
SuperTap

Enigma Manual

Chapter 1 ..... Introduction.... 2

Chapter 2 .... Quick Start.... 3

Chapter 3 .... What is a Multi-Tap Delay?.... 5

Chapter 4.....Tips and Hints 6

Chapter 5.....Controls and Displays 7

Chapter 6.....Factory Presets.... 15

Chapter 7.....Tempo Sync in V5.0.... 18

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SuperTap is a six-tap delay plug-in that can be used to produce a broad range of multi-tap delay effects, including analog and tape delay emulation, chorusing, rhythmic looping, and more. It also includes modulator and feedback sections.

The following pages explain how to use SuperTap. Be aware that this processor, just like its analog equivalents, is easily capable of overmodulation and positive gain feedback loops (i.e., increasingly louder sounds going well into distortion). There's no way to give you complete freedom and protect you from getting such sounds, so Be Prepared.

Chapter 2 - Quick start

At the most basic,there are two types of SuperTap processing: one with modulation, or one with longer taps. You can also choose between 2 or 6 taps for either type,as well as mono or stereo. Please note that the TDM and Native Power Pack products come with a 2-tap-only version of SuperTap; the full version is part of either the Pro-FX Plus or Gold products.

In your menu, you'll see four different component plugs, or "sub-plugins" of SuperTap: 6-taps (with and without Modulation) and 2-taps (with and without Modulation). The 2-tap takes less power and memory. The Modulation versions have shorter delay times (1.2 seconds); the components without modulation have the longest delay times (6 seconds).

Note: The components without modulation are not available in native applications. Maximum delay time may vary from application to application

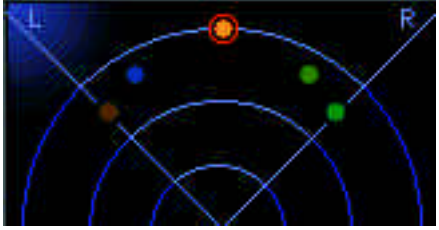
Launch one of the SuperTap components from your plug-in menu. It will open with the default settings. The default setting of any of the components has all the taps turned on, without Feedback. The factory pre-sets (located in the Load menu) are a great place to start, but take a little time to read at least this page! There's lots to know about this processor that will save you time.

1. Each tap's controls are arranged in a row from left to right. The on/off button is on the left, going across to the EQ section. Notice that when you turn a tap on, it illuminates in all three buttons: the on button itself, the delay slider, and the Pan Graph (for stereo plugins).



2. Drag the tap marker to set the delay time for each tap.





3. Drag a Pan Graph marker to change Gain and stereo position (rotation) at the same time, or adjust the Gain and Rotation controls separately for each tap. (Panning is only for mono signals, Rotation works with mono and stereo, so that is why it is here).



4. On the right side is the EQ/Filter section, with on/off control, 5 filter types,plus gain control for the bell and shelving filters. You can filter each tap separately for a very large range of creative rhythm effects from a single sound source.



5. The feedback section in the lower left corner is worthy of a warning! Using feedback can produce increasingly louder sounds, well into distortion, just as the analog equivalents can do. In order to give you great flexibility, there is also the small danger of very loud feedback sounds, so it is best to use low feedback values and adjust it slowly.



6. Modulating the taps produces variation in the delay times, which changes the pitch from each tap. You can control the depth (in milliseconds) and the rate of variation.

Chapter 3 - What is a Multi-tap Delay?

Audio delays have widespread use in studios and sound design and have been used for quite some time, dating from the earliest recording devices. There have been many versions, including analog "bucket brigade" types, digital, acoustic, tape, and more, each with their own flavor and character. The SuperTap doesn't try to directly emulate all of them, but you have a huge set of tools to work with to do exactly that, or create completely new effects only available in digital software tools.

What is a delay line?

A delay line simply plays a copy of the original signal following a delay of a certain amount of time. When you add this delayed copy to the original, some extraordinary effects can be created. When you play several such delayed signals along with the original where each signal is delayed by a different amount, you have a multi-tap delay.

