

Tremolator

Rhythmic Amplitude Modulation

User's Guide

Version 5 : For Mac and Windows



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Figure 1: Tremolator's Control Panel and Tweak Menu

Tremolo, the effect of oscillating a sound's volume, is one of the most popular tricks in the audio world. Tremolo (often used interchangeably to describe vibrato), is a positively ancient effect, first applied to pipe organs in the 16th century (a device known as a Tremulant).

Coinciding with the advent of recorded audio, the popularity and potential of mechanical tremolo units grew exponentially. Mechanical tremolo evolved from its initial application as an effect for the organ to become a need-to-have effect in live performance as well as just about anything laid to tape or acetate. Tremolator builds upon this long pedigree by bringing together the sound of classic mechanical tremolo along with added features and flexibility that no piece of classic hardware could have ever been capable of.

To achieve this inside the digital framework of Tremolator, first we had to start with those classics. From vintage Fender vibrato amps to the tremolo found in the Wurlitzer electric piano, we analyzed and examined what was actually happening inside these units in order to accurately recreate the properties they imparted onto audio passed through them. What we found by analyzing the waveform changes from unit to unit was very interesting and solidified just how unique each of these pieces were. Coupled with the software's Analog Styles, which emulate the saturation and distortion profiles of various analog circuits, Tremolator gives you every aspect of the sound of classic hardware.

However, a lot of this classic technology is just that, pretty "classic" in comparison to what can be achieved in the modern age. While the knobs on a 1950s Fender Vibrolux did give you control over depth and

speed, that was it: just two parameters. Tremolator on the other hand allows you to take that characteristic sound but utilize MIDI to lock the effect into sync with your project. Or use Tremolator's programmable Rhythm Editor to customize patterns, turning classic tremolo into modern rhythmic auto-gating. With Tremolator you can control accents, shuffle/swing to fit the groove, select waveform shape, or dive into the advanced Tweak Menu to control all dynamic aspects of the tremolo effect.

If you can't tell by now, we're very proud of Tremolator and know that this plug-in will find a home in many of your productions. As with all Soundtoys plug-ins, Tremolator comes with a cornucopia of very useful presets to get you up and running, ranging from the tame to the positively out-of-this-world. If this is your first interaction with Tremolator, we urge you to try it on a variety of source material to get a feel for how this effect can inspire and enhance.

Let's get Tremolating!



Figure 2: The Tremolator Control Panel

INPUT AND OUTPUT LEVEL

The Input and Output level controls are used to either boost or attenuate the input or output of Tremolator. The default setting of these controls approximate “unity gain” (what goes in also comes out the same level) and should provide the best overall “normal” sound quality when set to these levels.

The LED-style indicators located beneath the Input and Output knobs provide a visual display of the input and output signal levels. The yellow LED indicates that the signal is 6dB below clipping. The red LED indicates maximum signal level, and possible audible clipping (which you may or may not wish to have as part of your sound).

These controls are particularly useful in allowing you to control the amount of saturation and distortion present in Tremolator.



Figure 3: Output LED indicating maximum signal level

DEPTH

The Depth control defines how much of the incoming signal's amplitude will be modulated. This can range from a very subtle shift in the amplitude to actual gating of the signal, especially when the modulating waveform has sharp edges like a square wave or saw tooth wave.

One thing to keep in mind is that the Depth control can be dynamically modulated by the level of the incoming signal using the controls provided in the Tweak Menu which is discussed in-depth (pun intended) starting on page 9.

GROOVE

The Groove control allows you to impart a rhythmic 'groove' to the tremolo in one of two flavors: Shuffle and Swing. Setting the knob straight up at 12 o'clock is the 'zero' setting and no Shuffle or Swing feel will be imparted on the tremolo pattern. Groove control adjustments create a shift either forwards or backwards to the "even" beats towards a triplet type groove.

As you turn the knob-counter clockwise towards "Shuffle", an increasing amount of shuffle feel will be added to the tremolo modulation. As you turn the knob clockwise from the center "0" setting an increasing amount of swing feel will be imparted on the tremolo sound. The

amount of Shuffle or Swing dialed in with the knob will be relative to the currently set Rhythm. Groove settings are imparted on the signal regardless of the type of modulation used, the rate, or the rhythm setting.

FEEL

The Feel knob is similar to the Groove control but in this case shifts your whole delay output in relation to the beat, not just the groove of the pattern. The Feel control is like being able to dictate how the Tremolo will play in relation to the "pocket"; should it relax slightly behind the beat or propel the movement forward, slightly rushing the tempo?

