electro-harmonix

MINI SYNTHESIZER APP
Subtractive Virtual Analog Synthesizer

Congratulations on your purchase of the Electro-Harmonix Mini Synthesizer app, a faithful virtualization of our 1980s analog subtractive synthesizer. The Mini Synthesizer app recreates the tones, controls, and aesthetic of the original synthesizer while adding new features that expand the capabilities of the instrument without sacrificing the sounds, operation or fun found on the vintage instrument.

Original Features Emulated In the MINI SYNTHESIZER App:

- **Voltage Controlled Oscillator (VCO):** Pulse Wave with Sub Octave Divider, Pitch Bend and fine Tune control
- **Voltage Controlled Filter (VCF):** Dual Lowpass Filter that sweeps between your frequency settings with 2x effect and switchable Q
- **Phase:** Modulatable phase shift and pulse width control
- **Touch Keyboard and Ribbon:** The modern touch screen is the perfect technology for recreating the Mini Synthesizer's touch keys

New Features:

- **Monophonic and Polyphonic options:** Choose between single note monophonic mode or 4-note polyphonic mode
- **88-key Range:** No longer limited to a 2 octave keyboard
- **Filter Sweep Retrigger:** The filter sweep can be set to retrigger on every new note or after the keys have been released
- **Effects:** 2 Second Digital Delay, Holy Grail Plate and Reverse

- **Effects Signal Chain Order:** Switch between Delay into Reverb or Reverb into Delay
- **Memory:** Unlimited user presets!
- **Keyboard:** Keyboard options allow for either a classic layout or chromatic layout where notes may be removed
- **Aftertouch:** Available on all Android devices, iPhone 6s, and iPhone 6s Plus

The below features are available for all iOS devices and only for Android devices with software versions Marshmallow and above:

- **MIDI Input:** Play the Mini Synthesizer with your favorite MIDI keyboard (proper connection to device required) and map parameters to MIDI continuous controllers within the app
- **MIDI Output:** Use the Mini Synthesizer keyboard and controls to control an external tabletop synthesizer
- **Virtual MIDI**: Use MIDI with other apps that are available on your device (both iOS and Android).
- **MIDI CC Mapping:** Save/load your preferred MIDI CC Mappings
- **Preset and MIDI CC Map File Sharing:** Share your favorite presets and MIDI CC mappings with your friends regardless of device type. (Preset File Sharing available for all devices)

iOS Exclusives:

- **Audiobus** and **Inter-App** audio capabilities

MINI SYNTHESIZER APP CONTROLS

OSCILLATOR SECTION (OSC)
PITCH Slider: This control acts as a pitch bend slider with maximum range of +/- 1 Octave. Push PITCH up to bend notes to higher pitches or push it down to bend notes to lower pitches. When you release the slider, PITCH snaps back to its middle position for no pitch bend.

SUB OCTAVE Slider (SUB on phone version): Volume control for a sub-octave (one octave below the main VCO) square wave. Add some sub-octave to fatten up the sound of your synth.

OCTAVE UP Switch (OCTAVE on phone version):
Changes the range of the keyboard by one octave:
- Switch Down: Normal octave range
- Switch Up: one octave above the normal octave range

TUNE Knob: Fine tuning knob with a range of +/- 50 cents. Double tap the knob to return to the center tune position where it is tuned to A440.

FILTERS SECTION (FILTERS)
PHASE RATE Slider (RATE on phone version): The function of the PHASE RATE slider changes depending on the setting of the PHASE switch. When the PHASE switch is in the down position, the PHASE RATE slider controls the shape of the VCO's pulse wave by adjusting the duty cycle from 50% to 100%. When the PHASE switch is engaged (up position), the PHASE RATE slider sets the speed and depth of Pulse Width Modulation (PWM). As PHASE RATE is pushed upward the rate of modulation decreases while PWM depth increases.

