



ETHER-PHONE

VERSION 1.0 - FREE



VIRTUAL THEREMIN

FOR KONTAKT 4.1 AND HIGHER

Welcome!

This help file contains an overview of the free version of the Wavelore Ether-Phone virtual theremin for Kontakt 4 and higher. Reading it carefully and familiarizing yourself with the interface and parameters offered will allow you the most control possible when using this highly versatile and flexible instrument.

Enjoy!

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Before you Start:

The Concept and Design of the Wavelore Ether-Phone

Ether-Phone consists of several waveform samples, a pair of impulse response samples (“IR’s”), and a Kontakt instrument with extensive scripting to allow you a ridiculous degree of control over the playability and sound of the library. The instrument samples include a sine wave, sawtooth wave, triangle wave, square wave, white noise, and a full-rectified sine wave (the exact waveform created by the original theremin). The IR samples include an impulse response from an amp, and one from a concert hall. The instrument itself contains all the programming necessary to make easy changes to its sound and behavior, and all the important aspects of the theremin have been included. Additionally, the interface displays an image of a theremin, complete with the volume and pitch antennae, with two disembodied hands that show what your music would look like if it were played on a real theremin!

I) What is a theremin, and How Does It Work?

The theremin, originally referred to by its inventor, Leon Theremin, as the “Etherphone”, was one of the world's first electronic instruments. It is unique in that the instrument is never actually touched by the player; Rather, one's hands are waved in proximity to two antennae, one of which controls the instrument's pitch, and the other its volume. The nearer the hand to the pitch antenna, the higher the generated tone. Similarly, the nearer the hand to the volume antenna, the lower the volume of the generated tone. The instrument generates a constant tone, and separation between notes can only be created by dropping the volume hand to an inaudible level while changing the pitch with the other hand.

Vibrato is created by a variable degree of oscillation of the pitch hand, and can vary in speed and width from very subtle to heavily exaggerated.

The theremin has been used extensively in film score, and is particularly identified with sci-fi films, wherein it typically plays very eerie, lyrical, and heavily vibrato-laden passages. It has also been used in rock, pop, avant-garde, and novelty music throughout its history.

Though the original theremin design used a specific setup of tone-generation circuitry to make a single unique sound (A “full-rectified sine wave”, where the lower-half of the waveform is “flipped” to the positive side), modern theremins often offer more advanced controls for generating different kinds of waveforms.

II) How Does All of That Translate to MIDI and Kontakt?

Portamento: To allow the smooth carrying of one note to another, the Wavelore Ether-Phone uses portamento, a traditional synthesis trick, with some added innovations. The theremin can only play one note at a time, and is hence referred to as a “monophonic” instrument. The Wavelore Ether-Phone, similarly, can only generate one sound at a time, and playing different keys on the keyboard (or in the DAW) simultaneously will result in the pitches sliding from one to the next in the order played. See the [quick-start guide](#) below for a detailed description of how portamento works. There are three other things to be aware of when considering the use of portamento.

- The factory setup allows you to control slide speed with two possible types of input: The first is velocity. That is, the harder you hit the new note, the faster the slide will execute. The softer, the slower. The second is the factory assigned MIDI CC#5. Regardless of this controller's setting, velocity will still access a range of speeds; The value of CC#5 simply allows access to faster or slower ranges of speeds, depending on the currently active preset.
- Both the original note and the new target note may sound slightly out of tune at first, and will correct themselves to a reasonable accuracy within a moment afterward. This phenomenon is not inherent in the samples themselves, but rather, is a result of an algorithm that causes the instrument to “miss”, just like a real human would, and then “correct by ear”. This feature of “Pitch Humanization” is also removable.
- Where a real theremin produces a constant tone which can only be silenced by dropping the volume hand to an inaudible level, the Wavelore Ether-Phone only produces sound when one or more MIDI notes are held. To silence the instrument, one can either release all keys, or alternatively, lower the expression pedal (CC#11) to a value of zero.

Vibrato: When you move your mod-wheel (CC#1, or other CC#, if you re-assign the factory vibrato controller) while playing a note on your keyboard, you will hear the sounding tone oscillate in pitch. Increasing the mod-wheel value

increases both the speed and the depth of the vibrato...but not exclusively: There is another factor that is changing the speed and width of vibrato with each new cycle of the pitch oscillation: *Randomness*.

