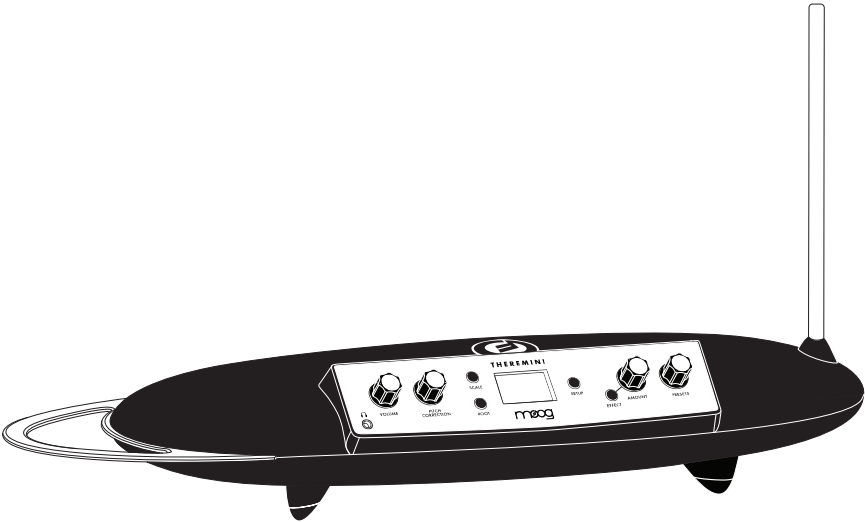




# THEREMINI

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USER'S MANUAL



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# IMPORTANT SAFETY INSTRUCTIONS

WARNING - WHEN USING ELECTRIC PRODUCTS, THESE BASIC PRECAUTIONS SHOULD ALWAYS BE FOLLOWED:

1. Read all the instructions before using the product.
- A. Keep these instructions.      B. Heed all warnings.      C. Follow all instructions.
2. **WARNING:** Do not use this product near water. To reduce risk of fire or electric shock, do not expose this product to rain or moisture. - For example, but not limited to: near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool or the like.
3. This product, in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable.
4. The product should be located so that its location does not interfere with its proper ventilation. Do not block any ventilation openings with any items including but not limited to newspapers, table-cloths, curtains, etc. Install in accordance with the instructions in this manual only.
5. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat. No naked flame sources (such as candles, lighters, etc.) shall be placed near this product.
6. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
7. The power-supply cord of the product should be unplugged from the AC mains socket-outlet when left unused for a long period of time or during lightning storms.
8. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
8. Clean only with a dry cloth.
9. This product should only be serviced by qualified personnel for issues including but not limited to:
  - a. The power supply cord or the AC mains plug has been damaged.
  - b. Objects have fallen, or liquid has been spilled onto the product.
  - c. The product has been exposed to water or other source of moisture.
  - d. The product does not appear to operate normally or exhibits a marked change in performance.
  - e. The product has been dropped or the enclosure damaged.

INSTRUCTIONS PERTAINING TO RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS:

Do not open the chassis. There are no user serviceable parts inside. Refer all servicing to qualified personnel only.

**GROUNDING INSTRUCTIONS:** This product must be earth-grounded; if it should malfunction or breakdown, earth-grounding provides a path of least resistance for the electrical current to reduce the risk of electric shock. This product is equipped with a cord having an equipment grounding connector and a earth-grounding plug (plug with a third prong). The plug must be plugged into an appropriate socket outlet that is properly installed and earth-grounded in accordance with all local codes and ordinances.

**DANGER:** Improper connection of the equipment's earth-grounding connector can result in a risk of electric shock. Check with a qualified electrician or serviceman if you are in doubt as to whether the product is properly earth-grounded. Do not modify the plug provided with this product - if it will not fit in the socket-outlet, have a proper outlet installed by a qualified electrician.

**NOTE:** this equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the fcc rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

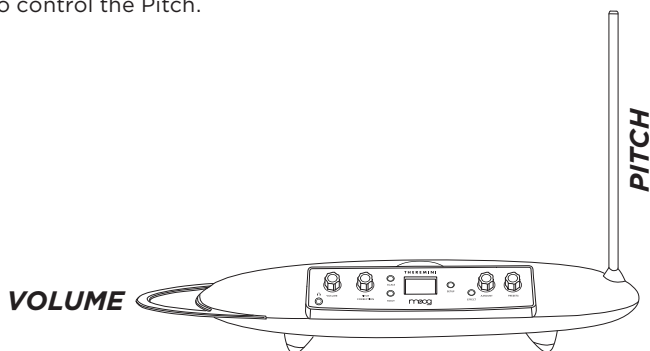
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/tv technician for help.

**CAUTION:** please note that any changes or modifications made to this product not expressly approved by Moog Music Inc. Could void the user's authority granted by the fcc to operate the equipment.

## THEREMINI OVERVIEW

Congratulations on the purchase of your new Theremini.

The Theremin is one of the oldest electronic musical instruments\*. As with all Theremin instruments, the Moog Theremini is played by interacting with two electronic antennae using subtle hand gestures. One antenna is a horizontal loop used to control the Volume; a vertical rod antenna is used to control the Pitch.



Due to the nature of these antennae, the Theremini is very sensitive both to the player AND its environment. Special care should be used when preparing a space to perform with your Theremini. Use the simple calibration procedure each time you move your Theremini to ensure a flawless performance.

The Moog Theremini is an ideal first Theremin. Unlike traditional Theremins that play a continuous sweep of pitches, the Theremini's Pitch Correction system allows the Theremini to play the distinct notes and steps of a musical scale; 22 Scales are available, beginning on any of 12 Root notes. This Pitch Correction can be added in any amount, effectively changing the Theremini's level of playing difficulty to match any performer's skill.

The front panel hosts a multi-function LCD screen that makes it easy to choose a preset, change settings, and quickly edit parameters. The built-in tuner uses the LCD to display both the note being played, and to indicate whether the note is being played sharp, flat, or perfectly in tune. This provides an excellent tool for improving pitch accuracy.

The Theremini features a built-in speaker, plus a headphone jack for private rehearsal. Based on Moog's award-winning Animoog synthesizer, the internal sound engine offers 32 presets, each providing a distinctly different tonality, or timbre. In addition, an onboard stereo effects section is provided, adding lush trails or spaciousness to the overall sound of your Theremini.

*\*Curious? A brief history of the Theremin can be found on page 29 of this manual.*

## GETTING STARTED

In order to get started, you will need to set up your new Theremini in a suitable environment and conduct the quick calibration procedure. For best results and the highest degree of satisfaction, please follow these simple steps before exploring your Theremini.

### UNPACKING

Inside the box, you will find the following:

- Theremini
- AC Power Adaptor
- Warranty Card
- This User Manual
- Quick Start Guide

To begin go ahead and follow these few steps:

1. Remove your new Theremini from the box and packaging.

*NOTE: Save this box in case you ever need to ship your Theremini back to Moog.*

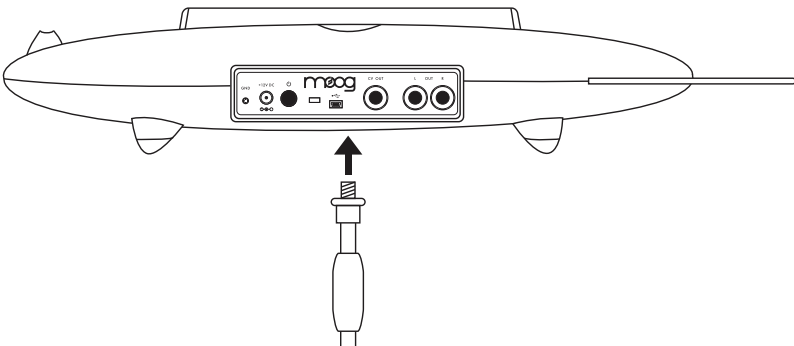
2. Remove the AC power adapter from the box and packaging.

3. Remove the Pitch antenna from its storage slot on the bottom side of the Theremini. Simply press the catch tab to release the antenna, and then gently pull the antenna out.

