# GUIMIDI

Play your Mac's MIDI instruments and music apps from an on-screen piano.




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# Overview

GUIMIDI shows a piano keyboard in a window and sends MIDI when you click its keys or type on your computer keyboard. One key press can play a full chord, chosen by Nashville, blues, or jazz chord rules, so you can play a backup part with one finger.

GUIMIDI makes no sound itself. You must connect it to something that plays MIDI, such as a music app (a DAW or software synth) or a hardware synth.




*The GUIMIDI window with all 88 piano keys.*

In this manual, a *piano key* is one of the keys on screen, a *computer key* is a key on your computer keyboard, and a *musical key* is the key of a song, such as G major.

## Requirements

- A Mac with macOS 13 Ventura or later.
- A music app or MIDI device that accepts MIDI input.

GUIMIDI has only been run on macOS 27, on a Mac with Apple silicon. It's built to run on macOS 13 or later and on Intel Macs, but neither has been tested.

# Use cases

- **Try out a synth** when no hardware keyboard is connected.
- **Test a MIDI setup** by sending a known note on a known channel to an app or device.
- **Play a backup part with one finger.** Choose a harmony and a musical key, then press the root note of each chord in your song.
- **Sketch a part while you work in a DAW.** With background play on, the computer keys play notes while your DAW stays in front.

# Getting started

## Install GUIMIDI

1. Download `GUIMIDI-1.0.dmg` from the GUIMIDI page.
2. Open the disk image, then drag **GUIMIDI** to **Applications**.
3. Open GUIMIDI from your **Applications** folder. macOS might ask you to confirm that you want to open an app downloaded from the internet.

The keyboard window opens. GUIMIDI also adds a `GUIMIDI` device to Audio MIDI Setup the first time it runs, and macOS asks for Input Monitoring permission.

## Allow Input Monitoring

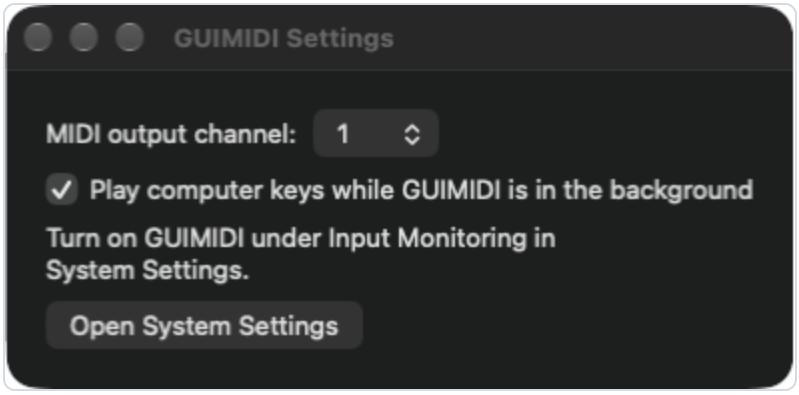
GUIMIDI uses Input Monitoring to hear your computer keys while another app is in front. You don't need it to click piano keys, or to play computer keys while GUIMIDI is in front.

| Permission | Why |
| --- | --- |
| Input Monitoring | To play computer keys while GUIMIDI is in the background. |

To turn on the permission:

1. Choose **GUIMIDI** > **Settings…**, or press `⌘,`.
2. If the window shows **Open System Settings**, click it.
3. In **Privacy & Security** > **Input Monitoring**, turn on **GUIMIDI**.

You don't need to restart GUIMIDI. It checks every 2 seconds, and the message in Settings goes away when the permission is on.




*Settings, before Input Monitoring is turned on.*

If you don't want GUIMIDI to hear computer keys in other apps, clear **Play computer keys while GUIMIDI is in the background** in Settings. GUIMIDI then plays computer keys only while its main window is in front. For what GUIMIDI does with your keys, see Privacy.

### Connect to a DAW or other music app

GUIMIDI publishes a MIDI source named `GUIMIDI` while it runs.

1. Open GUIMIDI.
2. In your music app's MIDI settings, turn on `GUIMIDI` as an input.
3. Set a track or instrument in that app to receive from `GUIMIDI`.
4. Click and hold a piano key. Your instrument plays the note.

GUIMIDI keeps the same source ID between runs, so a DAW can remember the connection.

This connection has been tested with a separate MIDI listener, but not with a particular DAW.

### Connect to a hardware synth

GUIMIDI sends to hardware through a cable you draw in Audio MIDI Setup.