A real theremin player cannot perform a vibrato (which is a cyclical movement of shaking the hand back and forth over a given central pitch) without each cycle being slightly different in speed and physical width from the last. He/she will always stay within practical constraints, but removing the human indeterminacy from this sound leads to the vibrato we typically hear from synthesizers and samplers: Constant, repetitive, and unrealistic. The width and speed of both parameters are all fully configurable, and randomization of each occurs automatically.

Timbre: As mentioned above, modern theremins are capable of producing a variety of possible timbres. We took this concept several steps further when developing the Ether-Phone, and gave the instrument six switchable oscillators, each of which uses a unique waveform.

Effects: Given that the theremin is an electronic instrument, it can, much like an electric guitar or keyboard, have its signal processed through any combination of effects units. We included delay, reverb, distortion, saturation, and a rotating speaker simulator, all of which can be independently activated.

1) QUICK START

1.1) The Instrument at a Glance

When you load the Wavelore Ether-Phone into Kontakt, you will see its user interface:



This page gives you immediate access to the most common settings. For detailed info on all the controls, please see [Section 2. “Editing the Instrument”](#). For now, the curious may get a lot from knowing that the controls have all been labeled and organized for intuitive navigation and use, so this document may only be necessary if you find something in the interface to be less-than-clear.

Here are the factory settings for MIDI controllers used (most of these are re-assignable) – again, see [Section 2. “Editing the Instrument”](#), for details):

CC#1 (Mod-Wheel): Vibrato.

CC#5: Controls portamento speed range; Lower values will access faster portamento speeds, and higher values will access slower speeds. Within any given range, velocity of target notes will determine the speed selected, unless velocity response is set to zero.

CC#11 (Expression Pedal): Volume control. Note that you can disable response to CC#11 by clicking the volume hand (shown as a palm-down open hand at the top right). Click it again to re-activate CC#11.

1.2) “Enough Jargon! How Do I Play This Thing!?” or Understanding the Ether-Phone In 5 Easy Steps.

For all the mumbo-jumbo presented so far, playing the Wavelore Ether-Phone is surprisingly easy. With the default bank/patch loaded (that is, load the instrument in its factory state), do the following.

- 1) Play a note on your MIDI keyboard. Play it while moving the mod-wheel. Notice that the pitch oscillates, and that the pitch hand on the interface wiggles along with the sound.
- 2) Play the note again, and hold it while playing a different note. Hey - A slide! Do it again, but this time be sure to hold both notes, then release the last note so that the pitch slides back down to the first. Sliding in this way will work between any two or more notes.
- 3) Repeat step 2 several times, each time striking the new note at a different intensity. Notice how the speed of the slide is proportional to how hard the second note was struck, as well as how the speed of the slide invoked by releasing that key matches the speed of the first slide. In this way, you can play slides of varying speeds using just note-on velocity, rather than having to move a controller each time you want a different speed.
- 4) Repeat step 2 or 3, adding vibrato with the mod-wheel any time you feel like it.
- 5) Play and hold any note while moving CC#11 – Note how the volume of the instrument changes. CC#11 simulates the movement of the hand near the volume antenna of the theremin. Controlled use of CC#11 allows real-time control over attack and release, as well as allowing the reduction of volume during slides, so that the effect of portamento is less audible. Try this some more, selectively adding vibrato using CC#1. Notice how the combination of slides, volume control, and vibrato results in a very expressive sounding performance.

2) Editing the Instrument's Setup

There is always a possibility that a given instrument configuration will not behave in the way you may prefer. Given the enormous number of possible opinions on how any instrument should be configured, we've done everything possible to offer the best out-of-the-box programming we can in this library, but you may still have certain reservations or differences of opinion. These differences could be about a wide variety of choices, including:

- Choice of assigned controllers: Many may want, for example, to have the instrument use different controllers for vibrato and portamento speed, where our configuration uses the mod-wheel and CC#5, respectively.
- Vibrato style: Our choices for each preset vary in speed and intensity. You may find a need for a more or less aggressive vibrato.
- Slide speed ranges: You may only want your slides to vary from half a second in length to a full second, whereas our original setup offers a range from very fast to very slow. You can configure slide speed ranges and control sources in almost any variety you wish.