PHASE Switch:
- Switch Down: Disengages modulation, pulse width set by PHASE RATE
- Switch Up: Engages modulation of PWM, PHASE RATE sets modulation

START Slider: Sets the filter sweep's starting frequency. As START is pushed upward, the filter sweep's initial frequency increases from bass to treble.

STOP Slider: Adjusts the filter sweep's endpoint with the same frequency range as the START slider.

SWEEP RATE Slider (SWEEP on phone version): Controls the speed of the filter sweep. As SWEEP RATE is pushed upward, the filter sweep slows. Minimum sweep time is 100ms; maximum sweep time is 2.5s

2X FILTER Switch: The Mini Synthesizer filter actually consists of two filters. The 2X FILTER switch changes how the audio passes through the filters:
- Switch Down: Filters work in parallel
- Switch Up: Filters work in series for a steeper cutoff

Q Switch: The Q or resonance of a filter indicates how peaky or dramatic the filter sounds, the higher the Q the more dramatic the filter.
- Switch Down: Filter set to low Q
- Switch Up: Filter set to high Q

RETRIGGER Switch:
Switch Down:
MONOphonic Mode: If you are holding an old note while you play a new note, the filter sweep does not retrigger. This is useful for a legato style of playing.
POLYphonic Mode: The first four notes you play trigger separate filter sweeps. If you continue to hold down the first four notes while playing additional notes, the filter sweep does not retrigger for the new notes.
Switch Up:
MONO and POLY Modes: Retriggers the filter sweep every time a new note is played. This is useful for bass lines and lead playing or acheiving a consistent sound everytime you press a key.

DELAY EFFECTS SECTION (DELAY)

DELAY Switch: An on/off switch for the Delay effect.
- Switch Down: Delay effect section is completely bypassed; Delay sliders are greyed out
- Switch Up: Delay effect section is active; sliders are blue

TIME Slider: Controls the delay time. The delay has a maximum of 2 seconds.

FEEDBACK Slider: Sets the number of echo repeats that the Delay effect produces.

BLEND Slider: Controls the wet/dry mix from 100% Dry (low position) to 100% Wet (high position). Set BLEND to middle position for an equal mix of both.

TIME Label: Tap Tempo button. Tap the label to your preferred beat to adjust the delay. The slider will slide to your tapped tempo delay value.

REVERB SECTION (REVERB): Tap on the REVERB label above the sliders to choose between PLATE or REVERSE settings.

PLATE Reverb: An emulation of a metal plate reverb commonly found in high end recording studios. Plate reverberation is a very smooth, tonally balanced reverb that sounds great on synthesizers. Push AMOUNT up to increase the decay time of the PLATE reverb. When AMOUNT is maxed, the PLATE reverb creates a very long reverb decay; holding each note for over 30 seconds.

REVERSE Reverb: An emulation of the reverse reverb trick commonly performed in recording studios where a note's reverb fades-in before the note is actually struck. The Mini Synthesizer's reverb works in real time though and cannot create backwards reverb for a note before it is actually played so REVERSE reverb creates its effect after the note is sounded. The length of time between playing a note and hearing the reverse reverb completely fade-in is set by the AMOUNT slider. The further you push AMOUNT up, the longer the note will take to fade-in. For short AMOUNT settings, the REVERSE mode can sound like a slap-back echo.

REVERB Switch: An on/off switch for the Reverb effect.
- Switch Down: Reverb effect section is completely bypassed; Reverb sliders are greyed out
- Switch Up: Reverb effect section is active; sliders are purple

AMOUNT Slider: Adjusts the decay time, or reverb length/size, for the PLATE reverb. In REVERSE mode, the AMOUNT slider sets the length of time between striking a note and the reverb fade-in. While in PLATE mode, when AMOUNT is set to its maximum position, the reverb decay is over 30 seconds, creating a lush reverb wash with each new note.