Therefore,a multi-tap delay is a single delay with multiple outputs (taps) along the delay. In SuperTap, the delay is a maximum of 6 seconds (without modulation), and the taps can be placed anywhere along that delay. These taps are "feed forward", which means they are all mixed together at the output. A "feedback" control is also provided which routes audio back to the input for looping and complex rhythmic effects.

Digital reverbs operate using a similar principle. By adding mirrored copies of the original signal to itself, and by reducing the gain each time, the effect of a disappearing echo in a large space can be reproduced. However, reverbs can have millions of delayed repetitions with great complexity in relationships (volume, phase,frequency response, direction).

Modulation

Audio modulation is the variation of one or more aspects of a sound. There are many kinds of modulation (frequency, amplitude, phase), but in SuperTap we use only Frequency modulation.A low-frequency oscillator (20Hz and below) very slightly changes the delay times of each of the taps, producing changes in the pitch of each output. This is ideal for chorusing and other effects where varying pitch is desired.

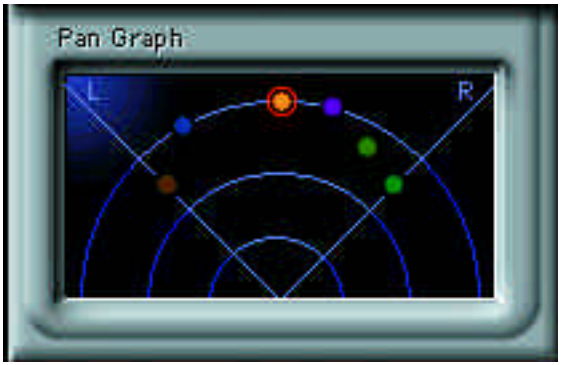
WaveSystem Toolbar

Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the WaveSystem Guide.

Work with Presets

Each of the presets was developed to illustrate a specific aspect of SuperTap, and although hardly exhaustive of the processor's capabilities, they are great places to start and tweak. By using them and simply adjusting the Tempo to match your production, you can save a lot of time. We encourage you to post any settings you create to our web site.

Pan Graph



The Pan Graph shows the stereo location of each tap in a stereo field. (Since the SuperTap also works with stereo inputs, the correct term is Rotation, which applies equally to mono or stereo inputs). You can click and drag each tap's marker inside this display to adjust its pan (Rotation) position and mix (Gain) values. Drag a marker from side to side to change its Rotation value (from -45 to +45 degrees), and up and down to raise or lower its output gain (from 0.0 to -24dB).

Tempo



You can use the triangular push buttons arrows to raise or lower the tempo value, or directly enter a number, or drag on the BPM value display with the mouse. One very important thing to remember about the Tempo control: Beats Per Minute always refers to the quarter note. No matter what Grid mode you are in (i.e., whether sixteenths or eighths, etc.) the BPM refers to the quarter note. The tempo is displayed in two forms: BPM (beats per minute) and ms (milliseconds).

The Mode button changes the function of the Tap Pad between Tempo and Pattern, depending on the desired mode.

Tempo Mode

If you don't know the exact tempo (speed) of the track you want to edit, but can listen to it, use tempo mode. It allows you to set the tempo rate by 'tapping' the pad with mouse clicks. The tempo is calculated automatically. In fact, SuperTap continually calculates the average tempo while displaying it in the BPM and ms displays. To get the most accurate average reading, tapping for a longer period is preferable. For example, if you tap reasonably consistently for awhile, (even up to two minutes!), the setting should reach a fixed value without changes despite the erroneous tap here and there.

Pattern Mode

If you want to enter your own sequence of delay times for each tap, use Pattern mode. Click your mouse on the Tap pad using your chosen pattern. You'll notice each tap takes the same delay as the sequence you tap. Each tap 'jumps' to position in the tap grid according to the sequence. This takes a bit of practice but can be used to quickly set a complex rhythm while, for example, listening to the song you're working with.