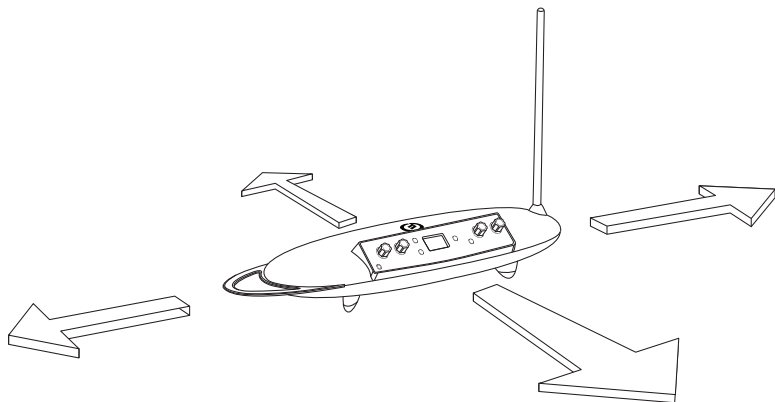
4. Register your Theremini to be notified of new sounds, features, and updates as they become available. Visit **[www.moogmusic.com/register](http://www.moogmusic.com/register)**

### SETTING UP YOUR THEREMINI

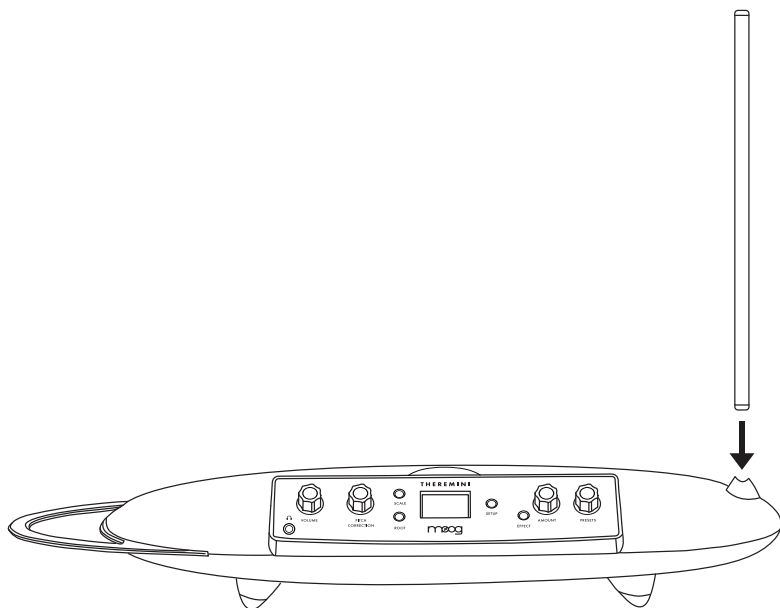
1. The ideal placement for your Theremini is on a microphone stand or camera-style tripod. Attach the Theremini to a suitable stand using the built-in 3/8" threaded mount located on the bottom of the unit.



If no stand is available, the Theremini can also be placed on a stool or table. Avoid using a metal surface, as this will interfere with the functioning of the Theremini's antennae.

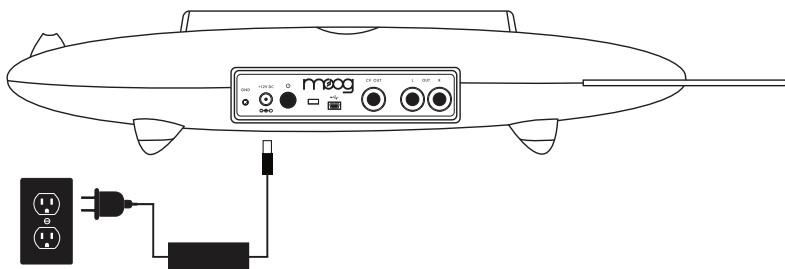


The Theremini reacts to almost everything within its field of sensitivity, so keep it at least 4 feet away from any large metal objects or sources of movement.

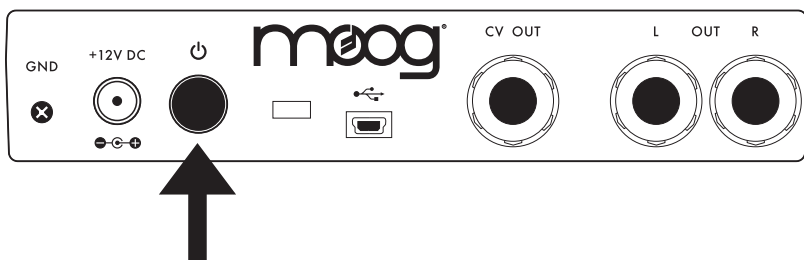


2. Gently insert the Pitch antenna into the Pitch antenna slot, and ensure that the antenna is snugly seated.

3. Using the supplied power adapter, connect the cord end to the +12 VDC jack on your Theremini's rear panel. Next, plug the supplied IEC cable into the power adapter itself, and then plug the IEC into a wall receptacle.



4. Press the POWER button on the Back Panel to turn the Theremini ON.



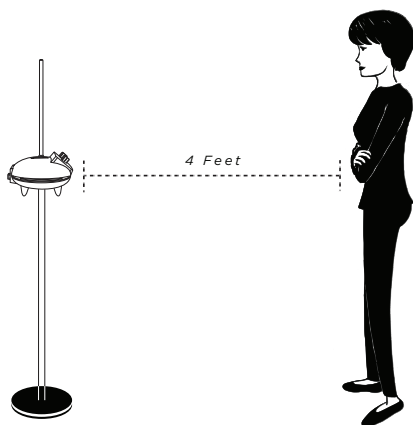
*And that's it! Now you're ready to calibrate your Theremini.*

## CALIBRATING YOUR THEREMINI

Calibration allows the Theremini to adapt to its environment, as well as your body movements and playing style. Calibration **MUST** be performed before using your Theremini for the first time, and must be repeated each time your Theremini is moved to a new location, or when it has been sitting unused for a long time. Don't worry about getting it perfect your first time. The automated calibration procedure is quick and easy, and can be performed at any time.

*NOTE: As your technique develops, you may wish to update your Theremini's calibration*

To access the Calibration menu, press and hold the **SETUP** button until the Calibration screen appears. Then press the **EFFECT** button to begin the Calibration process and just follow the on-screen prompts.



```
CALIBRATION
Press EFFECT
to begin
EFFECT: begin
SETUP: next
```

```
CALIBRATION
Press SETUP,
then move at
least 4 feet /
1.5m away
SETUP: calibrate
```

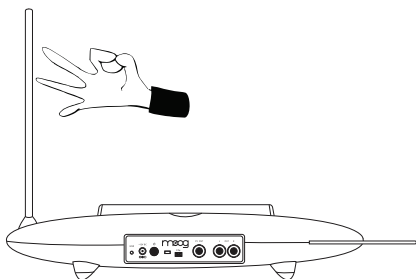
```
CALIBRATION
Move away
4 feet / 1.5m
5
```

Press the **SETUP** button and step at least 4 feet away from the Theremini. This will allow the Theremini to adjust to its environment and tune the oscillators. The display will count down, and then prompt you to proceed to the next step.

## CALIBRATING THE PITCH ANTENNA

### HIGHEST NOTE POSITION

Press the SETUP button and place your hand very close to the Pitch antenna, but without touching it. This will determine your hand position for playing the highest selected note. The display will count down, and then prompt you to proceed to the next step.



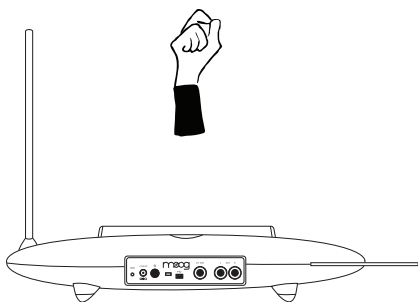
**CALIBRATE PITCH**  
Stand at arm's  
length from  
pitch antenna,  
then press **SETUP**  
**SETUP: next**

**CALIBRATE PITCH**  
Press **SETUP**,  
then hold hand  
near pitch  
antenna  
**SETUP: calibrate**

**CALIBRATE PITCH**  
Hold hand near  
pitch antenna  
**3**

### LOWEST NOTE POSITION

Press the SETUP button and place your hand about an arm's length away from the Pitch antenna. This will determine the hand position for playing the lowest selected note. The display will count down, and then prompt you to proceed to the next step.