BLEND Slider: Controls the wet/dry mix from 100% Dry (low position) to 100% Wet (high position). Set BLEND to middle position for an equal mix of both.

Signal Chain Order Switch:
Toggle between **Delay**->**Reverb** (up) and **Reverb**->**Delay** (down). Get a reverberated delay or a delayed reverb. Cool!

<u>POLYPHONY SWITCH</u>
In the upper right corner of the Mini Synthesizer is a switch labeled POLY/MONO. Use this switch to toggle between the two modes:
MONO: Only one note at a time may be played. This is particularly good for bass lines and lead playing and is how the original Mini Synthesizer worked.
POLY: POLY mode allows for up to 4 notes to be played at a time. This is great for playing chords and generating synth pad sounds.

PERFORMANCE MODE ON THE PHONE VERSION

There are some notable differences between the tablet and phone versions:

PERFORMANCE MODE (PHONE ONLY): Located to the right of the MINI SYNTHESIZER label above the keyboard is a square button, press this button to enter Performance Mode.

In Performance Mode the keyboard is enlarged and the default Mini Synth layout is replaced by a control interface consisting of five assignable knobs plus a dedicated volume knob. You can map the knobs to just about every slider parameter. To do so, press on the label below each knob to bring up the parameter menu, then choose the parameter you want to assign to the knob.

To exit Performance Mode and go back to the standard Mini Synthesizer layout, press the square button to the right and below the VOL knob.

PRESETS

The MINI SYNTHESIZER can save and recall an unlimited amount of presets. Every slider, switch, voicing option, and keyboard layout is saved and recalled in the presets. The app comes with default presets that are based on the suggested settings in the vintage Mini Synthesizer's manual, with some additional effects add-ons. To access the presets, find the menu window screen at the top center of the app.

LOADING PRESETS:
There are two ways to navigate through the presets: Using the up and down buttons or clicking on the preset window.

The **Up** and **Down** buttons navigate through the presets sequentially and loop around when you have reached the beginning or the end. The **Up** button seeks to the previous preset while the **Down** button seeks to the next preset.

When you click on the preset window, a preset menu will drop down. You will be able to scroll through to directly select and load a preset.

Once you load a preset, the sliders, switches, voicing option and keyboard layout change to reflect the settings of the preset.

SAVING PRESETS:
The save button (a floppy disk image) will appear whenever a slider, switch, voicing or keyboard layout is changed. To save, you must press the floppy disk image. A window will immediately appear where you can enter the name of the preset. Press the Save button to complete the preset save operation. If you change your mind and don't want to save the preset, press Cancel to exit without saving. After saving the preset successfully, it will show up in the preset menu.

DELETING PRESETS:

There are two ways you can delete a user preset:

Method 1: Through the App
1. Open the preset menu.
2. Scroll down to the preset you want to delete.
3. Swipe right and it will now be deleted from the app and the app's storage system.

Method 2: Through the App's Document Directory
iOS:
1. Connect your iOS device to iTunes and access the App Document's Directory via File Sharing.
2. Download the presets folder that is in the Mini Synth's app folder.
3. Delete the chosen presets from the folder.
4. Reupload it into the App's document directory.
5. Relaunch the app and the presets will be gone.
Android:
1. Connect your Android device to your computer. Set your USB connection to "File Transfers (MTP)". Make sure to have the correct drivers to connect your device to your computer.
2. Navigate through your Android device's folder to find the presets folder. It will be located in your external storage99 directory as: MiniSynth/presets
3. Delete the chosen presets from the folder.
4. Relaunch the app and the presets will be gone.

SHARING PRESETS:

Sharing presets is super easy and can be done with both iOS and Android.

iOS:

- Connect your iOS device to iTunes and access the App Document's Directory via File Sharing.
- There will be a presets folder in the Mini Synth's app folder.
    - To get your presets, download the folder. Inside the folder there will be a list of preset files. You may select any of these files to send to your friends.
    - To load shared presets, simply add the shared presets into the presets folder on iTunes. They will automatically be added to the app after you sync your iOS device.