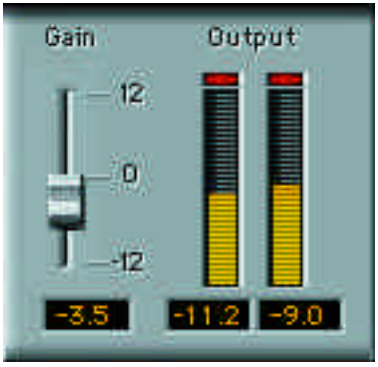
Modulator



To switch on the Modulator, click on the On/Off switch. The modulator only affects the active taps, not the direct.

You can use the Rate button to adjust the oscillation rate. Its range is from 0.0 to 20Hz. The oscillator sweeps the delay of each tap according to the Depth setting. In other words, if the Depth setting is 250ms (its range is from 0 to 500ms) and a particular tap's delay is 700ms, the delay of that tap will sweep from a maximum of 950ms to a minimum of 450ms.

Output Gain



Next to the Modulator are the output gain controls and peak meters. Click and drag the fader to raise or lower the output gain (range is from -12.0 to +12.0dB); the value is displayed below the fader. There are clip lights located above the level meters (click to reset). Below the meters is a numerical display showing the exact value in dB of the highest peak level since the last reset, for both left and right channels.

Direct



The On/Off button turns the direct tap ("dry") on or off. When you launch SuperTap, the Direct tap is on by default.

You can change Gain and Rotation of the dry signal just as you do for each of the taps, and as well, you can click and drag the Direct marker in the Pan Graph.

Delay lines (taps)

Each tap has its own set of controls arranged in a horizontal row, as seen here.



On/Off

This button, resembling an LED, can be used to switch a tap on or off. When a tap is switched on, a marker with a matching color appears in the Pan graph and a light on the side of a tap's marker (in the Grid display) illuminates. You can adjust the Gain and Rotate parameters of each tap using the controls described below:

Gain

Gain is adjustable from 0 to -24dB FS, in 0.1dB steps.

Rotate

Rotation is adjustable from -45 to +45 (in degrees). Rotation is a type of panning, but works for stereo as well as mono. For further information, the Waves S1 Stereo Imager manual has much more information about Rotation. In fact, it is the original "pan" control invented by the man who filed the original patent for stereo, Alan Blumlein. Suffice it to say that it is much better than a pan control.

Tap Delay Grid

Each tap has its own slider located in the display Grid.Each slider shows a value. When in Beats Per Minute,the slider shows how many beats that delay is set to. When in Milliseconds (ms), it shows the value in milliseconds.

Keep in mind that if you have Sixteenths selected for the grid,the number shown in each tap is how many sixteenths that tap is, so if you have "4", that is 4 sixteenth notes, which is equal to a quarter note. Beats per minute *always* refers to the quarter note, no matter the Grid setting.

If you are working with Snap turned off, then the numbers also show whether they are slower or faster than the closest beat by the plus (+) or minus (-) sign in front of the number. If the slider is perfectly aligned with the grid, then the number has no sign.

When a tap is active, a color-coordinated light on the right of the slider illuminates.A slider displays the delay value for that tap in either milliseconds or BPM, depending which mode the grid is set to. Click on the Grid Mode button to change between BPM or ms. To adjust the delay value for a tap, you can click and drag its slider from side to side inside the Grid display, or use the arrow keys.

In addition, a Snap-to-grid button lets you control the "quantization" of the taps.



The grid can be displayed using the divisions selected in the popup menu below the grid:

- Free
- Quarters
- Quarter Triplets
- Eighths
- Eighth triplets
- Sixteenths

In order to simplify the grid and numbering schemes, the grid was limited to these selections, but the BPM has a very wide range of adjustment (40 to 1200bpm), so if you need to work on "half-notes" for instance, you can simply cut the BPM in half and use the quarter note settings, etc. For complex rhythms such as 5's, 11's, etc., we leave that to you and your calculator to work in the "Free" mode!

EQ section



The filters on each tap are the same components from Waves highly acclaimed Q10.