In addition to these variables, there are countless other ways in which the instrument could be different, and some of those ways could be better, at least for certain people or projects. This section contains instructions on some of the many ways that you can customize the sound and behavior of the Ether-Phone to suit different needs or tastes.

2.1) About the Controls



Concept:

In the screen-shot above, the various knobs and buttons allow you to configure the slide/vibrato behavior and sound, the activation of oscillators, and the use of effects.

Controls:

- 1) *Speed CC#*: Sets the MIDI continuous controller for slide speed. In the factory setup, this option is set to CC#5, and slide speed will also be influenced by velocity.
- 2) *Velocity Response*: Sets the extent to which velocity will affect slide speed. When performing portamento slides on the keyboard, the factory settings will cause target slide notes that are played harder to slide faster than target slide notes that are played more softly. Reducing this setting to zero will “lock” slide speeds to that determined by the current value of the CC# specified in item #1, above. We recommend using the factory settings, as it allows greater expressivity in real time without demanding the use of another realtime CC#.
- 3) *Minimum Speed*: Sets the duration in milliseconds of the fastest possible portamento slide. This is the duration of the slide when played with CC# (and optional velocity) at its lowest value.
- 4) *Maximum Speed*: Sets the duration in milliseconds of the slowest possible portamento slide. This is the duration of the slide when played with the CC# (and optional velocity) at its greatest value.
- 5) *Vibrato CC#*: This assignable controller will invoke vibrato when set to a non-zero value, as well as control the width and depth of the vibrato.
- 6) *Maximum Vibrato Speed*: This knob sets the maximum speed of the vibrato in cycles per second (Hz). For example, when the maximum speed is set to 10 Hz, any time vibrato is fully invoked, it will fluctuate the pitch of the instrument from in-tune, to fully sharp, to fully flat, and finally back to in-tune, ten times each second.
- 7) *Maximum Vibrato Depth*: This knob sets the maximum width of vibrato in cents (hundredths of a semitone).
- 8) *Activate/Deactivate Oscillators*: These buttons are on/off switches for each of the six oscillators.
- 9) *Activate/Deactivate Effects*: These buttons are on/off switches for each of the effects. Note that activating the rotating speaker will bypass any use of vibrato.
- 10) *Hand Display*: When you play your MIDI keyboard, the pitch hand will move horizontally, reflecting the current note played. Since the instrument occupies the whole MIDI note range, pitch hand movements may not necessarily be very large. To force the pitch hand to reflect a smaller range of pitches, play the lowest and highest notes you intend to use, while the expression pedal is set to zero. Doing so will set the range over which the pitch hand will react. After setting the range, any notes which exceed the minimum or maximum will automatically expand the range. The volume hand moves vertically to reflect the current value of CC#11. To disable animation, click the pitch hand so that it turns transparent. To disable volume control (set all notes to full volume), click the volume hand so that it turns transparent.

2.2) Saving Your Changes

If you've gotten this far in the manual, you're probably familiar with all the controls available for this instrument and how to use them, and you've probably discovered some sounds you like (We sure hope you have!). Once you've made changes that you like, you need to save your instrument in order to recall them, using Kontakt's "File" menu. When using the Ether-Phone within your DAW, the current settings will save and re-load with your project.

3) Where to Get More Help

At Wavelore, we consider it our duty to ensure that you have the best possible experience with our products and support.

If you're having trouble, e-mail us and we'll help you!! We're at:

support@wavelore.com

There is also a support section on our website which will contain updates to the product as they become available, and currently contains links to a number of useful resources, including a link to our forum. We'd appreciate you addressing any problems there, since the more questions are asked and answered in the forum, the more useful a resource it can become for our users over time. That said, please don't hesitate to contact us at the e-mail address above for direct support

Appendix: Credits

The following people played important roles in the creation of this software instrument:

Mark Belbin - Audio editing, instrument design, documentation.

Luke Merdsoy, Mertz Creative Communications Inc. - Wavelore logos and visual concept. <http://www.mertz.ca>