zplane

TONIC

TONIC

Intelligent Key & Scale Finder

User Manual

Version 1.2.0 / 19 January 2023

VST3 Audio Units AAX mac OS

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1 Introduction

TONIC is an intelligent audio analysis plug-in which uses the latest zplane.development technology to determine probable keys of audio either playing real-time or in an audio file. Unlike many other key detection tools available which provide only one result which could be right or wrong, TONIC will suggest three potential keys for the audio under analysis, each with their own probability rating, which greatly increases your ability to find compatible keys more quickly, especially when the audio being analyzed isn't harmonically rich or complete.

Not only does TONIC make key recommendations, but it also provides guidance on the pitches that are valid for the selected key through a graphical keyboard interface so that you can easily create melodies that fit. Not only can you see the pitches that fit the selected key, but you can also audition and check the results by clicking the various pitches and hearing them in context with the audio being analyzed. TONIC even provides guidance on chords that are compatible with the key.

1.1 Key Features

- Built upon advanced AI analysis technology created by zplane.development
- See three potential key matches with probability ratings
- Use as a plug-in to detect the key of any audio track or bus in your host regardless if that track or bus is using recorded or live audio
- Perform offline key detection on audio files before loading them into samplers
- Tuning deviations from A440Hz shown in both hertz and cents
- Graphical keyboard shows the valid pitches of the selected key
- Audition the pitches while the music plays to verify key compatibility
- See and hear examples of chords that are compatible with the key
- VST3, AU, and AAX plug-in variants for use in a wide range of DAWs
- macOS version has native compatibility with both Intel and M1 processors

1.2 TONIC Overview

The TONIC interface is organized into two main sections, the second of which can be hidden from view:

Figure 1: TONIC Interface

1. The Main View is the primary area of the plug-in
2. The Keyboard View is located below the Main View and includes the graphical keyboard for guidance on scales and chords

1.3 Naming Conventions

In this documentation, the names of on-screen buttons, sliders, and indicators will be written in bold font between brackets, such as **[FILE]** and **[CHORD]**.

Selectable menu options will be written in bold font between quotes, such as **“Stereo”** and **“mono”**.

References to numbered pointers in images will be written in bold font between parenthesis, such as **(1)** and **(2)**.

1.4 Installation

In order to download the TONIC installer, you need to register your copy with zplane. After the successful registration, the installers will be available in the download section of your personal account. Find below a step-by-step description of the installation procedure:

1.4.1 Windows

- Download the TONIC Windows Installer application (.exe)
- Double-click on the file to launch the Installer
- Click **[Next]** in the installer window
- Read the End User License Agreement and, if you agree, click **[Next]**, otherwise, click **[CANCEL]** to abort installation
- Follow the instructions of the installer to complete the installation—you can choose which variants of the plug-in you wish to install and which to omit during the installation process

1.4.2 macOS

- Download the TONIC macOS Installer disk image (.dmg)
- Double-click on the downloaded .dmg to mount it, then double-click the installer file (.pkg) contained within
- Click **[Continue]** in the installer window
- Read the End User License Agreement and, if you agree, click **[Next]**, otherwise click **[CANCEL]** to abort installation
- Follow the instructions of the installer installation—you can choose which variants of the plug-in you wish to install and which to omit during the installation process
- When installation is complete, you can unmount the disk image by right-clicking on it and clicking **“Eject”** from the context menu

1.5 Registration & Activation

TONIC is protected by both a *serial number* and a corresponding *unlock key*. The serial number will be sent to you by e-mail upon purchasing TONIC. You will receive your unlock key by registering TONIC at the zplane website.