Each tap (and the Feedback line) has its own filter. If you want to hear to the results of changing a filter's parameters on one tap, turn off any other taps and the direct tap.

Each filter's range is from 0.1kHz (100 Hz) to 20kHz and there are six different filter curves:

1. Bell 1 (wider)
2. Bell 2 (narrower)
3. Hi Shelf
4. Low Shelf
5. High Pass ("Low cut")
6. Low Pass ("High cut")

Tap Filter Controls

On/Off

Click on this LED-button to switch the filter on or off. When it's on, the button illuminates. See how easy this is?

Type

This button lets you choose a filter curve. Click on it to toggle through the six different filter curves listed above. Alternatively, click on the small arrow to select from a popup menu.

Freq

This control button allows you to adjust the filter's center frequency. Click and drag up and down on the Freq button, or click it and type in a numerical value. Each filter has a range from 0.1kHz to 20kHz.

Gain

Use the Gain button to boost or lower the gain of the Shelf or Bell filters (it does not affect the Pass filters, even though you can change the value).

It is possible to create a little rhythm section from one percussive strike using a different filter on each tap. For example, you can take a single bass kick, and produce 6 different tones or timbres with the 6tap processors.

Simply set each tap to have very different EQ settings, such as High pass on Tap 1 at 1.0kHz, Bell2 onTap 2 at 7.5kHz and Gain of 8dB, and low shelf on Tap 3, 200Hz, and with Gain set to -12 (for a thin sound). Then simply set the pattern with the Tap pad or manually.

Combined with Feedback and modulation, the possibilities for variations in looping are limited only by the amount of time you have to sit and work.

Feedback



As you were warned earlier, be careful with the Feedback! It is very easy to create very loud sounds that continually get louder and louder, and distortion is completely allowed in this plug-in. Otherwise we would have to make this processor so "safe" that many creative areas would have been eliminated.

The controls are:

Mode
Feedback on/off
Gain
Rotation
Feedback EQ/filter section, except with different filters than the taps.

Mode

This is the most critical button in the Feedback section to understand.

In Norm(al) mode, the feedback simply sends each tap back into the input again. You'll notice that the Feedback delay slider is grayed out and can't be moved while in the Normal mode.

NOTE: while in the Normal mode you have the greatest risk of having positive gain feedback, that is, a sound that increases loudness rapidly into distortion. You must be careful about this, but at the same time, understand there are many creative areas that this allows. If multiple taps align onto the same time and you also have high Feedback settings, then positive gain is rather likely. In other words, it will get very loud very fast, so keep a hand on your monitor level until you "learn" what will happen.

In Tap Feedback mode, the feedback has its own delay time (like a "7th tap"),so if you set a rhythm using a few taps and set the Feedback delay time to the length of a measure,the entire rhythm will repeat.A gain setting of 50% means -6dB (half the energy), so the loop will fade out, where a setting of 100% will cycle a single input endlessly. It is in this Tap Feedback mode that the EQ/Filter settings give great power in making subtractive synthesis looping (filtering each tap differently).

On the other hand,if you set the feedback delay to a short length, and all other taps longer than it, then you'll hear each tap, followed by the feedback loop with each tap's sound overlaying into the short loop. This creates very complex timing issues that are better heard than described.

Feedback on/off

As Bob Clearmountain is reputed to have once said, if you have trouble understanding this type of button, maybe you should consider a different line of work.

Gain

Controls how much signal is fed back into the input. Warning: values above 50 are always delicate, so start with low Feedback Gain values and change it slowly.

Rotation

Being able to "pan" a stereo signal is at its coolest when used in the Feedback loop. For a mono signal, Rotation is very much like a pan control without a pan law (no volume dip in the center), but for stereo inputs, Rotation provides amazing flexibility and unexpected effects. They are unexpected largely because the world has little experience with Rotation, which moves an entire stereo image without collapsing the image width (for more info read the S1-Stereo Imager manual, available at our web site if you don't own the S1).