1. Connect the device and turn it on.
2. Open **Audio MIDI Setup**, which is in **Applications** > **Utilities**.
3. Choose **Window** > **Show MIDI Studio**.
4. Drag from the port on the `GUIMIDI` device to the input port on your device. A line stays on screen when the connection is made.

GUIMIDI reads cables each time you press a piano key, so you don't need to restart it after you change one.

A cable to another *external device* in MIDI Studio carries no MIDI, because those entries only describe gear. This includes any entry you added with **+**.

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## Features

### Play with the mouse

- Click and hold a piano key to play it. Release the mouse button to end the note.
- Drag across the keyboard to move from one piano key to the next.

All notes play at velocity 100. While you hold a key, GUIMIDI sends channel aftertouch that rises from 0 to 127 over 2 seconds.

## Play from the computer keyboard

The bottom two letter rows of your computer keyboard play like a piano: white keys on the Z row and black keys on the A row. These keys follow the **Chord** and **Harmony** menus, just like clicked piano keys.

| Computer key | Z | S | X | D | C | V | G | B | H |
|---|---|---|---|---|---|---|---|---|---|
| Note | C4 | C♯4 | D4 | D♯4 | E4 | F4 | F♯4 | G4 | G♯4 |

| Computer key | N | J | M | , | L | . | ; | / |
|---|---|---|---|---|---|---|---|---|
| Note | A4 | A♯4 | B4 | C5 | C♯5 | D5 | D♯5 | E5 |

Keys are matched by position, so the rows stay in the same place on other keyboard layouts. Hold keys together to play them together, along with a clicked piano key if you like.

Keep these limits in mind:

- **8 notes at once:** A press that goes over 8 notes ends the oldest press still held. A chord counts as all of its notes, and notes shared between chords count once.
- **Keyboard hardware:** Many computer keyboards can't report every combination of held keys, so some might not register.
- **Range:** The computer keys always play C4 to E5. Use the mouse for other notes.
- **Modifier keys:** Keys held with `⌘`, `^`, or `⌥` don't play notes, so app shortcuts keep working. `⇧` has no effect.
- **Command:** Pressing `⌘` ends the notes you're holding on the computer keyboard, because macOS stops reporting those key releases.

## Play while another app is in front

With Input Monitoring on, the computer keys play notes while you work in another app, such as a DAW. This option is on by default.

While this option is on, keep in mind:

- **Typing also plays notes:** Mapped keys you type in any app play notes, such as when you write an email.
- **The front app still gets the keys:** GUIMIDI only listens and never blocks a key. If your DAW uses `Z` as a shortcut, pressing it both plays a note and runs the shortcut.
- **Password fields:** macOS might hide keys typed in password fields, so they might not play notes.

With this option off, moving to another window ends all held notes.

## Read the note display

The red LED display at the left end of the title bar shows the root note and octave being sent. A lit `#` lamp means sharp, and a minus sign appears for octave −1. Letters use 7-segment shapes, so B and D appear as lowercase `b` and `d`.



*The note display while C♯4 plays.*

- With several keys held, it shows the newest press.
- With a chord, it shows the chord's root, in the octave it's actually sent. **Smooth Voice Leading** can change that octave. The note from **Add Bass Note** isn't shown.
- With **Snap to Key**, it shows the note after snapping.
- It goes dark when nothing is held.

GUIMIDI names octaves so that middle C, MIDI note 60, is C4. Some apps and gear call that same note C3. If your app reads one octave lower than the display, the MIDI note number is still the same.

## Set the output channel

1. Choose **GUIMIDI** > **Settings…**, or press `⌘,`.
2. In **MIDI output channel**, choose a channel from 1 to 16.

## Play chords with the Chord menu

Use the **Chord** menu in the title bar when you want the same chord shape on every piano key.

1. Make sure the **Harmony** menu reads **Harmony: Off**. The **Chord** menu is unavailable while a harmony is on.
2. Open **Chord**, then choose a shape, such as **Minor 7th**.
3. Press a piano key. That key is the root of the chord, and every note of the chord appears pressed.




