

Tribute User Manual

Speo

Version 1.1.0

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1 Oscillators



At the heart of Tribute are its oscillators. They are run-of-the-mill wavetable oscillators, except for some nifty modulation options, which can drastically change the characteristics of a table. Settings relating to amplitude are at the top, pitch settings are to the left and unison settings to the right of the wavetable display. Additional unison settings are available through the mod matrix. Tribute's oscillators are anti-aliased through bandlimiting and oversampling, but aliasing can still occur when using wavetable modulation. The active oscillator can be selected at the top left of the wavetable display. It can be turned on and off using the power button next to the selector buttons.

1.1 Wavetables

To load a wavetable for the currently selected oscillator, simply drag it on top of the device, or use the sample browse buttons to the top right of the wavetable display. Tribute comes with 50 wavetables which can be found in Tribute's folder in the Rack Extensions tab in Reason's browser, but it will accept any sound file and cut it into subtables of 2048 samples each, so it is Serum compatible. If the sound file is stereo, only the left channel will be read. Any silence at the start and end is ignored. Subtables are normalized on loading and their DC offset is removed. If there are less than 256 subtables in a wavetable, the missing subtables will be filled out by crossfading the existing ones. To clear a wavetable, hit the grey x under the sample browse buttons. If an oscillator does not have a sample loaded, it is set to the init wavetable, which morphs between a sine and a saw wave.



1.2 Wavetable Modulation



On hitting the squarify button, the active wavetable is reloaded without its even harmonics. This button cannot be automated. The wave knob simply scrolls through the wavetable. Use the outer, inner, position and ratio knobs to apply Tribute's unique wavetable modulation, which increases the effective frequency in certain parts of the subtable. Outer and inner must differ or ratio must be bigger than 1 for the modulation to take effect. Outer controls the effective frequency at the edges of the subtable, inner does the same at the point set with the position knob. The bigger the difference between the two, the more narrow the increase in frequency will be. Use ratio to apply the frequency modulation over multiple cycles of a subtable. The smooth button allows for non-harmonic ratios.

2 Envelopes

Tribute's 6 envelopes are used directly in the mod matrix or in mods. The envelope to edit is chosen at the top of the envelope display. Hit the sustain button to set a position within the display where the envelope will be stopped while a key is held down. The sustain position will also affect mods that use the envelope. Click the arrow in the top right for a drop-down menu with common setups. Each envelope has an attack, hold and decay period. Use the a/d and hold knobs to the top of the display to adjust the proportions. Use the fractal knob to change the shape of the envelope using smaller copies of itself. The overall time it takes for the envelope to run is set with the tempo value display in the bottom left. Attack and decay curvatures can be set next to that, both can also be doubly curved.



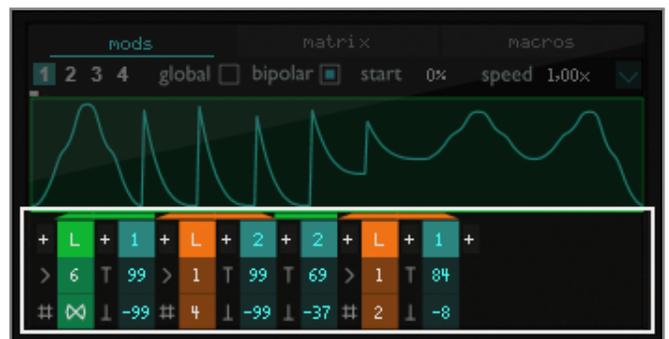
3 Mods



Mods allow the user to chain envelopes together and loop them. They are available under mods in the bottom center display. Choose the active mod in the top left. By default, mods are triggered on notes and range from 0 to 1 like envelopes. Enable global to make them run independent of note input and bipolar to make them range from -0.5 to 0.5. Use the start setting to offset the relative starting position of the mod. The speed value speeds up or slows down the mod. Use the drop-down menu in the top right for LFO-like settings or to copy another mod's setup.

3.1 Mod Elements

Mod elements are inserted using a little white plus below the mod's wave display. A mod element is either a reference to an envelope or a loop. To clear an element or change its type, click on the top rectangle of the element displaying the number of the envelope or L for loop. An envelope's minimum and maximum value can be set using the lower two rectangles. Envelopes attack from their minimum value up to their maximum value and decay to the next envelope's minimum value. Envelopes can be flipped (maximum < minimum). On a loop element, use the lower two rectangles to set how many following elements are affected by the loop and how many times the loop is repeated, respectively. A repetition value of S means the loop is active while the note that triggered the mod is sustained and the infinity symbol means that the loop is repeated indefinitely.