By turning the control counter-clockwise an increasing amount of delay is imparted on both left and right channels before the Tremolo, kind of like pre-delay in reverb. We called this one Draggin' because it has the effect of sliding modulation behind the downbeat. As the control is increased, additional delay is added the effect will fall further and further behind the downbeat.

On the other end of the spectrum is Rushin'. Instead of sliding the modulation behind the beat it begins to move it ahead of the beat. This is kind of like adding a negative pre-delay. As you turn the knob further towards the maximum value the Tremolo effect will be moving increasingly ahead of the beat.

ACCENT

As with the Groove knob, the Accent knob allows you to add two additional types of rhythmic feel to the tremolo effect: 'Sync' and 'Max'. Again, setting the knob straight up is the null or 'zero' position.

As you turn the Accent knob clockwise, the downbeat of the rhythm pattern will be emphasized, and the other beats will be de-emphasized. When fully clockwise, the '2-3-4' in the beat will be virtually silent with no amplitude modulation happening on those beats. The only pulse in the tremolo effect will be on the 'One' (the first downbeat).

This can create some really cool effects not available elsewhere. Keep in mind that if you use a square wave or a rhythmic wave that has very sharp edges, this will give you a gating effect. Using some of the Accent with some of the Groove and a decent amount of Depth all synced up to MIDI opens the door for highly customizable rhythm-based tremolo effects.

As the knob is turned counter-clockwise towards the 'Sync' setting, the pulse of the tremolo on the 'One' count (in terms of a 1-2-3-4), will become less and less pronounced. When the knob is set fully counter clockwise the 'One' downbeat will be almost fully off. So you'll get a bit of a drop-out to the signal on that first downbeat, with the tremolo still modulating on the '2-3-4'. The Accent control can produce very pronounced changes depending on the setting of the Groove control.

SHAPE

The Shape control is used to select from the list of available built-in LFO wave shapes. Tremolator includes all all of the standard LFO shapes you would expect such as sine, triangle, square, etc. Tremolator also includes a method for you to create you own custom wave shapes, allowing virtually limitless sonic modulation possibilities. Custom shapes are created in the slide-out Tweak Menu which we will discuss in-depth starting on page 10.

MOD INDICATOR LIGHT

The Modulation Indicator Light is a visual reference of the speed to which your effect is currently modulating. This indicator will illuminate blue in sync with the current pattern in a pulsating manner.

RHYTHM

The Rhythm Menu allows you to choose specific rhythms, which are subdivisions of the current Rate setting. These are based on a wide range of bar and note values, ranging from 1/32 note all the way up to 4 bars. You can set it slow, you can set it fast, it's up to you. Additionally, custom rhythm patterns can be created in the Tweak Menu (which we will discuss starting on page 9).

RATE

The Rate knob determines the basic rate of the modulation and is set in BPM. The range is from 30 BPM to 240 BPM. It is important to note that the Rate setting determines the downbeat on the one-count, based on a four beat measure. You can further subdivide the beats based in the Rhythm Editor which we will discuss shortly.

It is important to note that the Rate knob is set on the 'one' downbeat since what you might expect to hear may not be exactly what you get if the Rhythm is not set to the type of division of the beat you want (i.e. 1/4 note, 1/8th note, etc.) and is fixed to the value that you set.

MIDI TOGGLE SWITCH

When the MIDI Toggle Switch (located next to the Rate control knob) is in the down or off position the rate of the tremolo effect is determined by the Rate knob setting. When the MIDI switch is engaged, the incoming MIDI clock takes over as the master rate control. You can still subdivide the effect by selecting different note divisions in the Rhythm control but they will all be in sync with MIDI.

TAP TEMPO

Tap Tempo does what it says; start tapping on the grey button and it will determine the BPM of your tapping. This control is useful not only in determining the tempo of projects not recorded to a click track but also for finding the appropriate "feel" for your modulation. Even on material that has been strictly grid-aligned, sometimes placing that Tremolo slightly off the grid adds a more organic depth to a track.

TWEAK BUTTON

Pressing the Tweak Button will reveal the slide-out Tweak Menu, providing access to another set of advanced controls for customizing Tremolator even further. We will discuss each of these options individually beginning on the next page.

Keep in mind that underlying these controls is an envelope follower that is essentially watching the level of the incoming signal and producing a value based on the changes in the level of this signal. All of the Tweak controls are referenced to the envelope follower signal and allow you to alter the tremolo effect in a variety of dynamic ways.