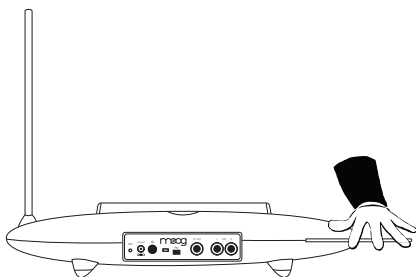
**CALIBRATE PITCH**  
Press **SETUP**,  
then hold hand  
far from pitch  
antenna  
**SETUP: calibrate**

**CALIBRATE PITCH**  
Hold hand far  
from pitch  
antenna  
**3**

## CALIBRATING THE VOLUME ANTENNA

### MUTE POSITION

Press the SETUP button and place your hand close to the Volume antenna, but without touching it. This will determine the hand position for muting the Theremini (the lowest volume position). The display will count down, and then prompt you to proceed to the next step.

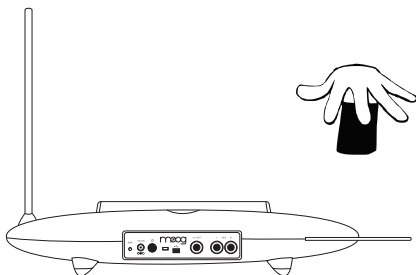


```
CALIBRATE VOLUME
Press SETUP,
then hold hand
near volume
antenna
SETUP: calibrate
```

```
CALIBRATE VOLUME
Hold hand near
volume antenna
3
```

### FULL VOLUME POSITION

Press the SETUP button and raise your hand up over the Volume antenna. This will determine the hand position and distance for playing the Theremini at the loudest volume. Wait for the LCD countdown to finish.



```
CALIBRATE VOLUME
Press SETUP,
then hold hand
far from volume
antenna
SETUP: calibrate
```

```
CALIBRATE VOLUME
Hold hand far
from volume
antenna
3
```

Your Theremini is now calibrated. In order to make playing easier, the next steps will show how to set the Note Range.

## SETTING THE NOTE RANGE

In the previous calibration procedure, Step 2 allowed you to define the hand positions where the highest and lowest notes will be played. Here, the Low and High note settings allow you to select the range of notes that can be played within these positions.

Setting a smaller range of notes will make it easier to find and play the correct note. We recommend starting with a 3-4 Octave range. Setting a larger number of notes will make it more difficult to play accurately.

1. Press the SETUP button to enter the SETUP MODE

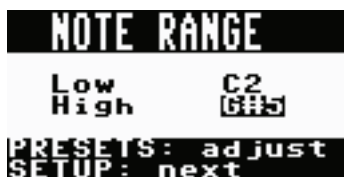
2. Press the SETUP button to advance to the NOTE RANGE screen.

3. Turn the PRESETS knob to specify the lowest note (Low) that can be played by the Theremini.

4. Press the SETUP button to advance to the High note selection.

5. Turn the PRESETS knob to specify the Highest Note (High) that can be played by the Theremini.

6. Press SETUP to save these values and advance to the next screen.



*Congratulations! You're done calibrating your Theremini and setting the note range. Now you're ready to explore all of the controls and connections.*

## THEREMINI FEATURES & CONTROLS

The Front panel controls are kept to a minimum, allowing both hands to remain free to play the Theremini. The most frequently used controls—Volume, Pitch Correction, Effect Amount, and Presets—feature active knobs for fast access. Panel buttons allow quick selection of musical Scale, Root note, and Effect Preset. The backlit LCD screen displays visual feedback from a built-in tuner. The Setup button offers access to the Calibration procedure and other deeper levels of control.

## EXPLORING THE THEREMINI

Before we dig in to the controls and connectors, let's quickly look at a few important features of the Theremini body itself.

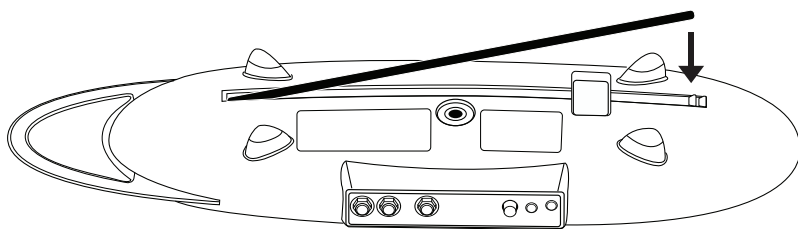
### INTERNAL SPEAKER

The Theremini is equipped with a built-in monitor speaker. This speaker allows you to setup and play anywhere without the need for an additional amplifier or speakers. The output level is controlled by the VOLUME knob on the front panel.

*NOTE: When headphones or earbuds are connected to the Headphone jack on the front panel, the internal speaker is muted, allowing for truly private practice.*

### PITCH ANTENNA STORAGE

The bottom panel provides convenient storage for the removable Pitch antenna, making the Theremini easy to transport. To store the antenna, place one end of the pitch antenna into the catch tab side of the storage area. Lightly push the catch tab and press the other end of the antenna snugly into place. You can also place the antenna catch tab end first. To remove the antenna from storage, hold the catch tab and pull the antenna out.

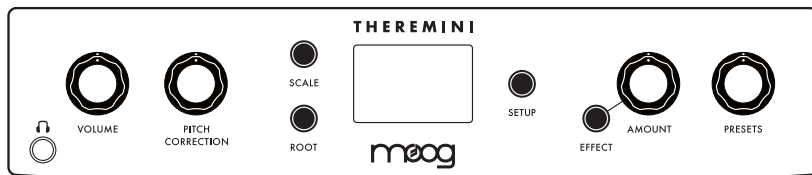


### STAND ADAPTOR

Also on the bottom panel is a 3/8" stand-mount fixture. This allows the Theremini to be mounted directly on a microphone stand or camera tripod. While the 3/8" size is quite common, an inexpensive 5/8" female to 3/8" male adapter can be used to accommodate a 5/8" mic stand.

## FRONT PANEL CONTROLS

This section offers an in-depth look at the Theremini's front panel controls. The LCD screen in the center is used to display the various selected functions; during performance, the LCD also offers real-time information from the built-in tuner.



### HEADPHONE JACK

The Theremini is equipped with an 1/8" stereo Headphone Jack for private practice. When the Headphone Jack is in use, the internal speaker is muted. Use the VOLUME knob to adjust the headphone volume level.

### VOLUME KNOB

There are three ways to enjoy listening to your Theremini: through the internal speaker; using headphones; or by using the audio output jacks to connect to an amplifier, recording equipment, etc. The VOLUME knob is used to control the listening volume of the built-in speaker and the headphone jack only. An additional Master Volume setting can be accessed from the SETUP Menu to set a maximum volume level.

### PITCH CORRECTION KNOB

Unlike a guitar fingerboard marked with frets, or a piano that uses separate keys for each note, the Pitch antenna of the Theremini is an electromagnetic rod, capable of creating huge continuous changes in pitch. By introducing Pitch Correction, it is possible to create distinct steps that align perfectly with the notes in a scale.

When the Pitch Correction knob is at its minimum setting, no pitch correction is being applied, and the Theremini functions just as a traditional Theremin. By setting the Pitch Correction knob to the middle position, enough pitch correction is applied to assist in accurately locating notes, while still allowing subtle hand gestures to create vibrato and pitch bend effects. With the Pitch Correction knob set to its Maximum position, only the notes within a selected scale can be played. This setting can be very rewarding for beginners, but is also very useful as a live performance tool or effect, opening up a whole new realm of musical capabilities not possible on a traditional Theremin.

## SCALE BUTTON & ROOT BUTTON

These two buttons work together with the PITCH CORRECTION knob, allowing the Theremini to play notes in a selected musical Scale and key (or Root) With Pitch Correction engaged, only the notes in your selected scale and key will be available on your Theremini.