*An F minor 7th from one computer key.*

Choose **Single Note** to play one note per piano key again.

| Chord | Semitones above the pressed key |
|---|---|
| Single Note | 0 |
| Major | 0, 4, 7 |
| Minor | 0, 3, 7 |
| Power (5th) | 0, 7, 12 |
| Sus2 | 0, 2, 7 |
| Sus4 | 0, 5, 7 |
| Diminished | 0, 3, 6 |
| Augmented | 0, 4, 8 |
| Major 6th | 0, 4, 7, 9 |
| Minor 6th | 0, 3, 7, 9 |
| Dominant 7th | 0, 4, 7, 10 |
| Major 7th | 0, 4, 7, 11 |
| Minor 7th | 0, 3, 7, 10 |
| Half-Diminished 7th | 0, 3, 6, 10 |
| Diminished 7th | 0, 3, 6, 9 |
| Add 9 | 0, 4, 7, 14 |

## Play a backup part with the Harmony menu

Use **Harmony** when you want each piano key to play the chord that belongs to it in your song's musical key. This follows the Nashville number system, where each chord is named by its place in the scale.

1. Open **Harmony**, then choose a harmony, such as **Nashville Triads**.
2. Open **Key**, then choose your song's musical key.
3. Press the root note of each chord in your song.

For example, in the musical key of G with **Nashville Triads**, the 1-5-6-4 progression is the piano keys G, D, E, and C. They play G major, D major, E minor, and C major.




*Nashville Triads in the key of G. The G key plays G major.*

| Harmony | Use it for |
|---|---|
| **Nashville Triads** | Three-note chords in a major key |
| **Nashville 7ths** | Four-note chords in a major key |
| **Nashville Minor** | Three-note chords in a minor key, with a major 5 |
| **Blues 7ths** | Dominant 7ths on the 1, 4, and 5 |
| **Jazz 9ths** | Five-note 9th chords on most major-key degrees |

Piano keys outside the scale still play a usable chord: usually a borrowed major chord or a passing diminished chord. The next table lists every chord, by how far the pressed piano key sits above the first note of the musical key. **Nashville Minor** uses the same rows, counted from its minor tonic.

| Semitones | Degree | Nashville Triads | Nashville 7ths | Nashville Minor | Blues 7ths | Jazz 9ths |
|---|---|---|---|---|---|---|
| 0 | 1 | maj | maj7 | min | 7 | maj9 |
| 1 | ♯1 | dim | dim7 | maj | dim7 | dim7 |
| 2 | 2 | min | m7 | dim | m7 | m9 |
| 3 | ♭3 | maj | maj7 | maj | 7 | maj7 |
| 4 | 3 | min | m7 | maj | m7 | m7 |
| 5 | 4 | maj | maj7 | min | 7 | maj9 |
| 6 | ♯4 | dim | m7♭5 | dim | dim7 | m7♭5 |
| 7 | 5 | maj | 7 | maj | 7 | 9 |
| 8 | ♭6 | maj | maj7 | maj | 7 | maj7 |
| 9 | 6 | min | m7 | dim | m7 | m9 |
| 10 | ♭7 | maj | 7 | maj | 7 | 9 |
| 11 | 7 | dim | m7♭5 | dim | dim7 | m7♭5 |

## Refine the part with the voicing options

These options are at the bottom of the **Harmony** menu. Choose an option to turn it on or off. You can combine them, and they also work with the **Chord** menu.

- **Smooth Voice Leading:** Plays the inversion of each chord that moves least from the last one, so chord changes sound connected. The chord stays within about an octave of the piano key you press.
- **Add Bass Note:** Adds the chord's root below the chord.
- **Snap to Key:** Moves a piano key outside the scale down one semitone, so a wrong note still plays something in the musical key. Turn this off to use borrowed chords such as the ♭7.

**Smooth Voice Leading** and **Add Bass Note** don't change **Single Note**, which always plays one note. **Snap to Key** does apply to it.

The **Key** menu is available when a harmony or **Snap to Key** is on.