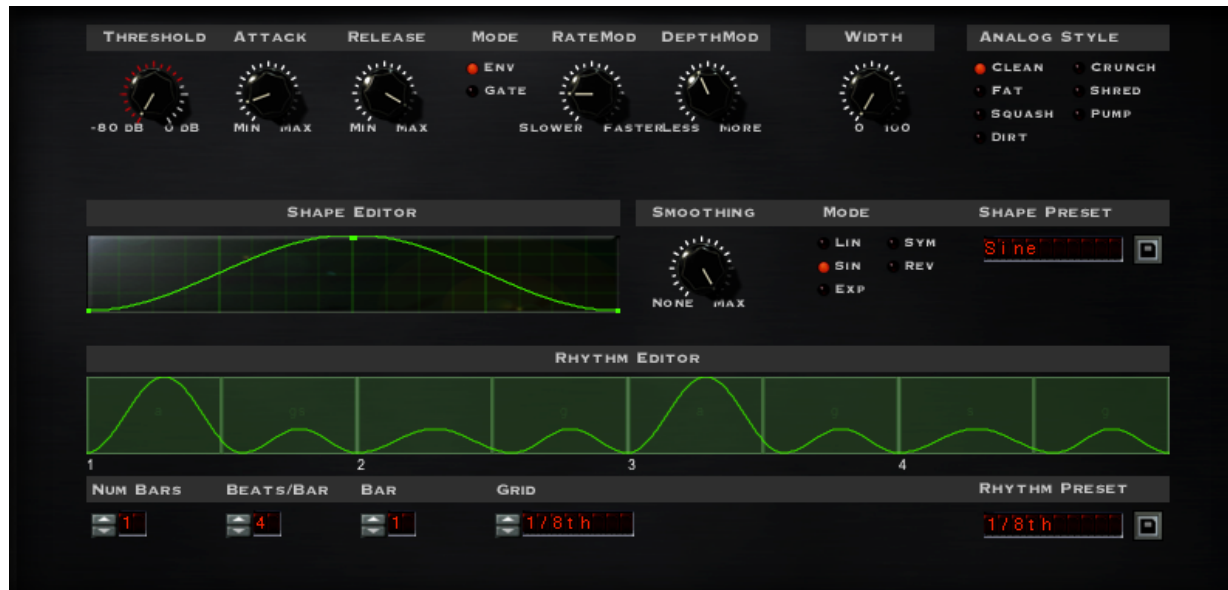


Figure 4: Tremolator's Powerful Tweak Menu

THRESHOLD

The Threshold knob, located at the start of the Tweak Menu is central to all other controls as it affects the responsiveness of the other knobs. The Threshold control allows you to define a specific level (as in loudness) that the input must reach before any dynamic processing of the Rate or Depth (as set with those controls) will be implemented. The scale of the Threshold control is in standard 'dB'.

There are two things to keep in mind regarding the Threshold control:

- 1) As long as the level of the input signal is above the Threshold level, the modulation of Rate and Depth will be active. As soon as the level of the input signal falls below the set Threshold, all modulation is turned off and completely de-activated.
- 2) How far the input signal goes above the Threshold determines how "deep" the modulation will go (with the maximum available mod depth being defined by the settings of the other controls).

THRESHOLD (continued)

You can think of Threshold as determining how far the signal must pass the the set target before the Rate and Depth settings will have an effect and how much modulation will occur. The white markings around the Threshold knob turn red based on the input signal, which makes it really easy to see changes in the level of the input signal and set the Threshold accordingly.

ATTACK

In addition to determining how much change should occur (via the Threshold control), Tremolator also allows you to control how quickly or slowly the Rate and Depth will change by using the Attack and Release knobs. Attack is based on time, in milliseconds, with a range from 0ms to 5000ms (5seconds).

Here's how it works: Once the input signal has passed the set Threshold, any changes set by the Rate Mod and Depth Mod settings are called into play and will change the Rate or Depth accordingly. What the Attack knob allows you to do is to define precisely how long it will take for the Rate Mod or Depth Mod to reach their full modulation depth setting.

At fast Attack settings (knob turned fully counter-clockwise) the Rate and Depth Mod will go to their full setting instantaneously. As you turn up and increase the Attack time it will take longer for the Rate and Depth modulation to reach their full amount, or depth of modulation. This lets you create smoother and slower changes in the rate and depth rather than the immediate and abrupt changes that would occur with a very fast Attack setting. As mentioned, this is dependent on the Threshold setting and how far past the set threshold the signal goes.