### SCALE

Press the SCALE button to advance through the Theremini's available Scales. To advance quickly, hold the SCALE button and turn the PRESETS knob. Available scales are:

Chromatic	Locrian	Gypsy
Ionian (Major)	Major Blues	Arabian
Dorian	Minor Blues	Egyptian
Phrygian	Diminished	Ryukyu
Lydian	Major Pentatonic	Whole Tone
Mixolydian	Minor Pentatonic	Major 3rd
Aeolian (Natural Minor)	Spanish	Minor 3rd
		5th

### ROOT

Press the ROOT button to advance through the Theremini's available Root note options. To advance quickly, hold the ROOT button and turn the PRESETS knob. Available root notes are:

C	C#	D	D#	E	F
F#	G	G#	A	A#	B

## TUNER DISPLAY

The Theremini is equipped with a built-in tuner that shares the multi-function LCD screen in the center of the front panel. This 128 x 64 pixel backlit display provides instant visual feedback, showing how accurately each note is being played. Using the tuner can help improve pitch accuracy while playing, and can also be a valuable tool for assisting in training your ears to recognize subtle changes in pitch.

The note being played is displayed on the left side of the screen. The horizontal bar and diamond on the right show the accuracy of a note. If the diamond is left of center, the note being played is Flat. If the diamond is to the right of center, the note being played is Sharp. When the diamond lines up with the center bar, the note is perfectly in tune.



## SETUP BUTTON

The SETUP button offers access to a number of global features and settings that can be used to optimize the performance of your Theremini—including the Calibration settings.

To enter the Setup Mode, press the SETUP button. Each successive press of the SETUP Button will advance to the next parameter. To quickly access a particular parameter, simply hold the SETUP button, and turn the PRESETS knob to scroll through available options. To quickly exit the current menu and return to the main screen, simultaneously press the SETUP and EFFECT buttons.

*NOTE: For detailed information regarding each of the Setup mode parameters, please refer to the SETUP MODE chapter in this manual.*

## EFFECT CONTROLS

The Theremini is equipped with a built-in stereo delay effect. Adding delay to your sound can introduce everything from classic slap-back echoes, to dramatic outer-space trails. Using the EFFECT controls you can select both the delay type and the amount of delay effect being added.

## EFFECT BUTTON

There are three delay types available in the Theremini: Short, Medium, and Long. Each press of the EFFECT Button will select the next option, in a rotating cycle (Short, Medium, Long, Off, Short, etc...)

## AMOUNT KNOB

Here you can set the mix between the original Theremini sound, and the delayed EFFECT sound. At the minimum setting (knob fully counter clock-wise), only the original sound is heard; there is no delay added to the sound. At the maximum position (knob turned fully clock-wise) only the delayed signal is heard.

## PRESETS

Unlike the sound creation abilities of a traditional Theremin, the Theremini offers 32 Preset sounds in memory. The internal sound engine is derived from Moog's award-winning Animoog Synthesizer architecture. Simply turn the PRESETS knob to make your selection.

The selected Preset is shown at the top of the LCD screen. Presets can be edited, modified and saved via MIDI.

Be sure you REGISTER your instrument to learn about upgrades, and applications for your Theremini as they become available.

**[www.moogmusic.com/register](http://www.moogmusic.com/register)**

## SETUP MODE

Setup Mode contains important global settings and operational features that can enhance the performance and capabilities of your Theremini.

To access the parameters in the Setup Mode, press the SETUP button. Each successive press of the SETUP Button will advance to the next parameter. To quickly access a specific parameter, simply hold the SETUP button, and use the PRESETS knob to scroll through the available options. To exit the Setup Mode at any time, press both the SETUP button and the EFFECT button at the same time.

Once you have selected a parameter, use the PRESETS knob to adjust its value.

### MASTER VOLUME

This parameter allows you to set a maximum volume level for the Theremini. Limiting the Master Volume can prevent you from accidentally sending too much signal to a recording device, stage amplifier, etc. This parameter will affect the audio outputs, the headphone outputs, and the internal speaker.



MASTER VOLUME  
Master vol: 100%  
PRESETS: adjust  
SETUP: next

### NOTE RANGE

Specifying the Low and High note settings allow you to set the range of notes that can be played by the Theremini. Choosing a smaller range of notes will make it easier to find and play the correct note. Setting a larger range of notes will place more notes within the same space of hand motions, making it more difficult to accurately play each note.



NOTE RANGE  
Low C2  
High G#5  
PRESETS: adjust  
SETUP: next

To set the Low and High notes:

- First, turn the PRESETS knob to specify the lowest playable note
- Next, press the SETUP button to advance to the highest note
- Finally, turn the PRESETS knob to specify the highest playable note

### AUTO MUTE

What happens when the hand that controls the Pitch antenna is out of range? When Auto Mute is ON, the Theremini will stop playing, or mute itself. When Auto Mute is OFF, the Theremini will continue to drone at the lowest selected note.

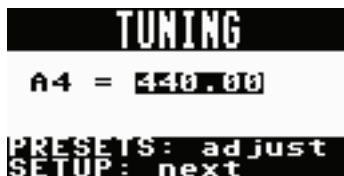


AUTO MUTE  
Mute when pitch  
hand is far  
away: YES  
PRESETS: yes/no  
SETUP: next

*NOTE: Need to mute your Theremini quickly? Drape an attached audio cable over the volume antenna.*

## TUNING

Normally, the tuning of the Theremini is set to A4 = 440Hz. However, this can be changed if you need to play in concert with another instrument that is not or cannot be tuned to A4 = 440Hz. Adjust the tuning using the PRESETS knob.



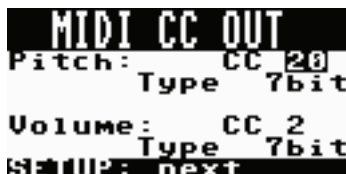
## MIDI CV SETUP

The MIDI CV SETUP menu offers access to parameters that allow the Theremini to send and receive MIDI messages, and to transmit CV (Control Voltage) signals. The CV output provides analog control of the Moog family of analog effects and synthesizers, as well as any instrument or effect that supports analog control. To enter the MIDI CV SETUP menu from within the Setup Mode, press the EFFECT button. To quickly exit the MIDI CV SETUP menu and return to the main screen, simultaneously press the SETUP and EFFECT buttons.



## MIDI CC OUT

**PITCH:** Use the PRESETS knob to assign a MIDI CC number (0–127) to the output of the Pitch antenna. Press the SETUP button to advance to the next parameter.



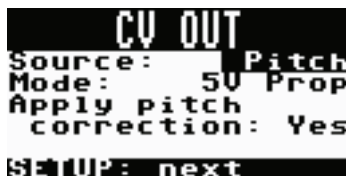
**TYPE:** Choose either 7-bit or 14-bit MIDI output.

**VOLUME:** Use the PRESETS knob to assign a MIDI CC number (0–127) to the output of the Volume antenna. Press the SETUP button to advance to the next parameter.

**TYPE:** Choose either 7-bit or 14-bit MIDI output.

## CV OUT

**SOURCE:** Use the PRESETS knob to choose either the Pitch antenna or the Volume antenna as the control source for the Control Voltage output jack on the Theremini's rear panel. Press the SETUP button to advance to the next parameter.



## CV OUT CONTINUED

### MODE

Use the PRESETS knob to choose the proper Control Voltage output scaling to match your analog equipment, either 0-5 Volt or 0-10 Volt. Press the SETUP button to advance to the next parameter.

### APPLY PITCH CORRECTION

Use the PRESETS knob to select whether the current Pitch Correction setting is applied to the Control Voltage output, or if it is not. Press the SETUP button to exit the MIDI CV SETUP Menu.

## CALIBRATION

Calibration allows the Theremini to adapt to its environment and to adjust to your body movements and playing style. Calibration should be repeated when setting up in a new location, or whenever the Theremini has been left unused for a long time. Press the EFFECT button to begin the Calibration procedure. (A detailed and illustrated guide to the Calibration procedure can be found in the “Getting Started” section of this manual.)