Android:

- Connect your Android device to your computer. Set your USB connection to "File Transfers (MTP)". Make sure to have the correct drivers to connect your device to your computer.
- Navigate through your Android device's folder to find the presets folder. It will be located in your external storage directory as: MiniSynth/presets
    - To get your presets, click the presets folder and select the presets you want to share. Copy the files and you can send it to your friends.
    - To load shared presets, simply add the shared presets into the presets folder. They will automatically be added to the app after you sync your Android device.

The Settings screen may be entered by pressing the gear button in the top left corner of the Mini Synthesizer. Both Keyboard and all MIDI settings can be configured while on the Settings screen.

KEYBOARD OPTIONS
Press the long button labeled KEYBOARD to highlight the Keyboard options.

VELOCITY Switch: Select between three different velocity options: LOW (42), MEDIUM (84), HIGH (127). Usually HIGH produces the loudest note volumes.

LAYOUT Switch: Choose between CLASSIC and MODERN keyboard layout:

    CLASSIC: This is a traditional keyboard layout based on the vintage Mini Synthesizer's keyboard with reverse black and white keys. All 88-keys are available at all times.

    MODERN: MODERN mode uses a chromatic keyboard layout where you can add or remove notes as you like. When you choose MODERN mode, the small keyboard to the right of the LAYOUT switch lights up. Any key that you press will then turn grey and be removed from the playable keyboard in the lower half of the screen. For example, you can remove C#, D#, F#, G#, A# so that only the keys in the C Major Scale are playable. The ribbon will adjust its range according to the keyboard scale you choose.

FOR ANDROID, IPHONE 6S, AND 6S PLUS:
KEY AFTERTOUCH:
    • Switch Down: Disables 3D touch for the keyboard.
    • Switch Up: Enables 3D touch for the keyboard. This configuration allows you to apply aftertouch to the keys. Aftertouch allows the user to apply different velocities read from pressure/force after setting a note on. The note's initial velocity is determined by the VELOCITY's current switch setting.

RIBBON AFTERTOUCH:
- Switch Down: Disables 3D touch for the ribbon
- Switch Up: Enables 3D touch for the ribbon. This configuration allows you to apply aftertouch to the ribbon. Aftertouch allows the user to apply different velocities read from pressure/force after setting a note on. The note's initial velocity is determined by the VELOCITY's current switch setting.

MIDI OPTIONS

Press the long button labeled MIDI to select and set the MIDI options.

Connecting a MIDI Controller to an iOS Device:

1. Hardware Required: iOS USB to Lightning Camera Adapter (for iPhone 5 and up/iPad 3 and up), Apple iPad Camera Adapter (iPhone 4/iPad 2), MIDI Controller, USB Cable
2. Connect MIDI controller to iOS Device

Connecting a MIDI Controller to an Android Device:

1. Hardware Required: USB 2.0 A to Micro USB B Adapter, MIDI Controller, USB Cable
2. Software Required: Marshmallow and above
3. Connect MIDI controller to Android device

Playing the Mini Synthesizer with a MIDI Keyboard:

1. Upon connecting your MIDI controller to your device, the controller will appear in the MIDI Input Table Section
2. Select your MIDI Controller from the list
3. Start playing the MIDI controller's keys; the MIDI Controller will start playing the Mini Synthesizer

Mapping MIDI CC to the Mini Synthesizer's Controls:

1. To map controls, select **CC MAPPING** which will highlight when selected
2. Go back to the Mini Synthesizer's main screen by pressing the Settings button
3. Red boxes will have now appeared around sliders and switches. Each box will have text relating to the CC Message #'s; "In: #, Out: #".
4. Select a slider or switch - its red box will turn green indicating it is now ready to be mapped.