4 Mod Matrix



Select matrix in the top of the bottom center display to access the mod matrix. Up to 25 rows can be added. There is a scroll bar but do yourself a favor and use alt-drag to scroll (and shift-alt-drag to be more accurate). Each row defines a source, the amount of modulation to be applied to the target, the target, the amount of scaling to be applied (negative values reduce the effect of the row by the scaling source's value) and the scaling source. Use x to the right to delete a row.

4.1 Sources

Most sources are straight forward. The note source is bipolar around A4, with a value of -0.5 at A0 and a value of 0.5 at A8. The Random sources are random numbers generated for each note. The left and right channels of the external audio input are available as sources as well. Unison offset (ramp or symmetric) can only be applied to an oscillator's level or pitch. Each of the active subvoices of an oscillator voice has a unison offset, ranging from -1 to 1. Note that when there is an even amount of subvoices, there is no subvoice with a unison offset of 0. The symmetric unison offset is simply the absolute value of the default (ramp) unison offset. When routing the unison offset to the pitch there can be up to 2 octaves between the individual subvoices.

4.2 Targets

Most targets are straight forward. Global targets affect both oscillators. The FM and FM HWR (half wave rectification is applied to the FM source) targets on oscillators mostly make sense with an oscillator, noise or external audio source, in which case the modulation will be applied at audio rate. The pitch target has a range of 8 octaves, the fine pitch target 4 semitones. Filter targets can either affect both or only the left or right channel. Rows targeting attack and glide are only evaluated when a note is struck, while rows targeting release only when a note is released. Macro and CV Out targets are always evaluated for the youngest active voice.

5 Macros



There are 4 macros which serve as sources in the mod matrix. Use them to build elaborate controls. To access them, select macros in the top right of the bottom center display. There is a grey label under each macro which you can edit by double-clicking it. Hit Add Target under a macro as a shorthand to add a row to the mod matrix with the macro as the source. Hit Clear to clear all sources in the mod matrix that use the macro. Clear is only visible if the macro is used at least once as a source.

6 Filters

There are 2 filters with various routing options. Select the active filter to the top left of the filter display. Next to that, you can switch on/off the active filter and choose its type. Routing options are to the bottom left of the display. Use the osc1 and osc2 checkboxes to route oscillators to the active filter. Hit the ext checkbox to route the external audio input on the back of the device to the active filter. If serial is not enabled, the filters run in parallel so their output is added. If serial is enabled, filter 1's output is routed to filter 2's input. If an oscillator is neither routed to filter 1 nor filter 2, it passes on unaffected. Reduce mix to add some of the dry signal, and enable keyboard tracking to sync the cutoff with the note's frequency. Some filters have a spread control at the top which spreads the cutoffs of the components of composed filters, or the bands/notches of the multi-bandpass/multi-notch filters.



7 Emitter



The emitter can be used to create new wavetables from a Tribute patch. Essentially, it plays a note at a frequency which will result in 2048 sample cycles. It makes use of Tribute's filters in the frequency domain, so it applies their amplitude response to the generated wavetable. Open the emitter by hitting the little upwards arrow next to the wavetable name in the wavetable display. Use count to set the number of subtables to be emitted.

Use period to set the amount of fictive time the emission process will span. This time does not affect the length of the emitted wavetable, only the subtable count does. Period simply sets the time frame of the emission for Tribute's envelopes and mods. The emitted subtables will be evenly spaced in this time frame, and all modulation is constant throughout the emission of an individual subtable. Use the emit button to start the emission or enable emit on C8 and play a C8 note. The emitter adds the oscillators' left and right outputs and applies the filters' left amplitude responses. Emitted subtables are normalized to -12dBFS and afterwards the phase of the first subvoice is reset. The emitter ignores the octave, semi and cent settings.

8 Techniques

8.1 Display Gestures

- Drag on the wavetable display to set position along x and wave along y.
- Alt-drag on the wavetable display to set outer along x and inner along y.
- Drag on the envelope display to set a/d ratio along x and both attack and decay curve along y.
- Alt-drag on the envelope display to set hold along y instead.
- Alt-drag on the mod matrix display to scroll.
- Ctrl/Cmd-Alt-drag on the mod matrix to reorder rows.
- Drag on the filter display to set cutoff along x and resonance along y.
- Alt-drag on the filter display to set spread along x and mix along y.

Ctrl/Cmd-click on any display to reset to default values. Shift-drag to be more accurate.

8.2 Unison Blend

In order to reduce the effect of unison on an oscillator, route the symmetric unison offset to the oscillator's level with a negative amount in the mod matrix. This way, the levels of the subvoices are reduced the nearer they are to the outermost subvoices. You might need to compensate for the loss in level using the oscillators level knob. This is especially true if your unison voice count is even, since there won't be a 0 unison offset subvoice and all subvoices will be reduced in level.