*NOTE: To skip a calibration step, simply press the SETUP button while the countdown is in process. You can also simultaneously press the SETUP and EFFECT buttons any time to exit the Calibration procedure.*



CALIBRATION  
Press SETUP,  
then move at  
least 4 feet /  
1.5m away  
SETUP: calibrate

### CALIBRATION & TUNING

Press the SETUP button and step at least 4 feet away from the Theremini. This will allow the Theremini to adjust to its environment and tune the oscillators. The display will count down, and then prompt you to proceed to the next step.



CALIBRATION  
Move away  
4 feet / 1.5m  
5

### PITCH ANTENNA HIGH NOTE:

Assume your normal playing position. Press SETUP and stretch out your right hand close to the Pitch antenna, but without touching it. This will determine your hand position for playing the highest selected note. The display will count down, and then prompt you to proceed to the next step.



CALIBRATE PITCH  
Stand at arm's  
length from  
pitch antenna,  
then press SETUP  
SETUP: next  
CALIBRATE PITCH  
Hold hand near  
pitch antenna  
3

### PITCH ANTENNA LOW NOTE:

Press SETUP and bring your hand back towards your body, far from the Pitch antenna. This will determine your hand position for playing the lowest selected note. The display will count down, and then prompt you to proceed to the next step.



### VOLUME ANTENNA MUTE LEVEL:

Press SETUP and place your hand close to the Volume antenna, but without touching it. This will determine your hand position for muting the Theremini (the lowest volume position). The display will count down, and then prompt you to proceed to the next step.



### VOLUME ANTENNA MAXIMUM LEVEL:

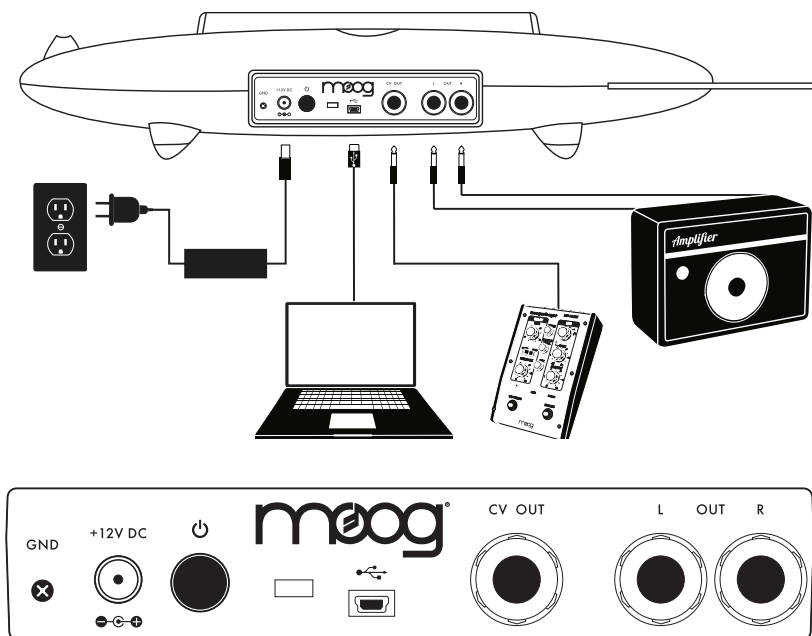
Press SETUP and lift your hand up, away from the volume antenna. This will determine the hand position for playing the Theremini at its maximum level. (If you keep the physical space between the mute and maximum levels short, it becomes easier to perform 'snappy' staccato notes. A larger volume range makes it easier to perform expressive volume swells.) The display will count down, and then prompt you to proceed to the next step.



When this step is complete, the Theremini is fully calibrated.

## REAR PANEL CONNECTIONS

Although your Theremini is a complete instrument on its own, it can be easily connected to amplifiers, computers, tablets, recording equipment, or other analog instruments. Here is a detailed look at the rear panel connectors available on the Theremini.



### AUDIO OUTPUTS L (LEFT), R (RIGHT)

To make the most of the onboard stereo effects, the Theremini is equipped with stereo outputs. Each line level output is equipped with an unbalanced 1/4" jack. These outputs are suitable for use with an external amplifier, recording equipment, etc... The Output level is set using the Master Volume setting in the Setup Mode.

*Note: If only one jack is used, a summed mono signal will be provided via that output.*

### CV OUTPUT

The Theremini provides a 1/4" Control Voltage output jack that can be used to interface with other analog synthesizers and effects. The function and voltage range of the CV output can be specified in the MIDI/CV Setup menu.

## **USB MIDI CONNECTION**

The Theremini provides a full-speed USB 2.0 Mini-B jack that allows MIDI data to be transmitted and received between the Theremini and a compatible computer, tablet, or MIDI device. The MIDI function and CC# can be specified in the MIDI CV Setup menu.

## **KENSINGTON LOCK SLOT**

For security, a Kensington lock slot is provided as part of your Theremini.

## **POWER SWITCH**

This push-button switch turns the Theremini power ON and OFF

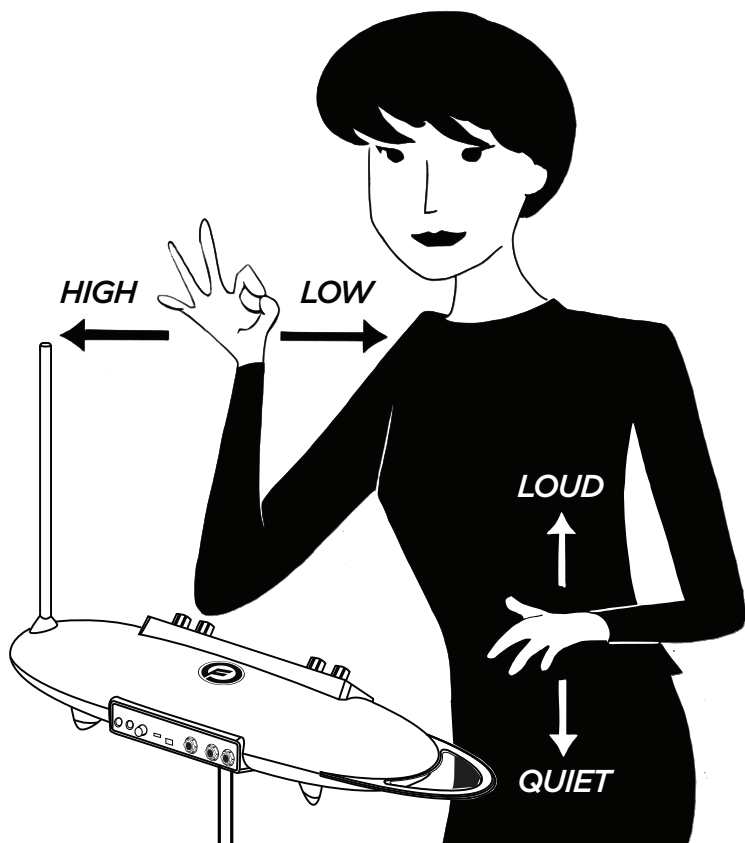
## **POWER JACK**

Connect the Theremini power supply to this jack. Use only the 12 Volt DC (center pin positive) power supply that came with your Theremini.

## **GND**

The Theremini provides a screw terminal grounding lug for improved performance in areas where power grounding may be an issue.

## PLAYING THE THEREMINI



The Theremini is played by interacting with two electronic antennae using subtle hand gestures. The horizontal loop antenna is used to control the Volume. The vertical rod antenna is used to control the Pitch. Bringing your hand near the volume antenna will decrease volume, while bringing your hand near the pitch antenna will increase the pitch. Those are the basics, but as you can imagine, there is a little more to it than that. The following sections contain information and exercises for developing your Theremin skills and techniques.