It is important to keep in mind that the attack and sustain characteristics of the input signal will directly affect how you will want to set the Attack time. If the signal is staccato and quickly moves above and below the Threshold it is likely that you will not hear the changes in the Rate or Depth with slow Attack time settings. The input signal will simply not be above the Threshold setting long enough for the slower attack time to reach its full setting. It is also very important that the sound stay above the Threshold setting for a period equal to the Attack time for the modulation to respond.

Using various Attack times that are either very responsive to, or that are slower than the changes of the input signal level, will allow you to create a wide variety of alterations in the tremolo effect.

RELEASE

The Release knob works in a similar fashion to the Attack knob but determines how quickly (or slowly) the Rate or Depth Mod will return to their 'normal' settings once the input signal has dropped below the set Threshold. Release is based on time, in milliseconds, with a range from 0ms to 5000ms (5 seconds).

The way the level of the input signal changes will likely play a big part in how you will want to set the Release time. If you want the modulation changes to track a quickly changing input signal you will likely want to have faster Release (and Attack) times. If you want the Depth and Rate Mod to change more smoothly, you can increase the Release (and/or Attack) times accordingly so they are slower than the rate of change in the level of the incoming signal.

Remember that the Threshold setting interacts with and dictates when the Rate and Depth modulation will begin to occur and how much of the modulation will happen (based on how far above the Threshold setting the signal goes). How the Attack and Release times will be set depends on the type of response you want and how long the signal remains above the Threshold setting.

MODE

The two Envelope Mode options determine the way the underlying envelope follower, Threshold, Attack, and Release settings respond and interact with each other. There are two Mode settings: 'Env' and 'Gate'.

When 'Env' Mode is selected, the Rate and Depth modulation will respond to the level of the input signal. Louder signals will produce more modulation, and quieter signals will produce less. Any input below the Threshold setting will produce no modulation.

When set to 'Gate', the amount of Rate or Depth Mod is no longer dependent on how far above the Threshold setting the signal goes and instead responds more like an On/Off switch (or Gate). As soon as the input signal goes above the Threshold setting the Rate and/or Depth Mod will be driven to its maximum settings (as defined by the Rate Mod and Depth Mod knobs) and at the rate determined by the Attack knob.

In Gate Mode the depth will remain at its full value, based on the Rate Mod and Depth Mod knob setting, and will be "pinged" at their full value for as long as the input signal is above the set threshold. This can greatly influence how the Rate and Depth Mod respond and it can be quite a bit different than in 'Env' Mode. Though both settings provide a very different response from each other, both modes are quite useful.

RATE MOD

The Rate Mod knob allows you to dynamically increase (or decrease) the rate of the LFO or Rhythm based on the level of the input signal and the Threshold setting as discussed previously. The modulation is either added or subtracted from the basic Rate as set on the front panel. The setting of this knob determines the maximum amount of rate modulation that can occur.

The Rate Mod knob is bi-polar; when set straight up it is at the 'zero' position. As you turn the knob clockwise (towards "Faster") the rate will increase based on the setting of the knob and/or the numbers entered into the associated LCD-style display. As you turn the knob counter clockwise (towards "Slower") the rate will decrease.

The Rate Mod scale is in octaves and is based on the standard frequency scale; a setting of '1.00' will provide a doubling of the speed (x2), a setting of '2.00' will double the rate again (x4) and so forth. So a setting of '4.00' is equal to a four-octave increase in the rate (x16). It is also possible to increase and modulate the rate to very high speeds (above what is possible with a setting of the fastest BPM + 1/32 note setting) and up into the audio signal range. This allows you to get 'ring mod' type effects that can be very, very cool. Again, keep in mind that the input signal must pass the Threshold setting to become active and modulation is relative to level above the set threshold.

Turning the Rate Mod knob counter-clockwise reacts similarly, only this time the rate is decreased (slowed down) as opposed to being sped up.

Additionally, you can still modulate the rate even if Tremolator is synced to an incoming MIDI clock. What happens is the rate is driven out of sync and sped up or down but once the mod level drops back to the 'normal' or base level, Tremolator will grab hold again and dance in sync with the incoming MIDI information.

DEPTH MOD

Depth Mod is also a bi-polar control and allows you to dynamically increase or decrease the depth of the tremolo effect, again, based on the setting of this knob as well as the set threshold.