8.3 Constant Pitch Oscillators

Route the note mod matrix source with an amount of -100 to the pitch to disable keyboard tracking for an oscillator. This way you can set the pitch using the oscillator's pitch control and it will be constant no matter which note was played.

8.4 Phaser

Here's how to build a classic phaser effect. You'll need an envelope, a mod, a macro and a filter.

- Set your envelope to Sine using the little arrow to the top right.
- Setup your mod to be an LFO over your envelope using the little arrow to the top right.
- Set your filter to one of the Multi Notch modes.
- In the mod matrix, route your mod to your filter's left cutoff frequency with an amount of 100.
- Scale that routing by your macro using a scale amount of 100.
- Add a row and use it to route your mod to your filter's right cutoff frequency with an amount of -100.
- Also scale this row by your macro with a scale amount of 100.

Now you can use your envelope's tempo to control the rate of the phaser, your macro to control the depth of the modulation, your filter's cutoff to control the frequency, its resonance to control the feedback, and its mix to control the overall dry/wet of the effect.

8.5 Resampling Wavetables

You can use the emitter to resample wavetables right back into Tribute as a way to bake modulation. The most efficient way to do so is by using Reason's sampling input. Flip the rack around and disconnect any cables currently connected to the SAMPLING INPUT in the AUDIO I/O device to the top left. Connect the CTRL ROOM OUT of the MASTER SECTION to the SAMPLING INPUT. Only connect the left input so the sampled wavetables will be mono to save some space. Now anything that comes out of Reason's mixer can be easily resampled. Load a fresh Tribute with your favorite wavetable and setup some modulation. For example you might want an envelope that's only attacking (a/d ratio of 100%) to modulate your oscillator's inner knob, while setting the ratio to 4/1. Open the emitter and ensure its period matches the tempo of your envelope. Choose an appropriate subtable count to be emitted. Sometimes less is more! Add a fresh Tribute to your rack (reset it if you have Reason configured to open the default patch in new devices). Click the Start Sampling button to the top right of the wavetable display on the fresh Tribute, then click emit on the first Tribute. Don't worry about the silence at the start of the sample, it will be ignored. Stop sampling once the first Tribute is done emitting, then use the wave knob on the second Tribute to test the new wavetable. Now you can tweak the modulation on the first Tribute and repeat the process until you're happy with your new wavetable.

Resampling wavetables is a very versatile sound design tool. All of Tribute's features are available to create new wavetables, though some features like mod matrix FM that mess with the cycle length can produce unexpected results. Resampling wavetables is especially useful to bake filter modulation into a wavetable. It can also be used to combat aliasing when using Tribute's wavetable modulation on a high lead sound. By baking the modulation into the wavetable, it will be bandlimited, retaining clarity even on the highest notes.

Pro tip: Resampling wavetables with lots of subtables? Speed up the emission process by increasing the project sample rate to 192000.

8.6 Making Wavetables for Serum

If you want to export wavetables emitted by Tribute for external use you can go one of two ways.

You can use the resampling technique described above, navigate to the created sample in the browser under Song Samples, then right-click and edit to crop the wavetable and normalize it. Note that the automatic detection of the first non-zero sample might skip the first sample of your wavetable, for example if it starts with a sine wave subtable. The back end of your table you'll have to crop manually. Then click save and right-click the sample in the browser to export it.

The other way is to enable emit on C8, draw a long C8 note in the sequencer, right-click the clip and bounce in place. Now you can be sure that the bounced audio clip starts at the first sample of the wavetable. Shorten the audio clip to remove silence from the end, normalize it, then right-click and bounce to disk. Take special care that the export sample rate matches the project's sample rate set in the preferences, otherwise the wavetable length will be off.

By bouncing in place, a stereo audio clip will be created. That is not an issue if you want to bring the wavetable over to Serum. If you do need to create a mono clip from a note in the sequencer, you first need to disconnect the right cable from your Tribute's mixer channel input, then set the loop markers around your note and select Bounce Mixer Channels from the File menu at the top. Select nothing but your Tribute's mixer channel, set the range to loop and select bounce to "New tracks in song". For the mixer settings select "All except fader section", then hit ok. Now you can bounce your mono clip to disk as usual.

Once you've exported your wavetable, open Serum and hit the little pen to the top right of the wavetable display to open the Table Edit window. To the bottom right where it says (enter formula), enter 2048. Now drag your exported wavetable onto the big display above. Serum's Table Edit is very useful, you could for example crop any silent subtables from the back in here instead of doing it in Reason. Hit the little x to the top right, then hit the save icon to the left of the name of your imported wavetable to save the wavetable in mono with all the necessary flags into your Serum's wavetable folder.

Happy tweaking!