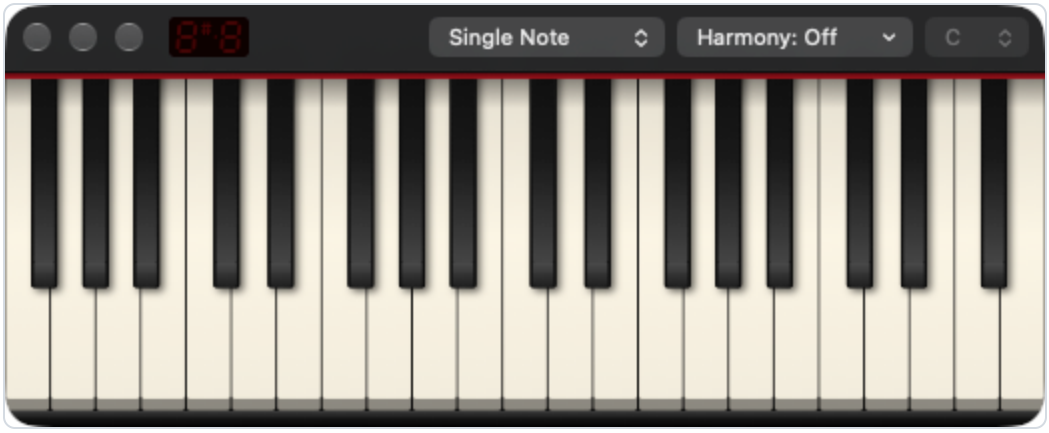



*Jazz 9ths in the key of F, with **Add Bass Note** on.*

## Resize the window

Drag any window edge. The window can be as small as 430 by 60 points, not counting the title bar.

- **Piano keys shown:** Wider windows show more piano keys. All 88, from A0 to C8, appear at 1,144 points wide or more. Narrower windows show fewer, centered on middle C.
- **Height:** The window's height is limited by its width, so it has no empty area above the piano keys.
- **Title:** The GUIMIDI title hides when the window is narrower than 700 points, to leave room for the menus.
- **Full screen:** Choose **View** > **Enter Full Screen**, or press `^⌘F`. The piano keys stretch to fill the screen. The title bar might hide until you move the pointer to the top of the screen.




*A narrow window shows the keys around middle C.*

A smaller window can't reach the lowest and highest notes, and GUIMIDI has no octave control. Widen the window to reach them.

## What GUIMIDI saves

GUIMIDI restores these settings the next time you open it:

- Window position and size, and whether it was in full screen
- Output channel
- Whether background play is on
- Chord, harmony, and musical key
- Voicing options

## MIDI messages

GUIMIDI sends these MIDI 1.0 messages on the channel you choose. `n` is the channel number minus 1.

| Event | Status | Data 1 | Data 2 |
|---|---|---|---|
| Piano key pressed | `0x9n` (note on) | Note number | `100` |
| Piano key held | `0xDn` (channel pressure) | `0` to `127` | None |
| Piano key released | `0xDn` (channel pressure) | `0` | None |
| Piano key released | `0x8n` (note off) | Note number | `0` |

- All held notes share one aftertouch value, which follows the oldest held press. It returns to 0 when the last press ends, just before its note off.
- When held chords share a note, GUIMIDI sends one note on, and note off only after the last press holding it ends.
- Chord notes can extend beyond the 88 piano keys. GUIMIDI sends them but can't show them as pressed.

# Troubleshooting

## You hear nothing when you press a piano key

**Cause:** GUIMIDI makes no sound itself, so nothing is listening yet, or the listener is on another channel.

**Fix:**

1. Connect an instrument (see Connect to a DAW or other music app or Connect to a hardware synth).
2. Check that your instrument listens on the channel set in **GUIMIDI** > **Settings…**.
3. For a hardware device, check that it's turned on and online in MIDI Studio.

## Computer keys play nothing in another app

**Cause:** Background play is off, or Input Monitoring isn't on.

**Fix:**

1. Choose **GUIMIDI** > **Settings…** and check that **Play computer keys while GUIMIDI is in the background** is selected.
2. If the window shows **Open System Settings**, click it and turn on **GUIMIDI** under **Input Monitoring**.
3. If the switch is already on but keys still don't play, turn it off and on again.

## Computer keys play nothing while GUIMIDI is in front

**Cause:** The key isn't mapped, a modifier key is held, or the Settings window is in front.

**Fix:**

1. Use a mapped key. The keys `A`, `F`, `K`, and `'` do nothing, because no black key sits at those positions.
2. Release `⌘`, `^`, and `⌥`.
3. Click the keyboard in the main window.

## Typing in another app plays notes, or a shortcut fires as you play

**Cause:** Background play hears mapped keys in every app and never blocks them.

**Fix:** Choose **GUIMIDI** > **Settings…**, then clear **Play computer keys while GUIMIDI is in the background**.

### A cable doesn't stay in MIDI Studio

**Cause:** No cable is saved until a line stays on screen. Offline devices stacked over each other can also hide their ports.

**Fix:**

1. Move any stacked devices apart.
2. Drag from the port on the `GUIMIDI` device to the input port on the target device.
3. Check that a line remains after you release the mouse button.

### A cable is drawn, but the device plays nothing

**Cause:** The device is offline, the cable goes to an external device entry, or the device listens on another channel.

**Fix:**

1. Check that the device is online.
2. Check that the cable goes to the device itself. A cable to an entry you added with **+** carries no MIDI.
3. Check that the device listens on GUIMIDI's channel.