The Depth Mod control's 'zero' value is at the 12 o'clock position. As you turn the knob clockwise the depth will increase based off the setting of the knob and/or the value entered into the associated LCD-style display. As you turn the Depth Mod knob counter-clockwise the rate will decrease.

The easiest way to determine just how much Depth Mod to add is by setting the front panel Depth knob towards the 'Max' setting and working backwards from there. This is a standard practice on most synthesizers, as having the front panel Depth control at its maximum value also means that at that point, no more possible Depth Mod can be

DEPTH MOD (continued)

added. As you increase the Depth Mod amount, the basic Depth setting will be 'biased' (scaled back a bit) to allow for the desired increase in modulation to occur and you may hear some decrease in the basic Depth setting as you turn this knob up. Again, it all depends on how much Depth Mod you are trying to add relative to the initial setting of the front panel Depth knob.

This behavior may also occur in reverse when you turn the control counter clockwise to dynamically lower the tremolo depth. If there is no Depth set on the front panel it is clearly not possible to take any away. So if the Depth control is set to zero some will be added as you turn the Depth Mod knob counter-clockwise.

WIDTH

The Width parameter controls the stereo spread of Tremolator's output. When set to the minimum value (or off) tremolo effects will remain centered in the stereo field. As the Width control is turned up, the stereo image will get wider and wider. When the Width control is turned past the 3 o'clock position, "out of phase" information is used that moves the delay signal outside the speakers in a pseudo-super-stereo spread. Always test wide effects in mono (if needed) as they may not always translate to a mono version of your mix.

ANALOG STYLE

There are 7 different available Analog Style algorithms that determine the saturation characteristics of Tremolator. The different styles impart a certain amount of distortion to the signal, relative to the style selected, at all signal levels. The Analog Style options are as follows:

- **Clean** - Maximum non-distorted range, with fairly hard clipping
- **Fat** - Smooth low-frequency distortion
- **Squash** - Similar to above but more compressed
- **Dirt** - Smooth broadband saturation
- **Crunch** - Exaggerated high-end clipping
- **Shred** - Lots of asymmetrical clipping
- **Pump** - Extreme pumping compression



Figure 5: Tremolator's Shape Editor Section

SHAPE EDITOR

It is extremely easy to create entirely new shapes in Tremolator using the built-in Shape Editor. You can use one of the Shape Presets (found in a menu all the way to the right of the Shape Editor) as a starting point or begin from the default Sine wave that will appear in the Editor window.

You'll see that default sine wave shape has three small points attached; one at each end and one at the apex of the curve. You can begin changing this shape by adding a new point which will happen simply by clicking anywhere inside the editor window. To remove a point, hold down the option key (alt key for Windows) while clicking the point with your mouse.

You can change the shape of the waveform line by clicking and dragging points. Up, down, all around; anywhere you want to go. Releasing the mouse click will set the current shape. You can create as many points

on the waveform as you like and use the "grab/move" operation to reposition any of the points. Extremely complex wave shapes can be created using this tool.

NAMING / SAVING CUSTOM SHAPES

Once you have begun editing a shape you will see that the readout in the Shape Preset Menu to the right automatically changes to "Custom". When you have edited your custom shape to your heart's content, you can save it by pressing the retro floppy disk "Save" button located to the right of the Shape Preset Menu display. Once saved, the new shape will appear in the Shape pop-up menu under the Preset menu entry and can be selected as previously described.



Figure 6: Saving a new Shape Preset

SMOOTHING

The Smoothing control allows you to round out the edges in the wave shape between the points. When smoothing is set to zero (no smoothing), the waveform will have a stair-step appearance and will jump abruptly from point to point. By increasing the Smoothing control you can soften the abrupt changes between the points and smooth out the transitions between points. When set to its maximum value the waveform will be completely smooth.

SMOOTHING MODE

The Smoothing Mode determines the “shape” of the smoothing that will be used to connect the points. This further increases the variety of waveforms you can create within the LFO Shape Editor. The Smoothing Mode choices are as follows:

Linear - Points are connected using straight lines

Sine - Produces a sinusoidal-like waveform, which is very smooth.

Exp - Produces a “scooped”, curved waveform where the curve is not even but kind of “rises quickly”, similar in shape to those used in an exponential analog ADSR envelope

Sym - Produces a curved shape that is even and symmetrical.

Rev - Produces a reverse scooped waveform shape that rises slowly and falls back quickly.



