of the Amp and Filter ADSR envelopes, when notes are activated while notes were sounding.
(Notes do not *slide* in polyphonic legato mode).

5. Envelopes

Mantis features separate ADSR (attack decay sustain release) envelopes for Amplitude and Filter Cutoff.

5-1. Amplitude ADSR

The Amplitude ADSR affects the loudness of the voice over time, as the note is held, the amplitude transitions over the Attack and Decay time segments of the ADSR, then holds at the Sustain level. When the note is released the amplitude transitions to 0db over the time set in the Release segment.

5-2. Envelope Shape

This affects how 'snappy' the ADSRs sound (exponential curve vs linear.) The picture next to the button describes how each shape type affects the ADSR ramps. Linear, Ease-In/Ease-Out, or Ease-In/Fast-Out.

5-3. Filter ADSR

The Filter ADSR affects the filter cutoff point over time, as the note is held, the filter cutoff transitions over the Attack and Decay time segments of the ADSR, then holds at the Sustain level. When the note is released the cutoff transitions to 0db over the time set in the Release.

5-4. Filter ADSR Amount

Scales the “Filter ADSR” curve from 0% to 100%.
0% and no envelope is added to cutoff.
100% and the full magnitude of the Filter ADSR is added to cutoff.

5-5. Filter Velocity

OFF: No Effect
S: Scales only the “Filter Sustain” level by note velocity
ADSR: Scales the entire “Filter ADSR” curve by note velocity

6. Filter

Mantis includes a 4 pole moog style filter (**24db rolloff**) with cutoff and resonance adjustment, and can self resonate. The filter cutoff can be controlled by the Filter ADSR when the Amt knob is adjusted above 0.

6-1. Keyboard Tracking

The filter cutoff value can follow the note frequency. Use **KB-TRK** to select between off, normal and bright. Bright opens the filter up more than normal mode, and thus will sound brighter.

7. Distortion

Distortion is a feature that lets you add more complexity (harmonics) to a voice. It can result in a range of tones, from aggressive and bombastic to cracked and fuzzy to warm and tube-like.

7-1. Wet/Dry Mix

Use the Mix knob to select how much of the distorted signal to include.

7-2. Gain

Use the Gain knob to select how much to overdrive the distortion unit.

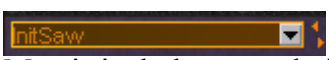
7-3. Type

The Type button selects between 3 distortion types, 1.) Tube, 2.) Thin, 3.) Hardclip. This is depicted using icons of the actual transfer waveforms - which describe how the input signal is mangled. A linear / would mean no distortion i.e. where Input corresponds perfectly with the output, and would result in no change. So with a curve in the waveform we have a non-linearity in the signal, which is what tubes and transistors do, and why people enjoy them for their "warm" sound. The curves color the signal in different ways.

8. Volume

Use this knob to affect the output loudness of Mantis.

9. Presets Manager



Mantis includes many built in presets. They are arranged by category, Bass, Lead, Synth, Drum, Piano.

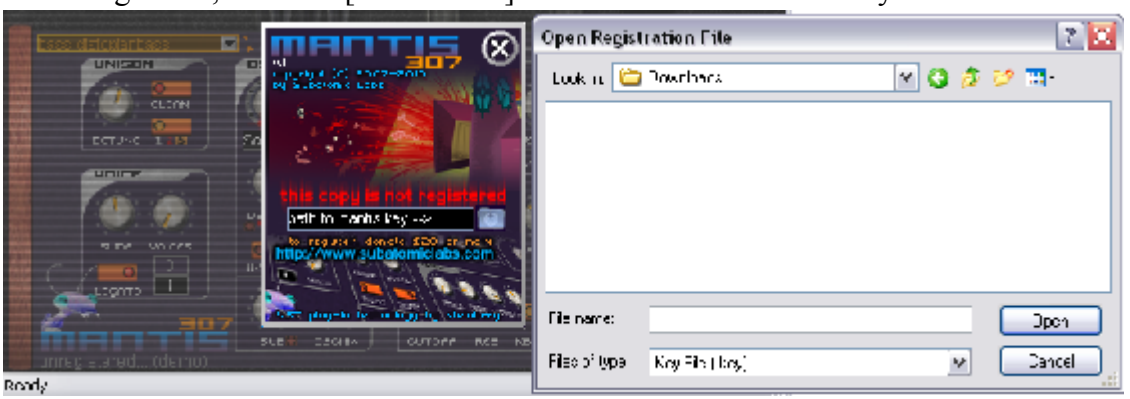
Left Click the dropdown listbox to see all built in presets.
Rename preset by right-clicking the box.
Save preset as .fxp format by clicking the **out** button.
Load preset from .fxp file by clicking the **in** button.

10. Registering your software

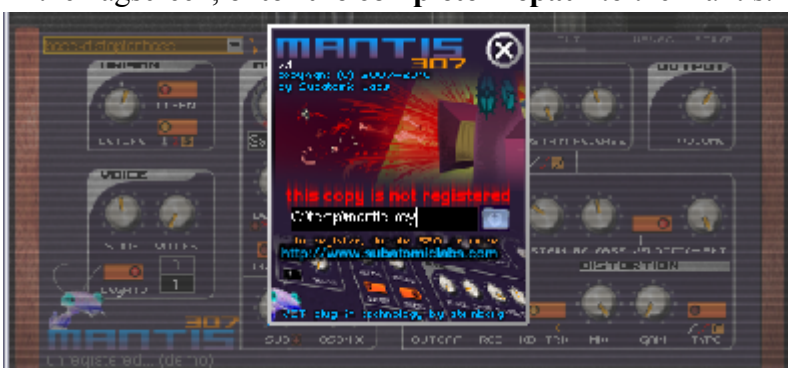
After you pay at the Mantis307 website, you'll get a key file called mantis.key.

You can register Mantis307 a few ways:

- **Easiest:**
  In the nagscreen, click the [blue folder] to **browse** for the mantis.key file



- **Or:**
  In the nagscreen, **enter the complete filepath** to the mantis.key file and hit enter



- **Or:**
  Place mantis.key into one of the following folders (% and $ denote environment variables):
  - ***Windows***:
    - %HOME%/.mantis/
    - %HOMEPATH%/.mantis/
    - %USERPROFILE%/.mantis/
    - This is usually in C:\Documents and Settings\username\.mantis
    - **NOTE:** You will need to open a command prompt to create this directory:
      Type `cmd` in the Start/Run menu, then:
      ```
      mkdir "%USERPROFILE%\.mantis"
      move "%USERPROFILE%\My Documents\mantis.key" %USERPROFILE%\.mantis
      ```
  - ***MacOSX***:
    - $HOME/.mantis/
    - This is usually in /Users/username/.mantis
    - **NOTE:** You may need to open a terminal to create this directory:
      ```
      mkdir ~/.mantis
      mv ~/Downloads/mantis.key  ~/.mantis/
      ```

11. Credits

See http://www.subatomiclabs.com/mantis for product and purchasing information including sound clips, demos, and upgrades.