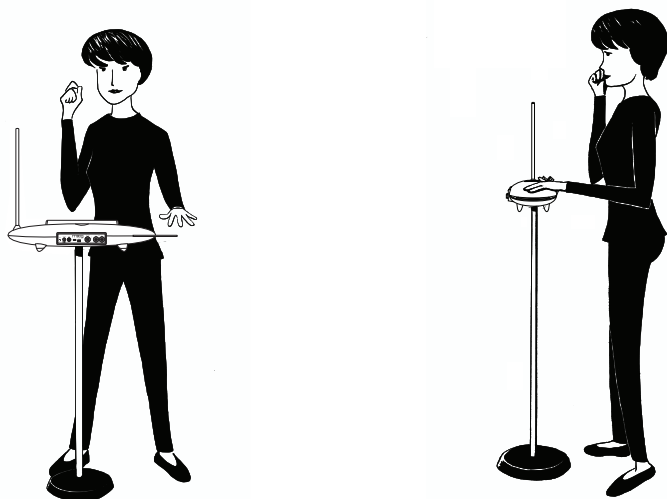
## LEARNING TO PLAY

### VOLUME ANTENNA

The Volume antenna controls the volume level of the Theremini. Lift your left hand up away from the Volume antenna to raise the volume of the Theremini. Lowering your hand, or increasing its proximity to the Volume loop, makes the Theremini quieter. When your hand is very close, the Theremini's volume will be muted. You can use changes in the volume to accentuate, play, or not play notes.

### PITCH ANTENNA

The Pitch antenna controls the pitch or frequency that the Theremini is playing. Extend your right arm outward, bringing your hand closer to the Pitch antenna to raise the pitch of the Theremini. Pulling your hand back, or reducing its proximity to the antenna lowers the Theremini's pitch frequency. You can use changes in proximity to play different notes.



### BEGIN ON PRESET 1 - CLASSIC THEREMIN

- 1) Stand facing the control panel of the Theremini with your body about 12" back and slightly left of center.
- 2) Your belly button should be in line with the left edge of the control panel.
- 3) Adjust your position so that you are about an arm's length away from the Pitch antenna.
- 4) Place your legs slightly apart to keep your body as still as possible.
- 5) Relax your shoulders and drop your elbows to your waist.
- 6) Hold your left hand just above the volume loop while positioning your right hand as shown in illustration above.
- 7) Slowly raise your left hand up to hear your Theremini.

Notice that it only takes incredibly small movements with your pitch hand to play related note groupings. Subtly moving a knuckle or slightly extending your pinky is all that is required to move to the next note, while opening your fist and spreading out your fingers can raise the pitch of your Theremini a full octave.

Clara Rockmore, widely regarded as the most skillful Thereminist in history, utilized a technique with tiny knuckle extensions. She would start with a loosely closed fist, uncurling her pinky, ring, and middle fingers outward in small steps while keeping her index finger resting on the thumb. As a beginning player, this is a good place to start.



*NOTE: Avoid large forceful hand gestures, and focus on light delicate movements. Imagine tickling butterflies rather than clutching guitar strings.*



## **PLAYING EXERCISES / TECHNIQUES**

The Theremin has been described as one of the most difficult instruments to play due to the lack of a physical interface. Unlike an instrument that provides physical feedback as to where each note is, the Thereminist must rely strictly on his or her ears to determine where each note lies.

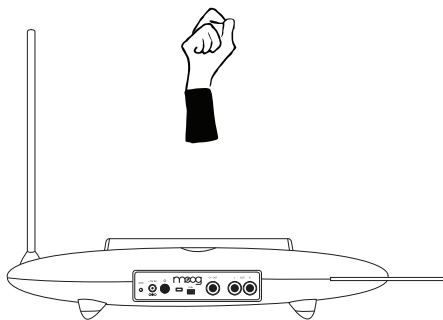
The most difficult obstacle to overcome is learning to control both the pitch and volume simultaneously. While each gesture by itself is quite simple, the two motions at the same time can feel a bit awkward. Fortunately, all it takes is a little practice. If you use your hands to hold utensils while you eat, you'll be fine.

## PITCH HAND EXERCISES

1) Hum a note, any note. Moving only your pitch hand, try to find that same note. When you find it, hold it steady and hum another note just a few tones higher.

2) Now gradually extend your fingers to raise the pitch and 'glide' to the new note. This glide is called a glissando.

3) Now slide back down to the first note.



*NOTE: You can use the Theremini's built-in tuner as a visual aid to help guide you, but more importantly, listen to the change and distinct sound of each note.*

4) Now hum a third note that is slightly higher than the second. Play the first note, slide to the second, pause, and then glide to the third.

5) Start at the third note and then play down to the first.

Practice this a bit, going up and down, making sure to hit the same three notes. Gradually speed up, while keeping your movements smooth and graceful. Pay attention to how much movement is needed to reach each note. Try to repeat the same movements and finger positions.

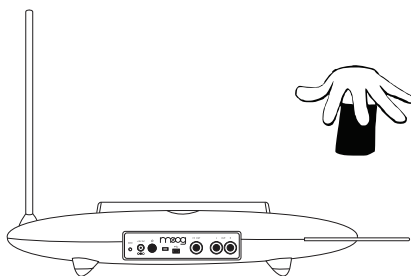
When you can consistently glide back and forth across three notes, try this:

Start at the first note again, but rather than gliding up, make a quick jump to the second note. This will require 'snapping' your hand into the second note position with an abrupt change. This creates the stepped sound of two distinct notes. Playing notes together like this, with no space in between, is referred to as "legato". Practice snapping the three notes in order, up and down; then, try larger jumps— snapping from note 1 to note 3. Experiment by mixing combinations of legato and glissando.

## VOLUME HAND EXERCISES

Now that you've gotten your pitch hand in shape, let's work on your volume hand. We will be keeping our pitch hand still and use only the volume antenna to articulate notes.

Play any note and slowly raise your left hand to raise the volume. Gradually lower your hand toward the volume antenna to reduce the volume.



*NOTE: Keep the motion mainly in your wrist as opposed to raising your whole forearm.*

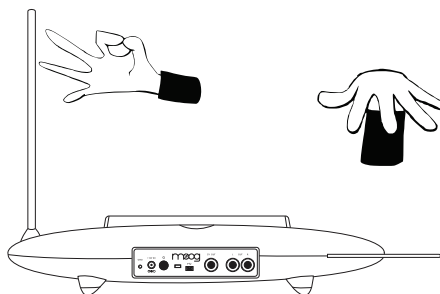
Practice making your movements as smooth as possible. The start of the note is called the 'attack' and the end is the 'decay.' This exercise is an example of a slow attack and slow decay.

Try it again, but this time, make your movement as quick as possible, so there is a dramatic jump in volume. A fast attack gives you the ability to 'pluck' out sharper sounding, staccato notes and rhythms.

Practice playing notes with a fast attack and fast decay in groups of 3 or more; then, try mixing it up by playing notes with a slow attack and fast decay, or with a fast attack and slow decay.

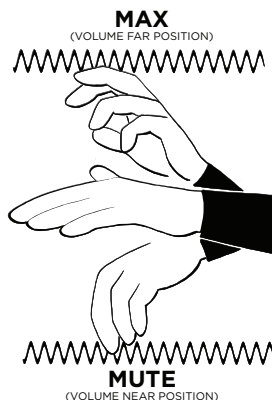
## PITCH & VOLUME EXERCISES

Now it's time to get both hands working in concert. Hum a note and play it aloud. This time, before sliding to the second note, slowly mute the volume and raise it just after your hand has glided to the second note. Do this again, syncing a dip of your volume hand as you glide between the second to the third note. Don't get frustrated if you find it difficult to keep both hands moving accurately at the same time; just keep practicing!



## EXPRESSIVE VOLUME

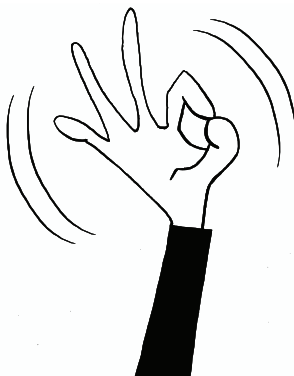
There is a wide range of loudness that the Thereminist can employ to liven up his or her playing. Try playing with your volume hand about three-quarters of the way up. From here, just a casual raising of your hand or fingers makes the volume swell; dipping your fingers or wrist slightly makes the volume drop. This variation in volume adds articulation and depth to your playing, while also highlighting specific notes or passages of music.



Try attenuating the volume to emphasize the mood in your playing, making some sections soft and others loud. If you find that your volume sensitivity range is too small or too big for you to easily control, redo the calibration procedure adjusting the distance between the volume “near” and “far” to suit your needs. Ideally, you should be able to go from full mute to maximum loudness with just a flip of the wrist.