By taking a signal and rotating it all the way to -45 or 45 degrees (hard left or hard right), the entire stereo signal will be shifted dramatically each time it comes thru the feedback loop. This creates antiphase signals and very interesting stereo placement on looped signals.

For an example of Rotation on Feedback:

- Set just one tap for a 500ms delay.
- Set Feedback in the Tap Feedback mode with 50% Gain.
- Set Feedback delay to 1000ms.
- Set Rotation to -45.
- Play a small section of sound into SuperTap and listen as the sound rotates thru the stereo field (and even "outside" of it).
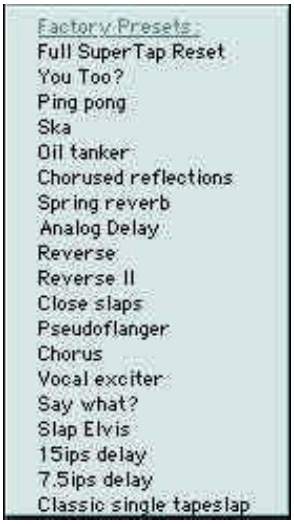
EQ/filter section

Only 3 filter types are in the Feedback EQ section:

- Low Pass
- Low Shelf
- Low Decay

The low shelf gives enough control to act as a highpass, and leaving out high shelves and high pass filters eliminates the possibility of strong boosts in treble. This keeps positive feedback overloads from producing huge amounts of high frequency energy. In other words, it was "safer" for us to make it this way.

Low pass and low shelf are self-explanatory, but the Low Decay is the filter type that is different from any other tap. It is simply a very gentle high shelf that has only cut (negative gain) values, so that you can make each repetition be a little duller (less treble), very much like tape or analog delays, or vintage delays that had low sampling rates. Good settings to start with are about -3dB.



Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the WaveSystem Guide.
Each preset provides a good starting place for some fun. Here are brief descriptions of the presets.

Full SuperTap Reset

This is the default setting for all SuperTap plug-in components (mono/stereo, 2/6 taps, with or without modulation). It is set for fairly short delays of all available taps, with increasing stereo spread on each successive tap, as well as switching sides between L and R on each tap.

You Too?

A simple 2-tap cloner than duplicates the input with some Feedback for an audio house of mirrors. Quite good for a lead instrument, although you'll probably need to lower the gain of the taps some.

Ping Pong

Simple back-and-forth, with some HF dulling for better effect.

Ska

You know, the mighty mighty beat. The big big vocal.One Step Beyond. The Specials, in all their glory, or at least as we remember it.

Oil Tanker

Bad reflections,like a cheap house of too many mirrors, with closely spaced shaky reflections (sounds even better with the modulation versions).

Chorused reflections

A pleasant scattered reflection series with subtle pitch shifts. By putting the Tempo mode into Pattern mode and altering the Tempo, you can control the density (short or long) of the reflections. Very nice when blended with a deep digital reverb.

Spring reverb

Not as bad as the real thing, but with just as many distracting qualities. At least it's a start to getting toward the spring sound, and has the added feature and advantage of not making a huge noise if you bang on the top of the box.

Analog delay

Notice the filtering that heavily removes the high frequencies from the delays. By playing with these filters, even heavier dull emulations can become dark spiraling blurs. Very nice for cloudy, moody rock (which always seems to be popular with youth, no matter the age).

Reverse, Reverse II

By carefully setting the Gain of each tap, a pseudo-reverse effect is established, not much unlike a reverse-tape repeating echo (by flipping the reels over). By simply offsetting the track to the value of the last tap, you can have true pre-echo.

Close slaps

Nice for lead instruments or singers, as well as musicians. Old joke. The close spacing of the slaps can produce cancellation in the low frequencies, so if you wish to use this setting on a bass instrument, you might want to use a high pass filter on all the taps so that those frequencies don't suffer from unequal frequency response. If you don't understand this, just try it anyway, by using High Pass filters at about 500Hz or so on all the taps. The proof is in the listening.

Pseudoflanger

Why not use the MetaFlanger? It will do a better job, but if you need to switch to a setup (and since no DAWs allow you to automate the plugins being inserted or removed yet), this gives you a nice fake start on a flanging type of sound.