### GUIMIDI is missing from MIDI Studio, or an old device still appears

**Cause:** An open MIDI Studio window can stop updating after devices are added and removed.

**Fix:** Quit Audio MIDI Setup and open it again. If `GUIMIDI` is still missing, open GUIMIDI, which adds the device when it starts.

### An instrument ignores aftertouch

**Cause:** GUIMIDI sends channel pressure, not per-note aftertouch, and some patches don't respond to it.

**Fix:** Check that your instrument or patch responds to channel pressure, and that a parameter is assigned to it.

### A note stops while you're still holding its key

**Cause:** A new press went over 8 notes and ended the oldest press, you pressed `⌘`, or you switched windows with background play off. Chords use up the 8 notes quickly: three 4-note chords need up to 12 notes.

**Fix:** Hold fewer chords at once, or choose a shape with fewer notes.

### Some computer keys don't register when held together

**Cause:** Many computer keyboards can report only certain combinations of held keys. GUIMIDI never receives the extra key.

**Fix:** Try a different combination or a different keyboard.

### A note keeps sounding

**Cause:** A force quit or crash can't send note off. If a password field takes over while you hold a key in the background, macOS might also hide its release.

**Fix:** Press and release that key again, or use your instrument's all-notes-off or panic control. This fix hasn't been tested.

### The display reads one octave different from your app

**Cause:** GUIMIDI calls MIDI note 60 C4, and some apps and gear call it C3. **Smooth Voice Leading** can also send a chord's root up to an octave lower than the piano key you pressed.

**Fix:** Nothing is wrong. To compare them, check the note number if your app shows one.

### The Chord menu is grayed out

**Cause:** A harmony is on, and it chooses the chords.

**Fix:** Open **Harmony** and choose **Off**.

### The Key menu is grayed out

**Cause:** Nothing is using the musical key.

**Fix:** Choose a harmony or turn on **Snap to Key**.

### Black piano keys play the note next to them

**Cause: Snap to Key** is on, and it moves notes outside the scale down one semitone.

**Fix:** Turn off **Snap to Key** in the **Harmony** menu.

### The window won't get taller

**Cause:** The window's height is limited by its width.

**Fix:** Widen the window past 1,144 points to allow more height, or use full screen.

### The lowest or highest notes are missing

**Cause:** Narrow windows show fewer piano keys, centered on middle C.

**Fix:** Widen the window to 1,144 points or more to see all 88.

### An alert says GUIMIDI can't start MIDI

**Cause:** GUIMIDI couldn't reach the macOS MIDI system. It shows the error and quits when you dismiss the alert.

**Fix:** Restart your Mac and try again. This case has never occurred, so this fix hasn't been tested.

### Reset GUIMIDI's settings

Resetting restores the default window, channel, and menus. DAWs might treat GUIMIDI as a new input afterward, because its source ID also resets. Your MIDI Studio cables aren't affected.

1. Quit GUIMIDI.
2. In Terminal, run `defaults delete com.endogenllc.guimidi` to delete its settings.
3. Open GUIMIDI.

### Remove GUIMIDI

1. Quit GUIMIDI, then drag it from **Applications** to the Trash.
2. Optional: In MIDI Studio, select the `GUIMIDI` device and click **Remove**. The device otherwise stays there, so your cables survive between runs. Any cable you drew to it is gone once you remove it.
3. Optional: In **System Settings** > **Privacy & Security** > **Input Monitoring**, remove **GUIMIDI**.

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## Privacy

GUIMIDI works entirely on your Mac. Endogen LLC doesn't receive any of your data.

- **What it reads:** With background play on, the key code of each key press and release in any app, to choose a note. It doesn't read the text you type, and it doesn't store or send your keys. The only thing it sends is MIDI notes, to the instruments you connect.
- **Where requests go:** Nowhere. GUIMIDI makes no network connections and includes no analytics or tracking.
- **What it stores on your Mac:** The settings listed in What GUIMIDI saves, its MIDI source ID, and the `GUIMIDI` device in Audio MIDI Setup.
- **Removing your data:** See Reset GUIMIDI's settings and Remove GUIMIDI.

For Endogen's full privacy policy, see the Endogen privacy policy.

## Support

For help, email support@endogenllc.com. Include your macOS version and the music app or MIDI device you use.

For updates and more information, visit the GUIMIDI page.

## Legal

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This manual describes GUIMIDI as of the revision date. Features and screens may change in later versions.

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