Mapping MIDI Input CC Messages:

1. On your MIDI controller, turn a knob or move a slider for a few seconds then pause from moving the control. After a second, the "IN" text will have now changed the number. Move your hardware control again and the software slider will move as well. The slider is now mapped!
2. Deselect the green box by clicking on it again, clicking on another slider, or clicking elsewhere on the screen.
3. Once you finish mapping all the sliders that you want to map, press the Settings button and then press the CC MAPPING button. The sliders will remain mapped to the MIDI controls you just assigned but the red and green boxes will disappear when you return to the Mini Synthesizer's main screen and it can be used normally.
4. To clear all CC mapping, go to the Settings menu and press **REFRESH**.

Mapping MIDI Output CC Messages:

1. Click and hold the selected green box you have chosen for about two seconds.
2. A popup will appear with the option to enter in your preferred MIDI Input and Output CC message numbers (choose between 1 to 119). Along with that, you can choose which MIDI input and output channels you wish to map the messages to. You can either choose from channels 1 to 16 or all the channels. Choosing all is preferred for instruments that have multiple input channels (for example, the Korg Volca Sample has 10 MIDI input channels).
3. Once chosen, press OK and the controls will automatically be mapped.

Saving a MIDI CC Mapping:

1. Press Save CC Mapping.
2. A popup will appear asking you to define your mapping's name. Please enter a name (default will be labelled "Default").
3. Press OK.
4. Successful save!

Loading a MIDI CC Mapping:
1. Press Load CC Mapping.
2. A popup will appear with a list of options to choose from. Pick a list option for your CC Mapping.
3. Press OK.
4. Successful load!

DELETING MIDI MAPPING FILES:
Deleting MIDI Mapping files must be done through the app's document directory.
iOS:
1. Connect your iOS device to iTunes and access the App Document's Directory via File Sharing.
2. There will be a folder named "midi" in the Mini Synth's app folder.
3. Download the midi folder that is in the Mini Synth's app folder.
4. Delete the chosen MIDI mapping files from the folder.
5. Reupload it into the App's document directory.
6. Relaunch the app and the MIDI mapping option will be gone.
Android:
1. Connect your Android device to your computer. Set your USB connection to "File Transfers (MTP)". Make sure to have the correct drivers to connect your device to your computer.
2. Navigate through your Android device's folder to find the presets folder. It will be located in your external storage directory as: MiniSynth/midi
3. Delete the chosen MIDI mapping files from the folder.
4. Relaunch the app and the MIDI mapping option will be gone.

SHARING MIDI MAPPING FILES:

Sharing presets is super easy and can be done with both iOS and Android.

<u>iOS:</u>

- Connect your iOS device to iTunes and access the App Document's Directory via File Sharing.
- There will be a folder named "midi" in the Mini Synth's app folder.
    - To get your midi mappings, download the folder. Inside the folder there will be a list of preset files. You may select any of these files to send to your friends.
    - To load MIDI mappings, simply add the shared midi mapping file into the MIDI folder on iTunes. They will automatically be added to the app after you sync your iOS device.

<u>Android:</u>

- Connect your Android device to your computer. Set your USB connection to "File Transfers (MTP)". Make sure to have the correct drivers to connect your device to your computer.
- Navigate through your Android device's folder to find the "midi" folder. It will be located in your external storage directory as: MiniSynth/midi
    - To get your midi mappings, click the midi folder and select the midi mappings you want to share. Copy the files and you can send it to your friends.
    - To load midi mappings, simply add the shared midi mapping file into the midi folder. They will automatically be added to the app after you sync your Android device.

NOTES: Some MIDI controllers will not work with iOS and Android devices so be sure to check the MIDI controller's manual/website to confirm if it is compatible with mobile devices. Please email minisynth@ehx.com for any issues concerning MIDI and if your MIDI controller works but is not on the list below.