Chorus

Lots more to be explored here; we've only started you at the edge of a vast range of possible settings for chorusing and double/triple/n-pling the sound. Since the Rate and Depth don't have linking, you'll have to

carefully adjust both settings to get just the right amount of pitch variation. Similarly to the Pseudoflanger, closely spaced delays will cause cancellation of frequencies,so if you are using this on a source with a wide range of frequencies (especially bass or low notes),then high pass filters on each tap will help to control the unevenness of the sound. Better to have a solid bass in the Direct than to have unequal bass everywhere.

Vocal exciter

Another area with lots more to be explored. This is just a start, using 2 taps and some strong EQ to add an edge. By no means is it a true exciter, but it certainly puts an edge on the input.

Say what?

Thissiskindofhardtounderstandstandbecauseeverythingthing is runninginging togetherehter. A deliberately confusing set of time delays that makes comprehension rather challenging.

Slap Elvis

He'd probably have liked it, but this is really not about any physical issues, just giving the rockabilly vocal slap that seems to emulate that period of history, and in stereo too. Swing dance needs this type of effect if you blur the line between Brian Setzer and the King.

15ips delay

True emulation of the Ampex 440, whose distance between the record and play heads is 2.508 inches (thanks to John French of JRF Magnetic Sciences), which gives 172ms delay. If you fed the output back to the input,then you get the repeating taps we have set in this setup. Changing the EQ settings can provide something you never had with the old-style "turn up the tape output on the board"method: independent EQ on each repeat! This is as nice as having a holodeck Ampex 440 with a cloning subroutine.

7.5ips

Everything we said about the 15ips delay, but at half the tape speed,i.e., 344ms delay times. Very very much a reminiscent sound (to those who were there and can remember) of the types of delays during the period when the Ampex 440 was found in nearly every studio.

Classic single tapeslap

Simply a 1-tap version of the 15ips delay setup. This is probably more realistic a delay setting than the Slap Elvis, and is in mono.

SuperTap Tempo Sync in V5

A new, simple, and perfect way of setting your digital delay tempos has been added to **SuperTap** in version 5.0 - sync to host tempo.

This new function enables **SuperTap** to lock to the host application's tempo and tie the relevant controls to that externally controlled tempo.





SuperTap has two sections that apply to tempo syncing. One is the Tempo section's tap tempo delay time value. The other is the Modulation section.

A new control labeled "Sync" has been added to each of these sections, and it has two modes in each section:
- In the Tempo section: Auto or Manual
- In the Modulation section: Tempo or Manual

In the Tempo section, when "Sync" is set to Auto, the tempo control receives its value from the host application. The "BPM" and "ms" controls are disabled and their values are locked to the host's tempo, and the TapPad mode is fixed for pattern tapping.

When "Sync" is set to Manual, the Tempo section will not be in sync with the host's tempo and will perform as it did in V4, with its parameters controlled internally.

In the Modulation section, when the “Sync” button is in Manual mode, the modulation section functions as it did in V4, and the “Rate” control determines the modulation rate in Hertz (cycles per second).

However, if the “Sync” button is in Tempo mode, then the modulation section is locked to the tempo in the Tempo section, whether set internally or in sync with the host’s tempo value.

In this case, the “Rate” button changes its functionality from “Rate (Hz)” to “Rate (x/Beat)” indicating that the value being set in the control determines the number of modulation cycles per beat, where the number of beats per minute (BPM) is determined and controlled by the plug-in’s tempo section.

For example, if “Rate” is set to 3.00 and the tempo section is at 120 BPM (or 2 beats per second) then the modulation rate will be 3 cycles per beat, which in this case will be 6 cycles per second (6Hz).

The “Rate” button has been enhanced with a new drop-down menu which allows a quick selection of some predefined and commonly used subdivisions of the beat (i.e. quarter notes, etc).

Create beautiful digital delays, *perfectly timed to your music*, with the new Waves **SuperTap V5.0**!