## VIBRATO

Vibrato is an effect created by shaking your hand and rhythmically “bending” notes back and forth, causing a vibration of the pitch frequency. This can make certain passages seem more mysterious or interesting. A strong, fast vibrato will add tension or drama to a passage, while a slow and delicate vibrato creates a subtle movement that can soften or sweeten a passage.

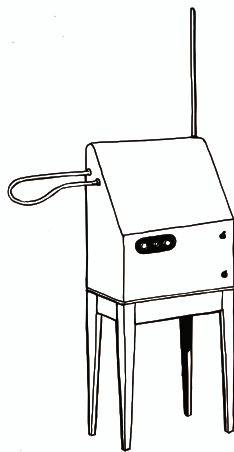


To perform vibrato, simply give your pitch hand a slight wiggle. The trick is learning to sync the back-and-forth motions in a way that are musically appropriate to what you are playing. Keep your movements small and gentle. You are bending the note up and down just slightly. Vibrato that is too wide, covering several steps, is a trill and generally doesn't sound as pleasant.

There is no “correct” way to perform vibrato, but generally you want to find a technique that is both precise and physically comfortable to sustain. Using only your wrist to provide the necessary back-and-forth motion can become painful even after just a few minutes. Instead, try leaving your wrist relaxed and flexible, using mainly forearm movements to shake your hand.

## A BRIEF HISTORY OF THE THEREMIN

In 1919, electricity and radio waves were the cutting-edge technology of the time. Back then, a young Russian scientist named Leon Theremin was hard at work using radio waves to develop a device that could measure the density of different gasses in the air. Theremin realized that his own body was interfering with the device, producing an audible tone that changed pitch as he moved around the room. He quickly discovered that by making subtle movements in the air, he could actually 'play' this tone. After a few more refinements, the instrument we call the Theremin was born.



Theremin and his invention were greeted by wide fanfare when he arrived in the United States in 1927. He met with large American companies, organized Theremin concerts at Carnegie Hall, and gave demonstrations to the likes of Albert Einstein and Ira Gershwin. Theremin found a friend and inspiration when he met Russian expatriate, Clara Rockmore. She was a gifted young musician who had been forced to give up playing the violin due to bone problems related to childhood malnutrition. Freed by the non-physicality of Theremin's instrument, within a short time she began to display a virtuosic ability to turn the unique sound into hauntingly beautiful melodies unlike any other. To this day, Clara Rockmore is still regarded as the world best Theremin player.

After patenting his invention in the USA, Theremin granted RCA the commercial production rights. RCA went into production with the hopes that their new "Thereminvox" would become just as common as a piano or radio in the American home. Unfortunately, the release of the Theremin occurred just before the Stock Market crash of 1929. Tough times made the instrument's significant price tag unappealing to most families and only a few RCA Theremins were sold.

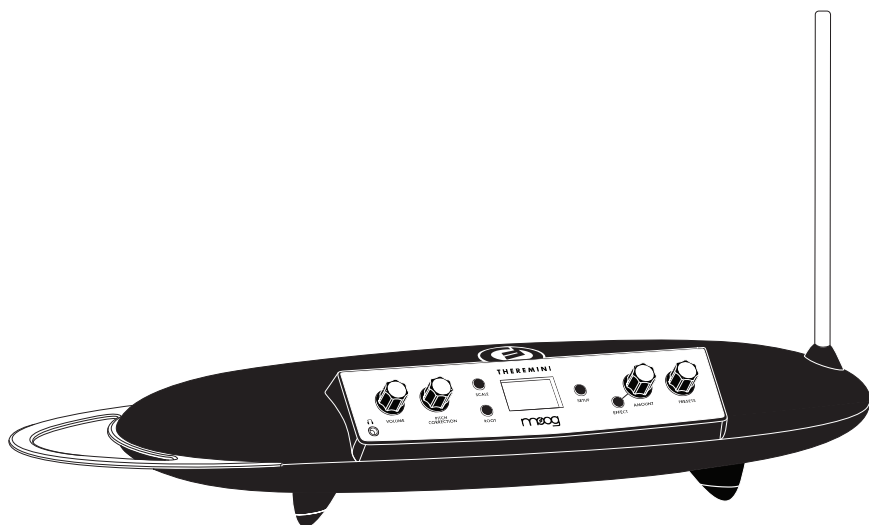
Over the next decade, Leon Theremin stayed in New York and opened a studio where he worked to develop his other inventions, such as a Theremin-controlled burglar alarm. In 1938, Theremin abruptly returned to Russia, under somewhat mysterious circumstances. In the decade that followed, interest in his work faded. In the 1950s, the Theremin experienced a resurgence, when it found a new career in Hollywood. It became the

go-to source for otherworldly sounds and was featured prominently in many classic Sci-Fi films. At that point in time, the only Theremins produced were the rare RCA units.

In 1954 a teenager with a keen interest in electronics began to develop and sell his own Theremins. That teenager was Robert Moog. He had been fascinated with the instrument as a child—building his first Theremin at age 15. He soon began publishing his plans and selling kits, eventually moving on to completed models. Long before he was a pioneer in the world of synthesizers, Bob Moog's very first instruments were, in fact, Theremins.

As Cold War tensions eased, more news of Leon Theremin began to emerge. Upon returning to the U.S.S.R. in the 1930s, Theremin had been met with suspicion and accused of being an American spy. He was sent to a Siberian prison camp, where his genius had been employed for Cold-War espionage. Upon leaving the KGB in 1966, Theremin continued his previous work at the Moscow Conservatory of Music. By the 1970s, Theremin was a Professor of Physics at Moscow State University, in the Department of Acoustics. After a brief trip back to the USA in 1991, Theremin died in Russia in 1993, at the age of 97.

Nearly 100 years after its invention, Moog Music continues the legacy of the Theremin with the Etherwave family of analog Theremins, and the Theremini—an entirely new take on one of the world's oldest electronic musical instruments.



## FAQ HELP

Here are the answers to some frequently asked questions or issues that may arise. A simple setting can cause your Theremini to behave improperly. Take a moment to double-check the relevant settings discussed below.

### 1. "I HAVE NO SOUND."

If you don't have sound coming out of the speaker or headphones, try the following remedies:

- a) Try turning up the front panel VOLUME knob.
- b) Check the Master Volume setting of the Setup menu.
- c) If there still is no sound coming out the speaker or line outputs, try running the Calibration routine by pressing and holding the SETUP button.

### 2. "THE VOLUME KNOB IS NOT DOING ANYTHING."

The Volume knob only controls the volume of the built-in speaker and the headphone jack. To adjust the volume of the line outputs, press SETUP to enter the Setup menu. The first page of the Setup menu is the Master Volume adjustment.

### 3. "CAN I USE A DIFFERENT POWER ADAPTER THAN THE ONE THAT CAME WITH MY THEREMINI?"

NO! Only use the power adapter that comes with your Theremini or unpredictable results may occur. If you lost or damaged your original Theremini power adapter, you can order a replacement from Moog Music.

### 4. "MY THEREMINI DOESN'T WORK RIGHT WHEN IT'S NEAR ANOTHER THEREMINI, ETHERWAVE THEREMIN, OR ANY OTHER THEREMIN."

Theremins are sensitive instruments that operate via proximity sensing antennae. When using more than one Theremin, you should maintain a distance of 10 feet (3 meters) between instruments. Also, please be aware that if a metal object is placed between your Theremini and another Theremin, the metal object can cause coupling between the two and cause poor operation.

### 5. "MY THEREMINI SEEMS VERY UNSTABLE."

Make sure you are only using the power adapter that came with your Theremini only. For best operation you will need a grounded outlet for operating your Theremini. If you are trying to play your Theremini but the pitch is very unstable and jittery, you might be plugged into an ungrounded outlet. For best results, you must find a grounded outlet. There is a ground screw on the rear panel of the Theremini that you can use to ground your Theremini. Also, if other music equipment in your home / office / studio is earth grounded, you can plug the line output(s) of your Theremini into the other equipment to get grounded. Powerline network adapters may interfere with the Theremini. If you are using them at your location and you are experiencing pitch instability, you may need to unplug them from the wall.