Figure 7: Tremolator's Rhythm Editor Section

THE RHYTHM EDITOR

The Rhythm Editor section allows you to create completely unique rhythm patterns for Tremolator. The main editor window (with the green pattern lines) works in a very similar manner to a drum machine pattern editor. You will notice the vertical dividing lines in the editor window; these can be selected by clicking on each section to add or remove. What is added or removed is determined by the settings of the selection menus below the editor. We can remove any section to replace it, but we must have an available length of "blank" pattern to add a section.

For example, in Figure 7 (above) we currently have the editor window set up for 1 bar, 4 beats per bar, and the grid sectioned by 1/8th. By default, the basic rhythm pattern is one bar long and is shown in the rhythm display, though multiple bars can be created and edited. For

each selected event in the rhythm pattern, one entire cycle of the LFO Shape will be triggered and played. So, if we click on the first division it will remove that first 1/8th beat curve. Now, if we select 1/16 under the "Grid" menu and click again in that now blank section, we see that we can add in new 1/16th modulations, and can fit two of them in the available 1/8th space. However, if we instead switch the "Grid" menu to 1/4, you will see that we cannot add it unless we also remove the 2nd divider in the editor window. This is because we need that adequate length of "blank" pattern space to add modulation.

The Rhythm Editor is extremely helpful in generating dynamic rhythmic patterns that can move along with your songs. Your Tremolo patterns are no longer static but can vary in complexity and modulate in very musical and rhythmic fashions.

THE RHYTHM EDITOR (continued)

There are four modifier menus that are located directly beneath the editor window. The first two (**Num Bars** and **Beats/Bar**) can be thought of as setting up your rhythm to match the song as we are determining the number of bars the pattern should entail as well as how many beats per bar.

The next menu, **Bar**, is used to select one bar at a time (for patterns that are longer than one bar) to edit in the editor window.

Finally, the **Grid** menu determines the spacing of added LFO shapes to the pattern. When you click in an empty space in the editor window, the length of the LFO added will be determined by what appears in the Grid menu display and not by the length of the available space in the editor.

RHYTHM PRESET

The Rhythm Preset menu allows for pattern presets (factory as well as user-defined) to be loaded into the Rhythm Editor and also allows for new patterns to be saved by clicking on the retro floppy disk “Save” icon. This will open up an operating system Save Menu and prompt for a name with which to save your preset under.

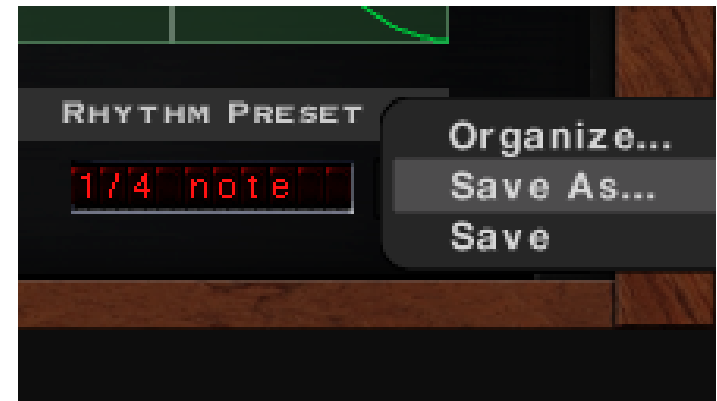


Figure 8: Saving a pattern

SUPPORT INFORMATION

Now that you've taken the time to learn all about Tremolator, have fun, experiment, and make greatness! If our plug-ins helped you take your production to the next level, let us know, we'd love to hear from you and what you were able to create with our software.

If along the way however you should run into any hiccups or anything unexpected, we offer free technical support for all registered users.

Our FAQ contains many helpful answers. you can find it at:

<http://support.soundtoys.com>

If you need further support you can find our Customer Support contact form at:

<https://www.soundtoys.com/forms/support>

You can also reach our support staff by e-mail at:

support@soundtoys.com

If neither of those options work for you, our office can be reached via telephone at:

1-800-COOL-EFX

Please have the following information available to help assist our support team:

- The product version and serial number
- The version number of your audio system (e.g ProTools 11.2.1, Cubase 8.0.5, Logic 10.2.0, Cakewalk Sonar X3)
- Your interface/hardware (e.g. Mbox Pro, Apogee Quartet, RME Fireface, etc.)
- Your computer and operating system info (e.g. MacPro OS X 10.9.5, Windows 7 SP1, Windows 8.1, etc.)
- A detailed description of the problem

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