Compatible MIDI Controllers:
- AKAI MPK mini2
- Novation Launchkey Series
- Keith McMillen QuNexus
- Keith McMillen KBoard
- Keith McMillen QuNeo
- Keith McMillen 12 Step
- Keith McMillen SoftStep

Compatible Virtual MIDI iOS Apps:
- Garageband
- AUM
- Moog Animoog
- Moog Model 15
- Propellerhead Thor
- Jam Origin MIDI Guitar

Compatible Virtual MIDI Android Apps:
- Mobileer SynthExample
- Mobileer MIDI Keyboard

ANDROID AUDIO PREFERENCES

The following Sample Rate and Buffer Size information only apply to Android users.

Due to the number of Androids having different native sample rates and audio drivers, we have put in a section on the Settings page to change sample rates and buffer sizes. The following sample rates and buffer sizes are supported:

Sample Rates: 44.1 kHz, 48 kHz
Buffer Sizes: For 44.1 kHz: 128, 256, 512, 1024, 2048
              For 48 kHz: 240, 480, 960, 1920

Every Android device is defaulted to a sample rate of 44.1 kHz and buffer size of 512 frames per second. When you set your device to a new sample rate and/or buffer size, the MINI SYNTHESIZER app will automatically save these configurations. The Sample Rate and Buffer Size settings will be used as preferred settings upon the next opening of the app.

Here are some known optimal configurations for Android devices:

Device Type	Sample Rate	Buffer Size
Nexus	44100	512
LG	44100	512
Samsung	44100	512
Motorola	48000	480
HTC	44100	512

TIPS AND TRICKS

ADDITIONAL SLIDER CONTROLS

- **PITCH:** Double tap the pitch bend slider handle to disable the automatic reset when letting go of the slider. This allows you to get interesting microtunings in conjunction with the tuning knob. To go back to automatic reset, simply double tap the pitch bend slider again.
- **START AND STOP:** Double tap either one to bring the Start/Stop frequency levels to the same value. For example, double tapping the Start slider handle will adjust the Stop slider handle/value to the same value as the Start slider; vice versa with double tapping the Stop slider.

ADDITIONAL PHONE FEATURES

- **PERFORMANCE MODE:** Press on the button with a small keyboard next to the Mini Synthesizer label on the main screen. This will take you to the Mini Synthesizer's **PERFORMANCE MODE**. Here you'll see an enlarged keyboard, ribbon, and six knobs. Five of these knobs are customizable and allow you to choose which Mini Synthesizer control parameter to manipulate. The rightmost knob is the master volume knob. By pressing **SELECT** (located below the knob), this will open a small menu of the different parameters you can control. Select one by clicking on it and the knob will change color indicating it is ready to be used. To go back to the **HOME SCREEN**, simply press the button again (this time it will have an image of sliders). Your knob selection will stay until you quit the app.

RIBBON TIPS

- For a vibrato effect, slide your finger left and right very slightly on the ribbon.
- Looking for portamento? Slide your finger from the current key you're playing to the ribbon and glide!
- For a detune effect, enter POLY mode. Play the preferred note on the keyboard and then place your finger on the ribbon above the corresponding note. This will give a very nice detune effect. Furthermore, if you set the PHASE switch on and set the PHASE RATE very low, the detune effect becomes more pronounced.

LIMITATIONS

OLDER iOS DEVICES
• Holy Grail Reverb has polyphony limitations on older devices: for REVERSE reverb, the max number of voices is 3

DOWNLOADING iPHONE VERSION ON iPAD
• The iPhone version is not meant to perform optimally on the iPad. Be aware that if you download the iPhone version on the iPad you are more prone to glitches and crashes than having the iPad version on the iPad.

ANDROID DEVICES
• Only available for the following brands: **Google Pixel, Nexus, Samsung, LG, Motorola, HTC**
• Lollipop and Marshmallow compatible.
• MIDI is only supported on Marshmallow OS. However, some Android devices on Marshmallow do not support MIDI so please check if your device supports MIDI.