## **6. “MY THEREMINI WON’T STOP MAKING SOUND.”**

If your Theremini continues to drone when it is not being played, you may want to use the Auto Mute feature. Auto Mute will cause the Theremini to stop making sound when you are physically away from your Theremini’s Pitch antenna. To activate Auto Mute, press the SETUP button to enter the Setup menu and keep pressing SETUP until you reach the Auto Mute page.

If you do not want to use auto mute, you can simply drape the Theremini’s power or audio cable over the volume antenna when not in use.

## **7. “MY DISPLAY IS TOO DARK OR SEEMS FADED.”**

Try adjusting the display contrast. The display contrast is a parameter that can only be accessed from the Theremini’s Advanced Menu. To get to the advanced menu, start on the Theremini’s main screen (the screen with the tuner). Press SETUP and SCALE at the same time. While holding down SETUP and SCALE, turn the PRESET encoder one click to the right. You are now in the Advanced Menu. Press SETUP until the display reads “Contrast.....xx”. Now, turn the PRESET encoder to get the desired LCD contrast. Once you have the desired contrast, press SETUP to return to the main screen.

## **SPECIFICATIONS:**

**PITCH DETECTION:** Heterodyning analog oscillator

**SYNTHESIS ENGINE:** Animoog-derived wavetable

**PRESETS:** 32

**DISPLAY:** 128 x 64 pixel backlit LCD

**INTERNAL SPEAKER:** 2-inch, full-range

**HEADPHONE JACK:** 1/8" (3.5mm) TRS headphone jack.

**AUDIO OUTPUTS (L, R):** 1/4" unbalanced; Line Level,

**OUTPUT IMPEDANCE** = 680 ohm nominal

**CV OUTPUT:** 1/4" unbalanced; 0-5 Volt / 0-10 Volt (selectable)

**OUTPUT IMPEDANCE** = 330 ohm nominal

**SECURITY:** Kensington Slot Type

**USB MIDI:** Full-speed USB 2.0; USB Mini-B connector

**POWER JACK:** 12VDC 300mA Center Pin Positive; Power Supply Included

**EXTERNAL POWER SUPPLY:** 100-240VAC 50/60Hz 3W; Use Only Included Supply

**DIMENSIONS:** 22.75" L x 6.5" D x 15" H with antenna (4" H without antenna)

**WEIGHT:** 3 lbs

## MIDI DATA

All implemented controller numbers 0 - 31 have corresponding LSB (fine) controls at locations 32 - 63. Certain controllers adjust parameters which can be negative or positive. For these controllers, sending 0 sets the parameter to fully negative, 64 sets it to 0, and 127 sets it to fully positive.

CC NO.	FUNCTION	EFFECTIVE VALUE RANGE
7	Master Volume	0 - 100%
9	Wavetable Scan Rate	0 - 32 Hz
12	Delay Time	0 - 0.83s (approx.)
14	Delay Feedback	0 - 100%
20	Scan Amount	0 - 2
21	Scan Position	0 - 2
22	Pitch Mod Scan Freq.	-400% - 400%
23	Vol Mod Scan Freq.	-400% - 400%
24	Pitch Mod Scan Amount	-400% - 400%
25	Vol Mod Scan Amount	-400% - 400%
26	Vol Mod Volume	0% - 1600%
27	Vol Mod Cutoff	-100% - 100%
28	Vol Mod Resonance	-200% - 200%
29	Filter Pitch Tracking	-800% - 800%
30	Pitch Mod Resonance	-400% - 400%
71	Filter Resonance	0 - 100%
74	Filter Cutoff Freq	0 - 100%
80	Filter Type	See Below
84	Pitch Correction Amount	0 - 100%
85	Scale	See Below
86	Root Note	See Below
87	Low Note	Lowest MIDI Note
88	High Note	Highest MIDI Note
90	Wave Selection	See Below
91	Effect Mix	0 = Dry Only, 64 = Wet + Dry, 127 = Wet Only
102	Transpose	-64 - 63 Semitones
103	Preset Volume	0 = Off, 127 = Max
119	Save To Current Preset	Any Value Saves All Edits To Currently Selected Preset

## SCALES

VALUE	SCALE
0	Chromatic
1	Ionian
2	Dorian
3	Phrygian
4	Lydian
5	Mixolydian
6	Aeolian
7	Locrian
8	Major Blues
9	Minor Blues
10	Diminished
11	Major Penta
12	Minor Penta
13	Spanish
14	Gypsy
15	Arabian
16	Egyptian
17	Ryukyu
18	Wholetone
19	Major 3rd
20	Minor 3rd
21	5th

## ROOT NOTES

VALUE	NOTE
0	C
1	C#
2	D
3	D#
4	E
5	F
6	F#
7	G
8	G#
9	A
10	A#
11	B

## WAVEFORMS

VALUE	WAVEFORM
0	Sine
1	Triangle
2	Super Saw
3	Animoog 1
4	Animoog 2
5	Animoog 3
6	Etherwave

## FILTER TYPES

VALUE	FILTER TYPE
0	None (bypass)
1	2-Pole Lowpass
2	2-Pole Bandpass
3	2-Pole Highpass
4	2-Pole Notch
5	Animoog 3
6	Etherwave

## **PRESET NAME CHANGE (SYSTEM EXCLUSIVE MESSAGE)**

F0 04 0B 06 07 00 00 00 00 00 00 00 00 00 00  
01 nn nn nn nn nn nn nn nn nn nn nn 00 00 00 F7

nn are the 13 ASCII characters in the name.

Use UPPER CASE characters only!

## **EFFECT NAME CHANGE (SYSTEM EXCLUSIVE MESSAGE)**

F0 04 0B 06 08 00 00 00 00 00 00 00 00 00 00  
01 nn nn nn nn nn nn nn nn nn nn nn F7

nn are the 13 ASCII characters in the effect name.

## **RECOMMENDED RESOURCES**

### **FILMS AND VIDEO**

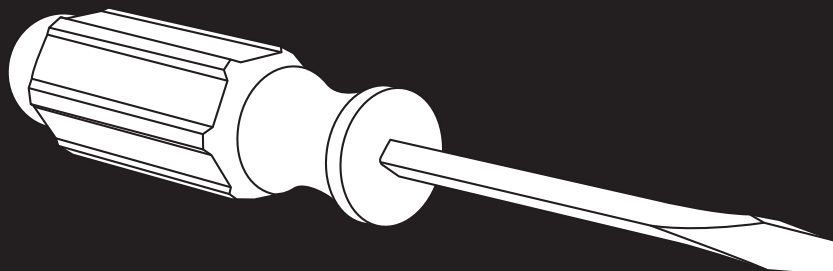
- Theremin: An Electronic Odyssey
- Mastering the Theremin

### **BOOKS**

- Theremin: Ether Music and Espionage
- Clara Rockmore : Method for Theremin- PDF
- Understanding the Theremin

### **MUSIC**

- Clara Rockmore, Art of the Theremin
- Clara Rockmore, The Lost Album



## **WARRANTY AND SERVICE INFO**

### **LIMITED WARRANTY**

Moog Music warrants that its products will be free from defects in materials and workmanship, and shall conform to specifications current at the time of shipment, for a period of one year from date of purchase. During the one- year period, any defective products will be repaired or replaced, at Moog Music's option, on a return-to-factory basis. This Warranty covers defects that Moog Music determines are no fault of the user.

### **RETURNING YOUR THEREMINI FOR REPLACEMENT/REPAIR**

You must obtain prior approval and an RMA number from Moog Music before returning any product to us. Wrap your Theremini carefully and pack it with the power adapter in its original carton. The warranty will not be honored if the product is not properly packed. Send it to Moog Music with transportation and insurance charges paid. A reasonable cost for service, materials and return freight will be charged to replace materials defective through the fault of the user, or for which the one year warranty period has expired. Transportation and insurance charges from Moog Music to your United States address, of products repaired or replaced under warranty will be paid by Moog Music.

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*Note: Specifications subject to change without notice*

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*Theremini is a trademark of Moog Music Inc.*

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