1.5.1 Registering Your Product

In order to receive your unlock key, please log in to your account at the zplane website —please create a new account there if you don't have one already. After logging in:

1. Click the **[REGISTER]** button in the menu bar:

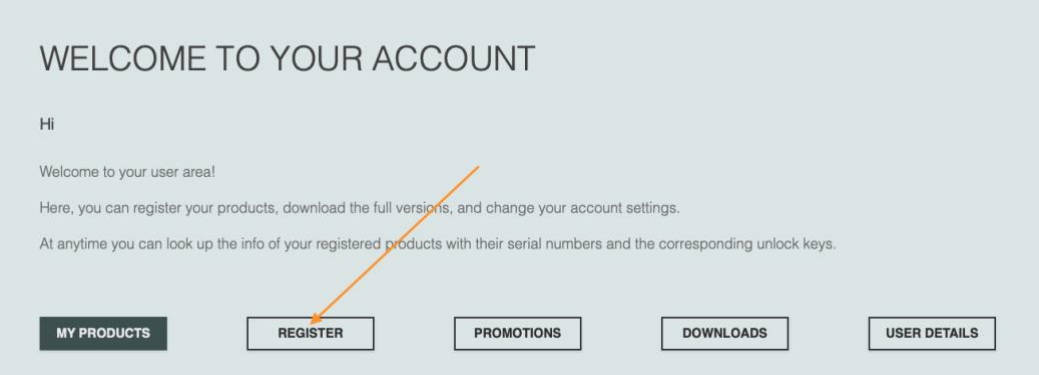

Figure 2: The Account page

2. In the area provided **(1)**, paste in your TONIC serial number and click the **[REGISTER]** button **(2)** to the right:

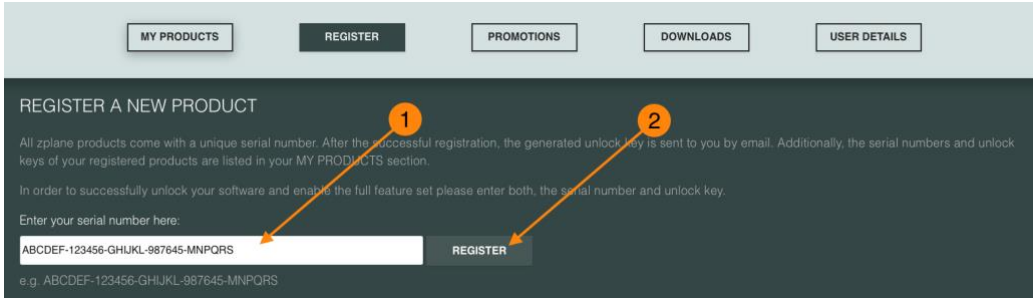

Figure 3: The Product Registration page

3. Your TONIC unlock key will then be shown.

Note: You can recall any of your serial numbers and unlock keys anytime in the future by logging in to your account and clicking the **[MY PRODUCTS]** button in the menu. This will display the serial numbers and unlock keys for all the zplane products you have registered in your account.

1.5.2 Activating Your Product

Activation of TONIC is done within TONIC itself. You must therefore first load TONIC as a plug-in within any host program you have. Once you've loaded TONIC:

1. Open the TONIC interface so you can see the plug-in—most hosts will automatically show the plug-in interface as soon as the plug-in is loaded. You will immediately see the Activation screen:

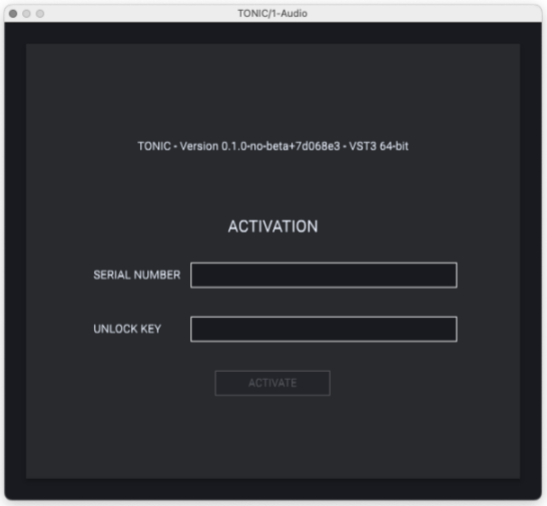

Figure 4: Activation screen

2. Paste your Serial Number **(1)** and Unlock Key **(2)** into the spaces provided, then click the **[ACTIVATE]** button **(3)**:

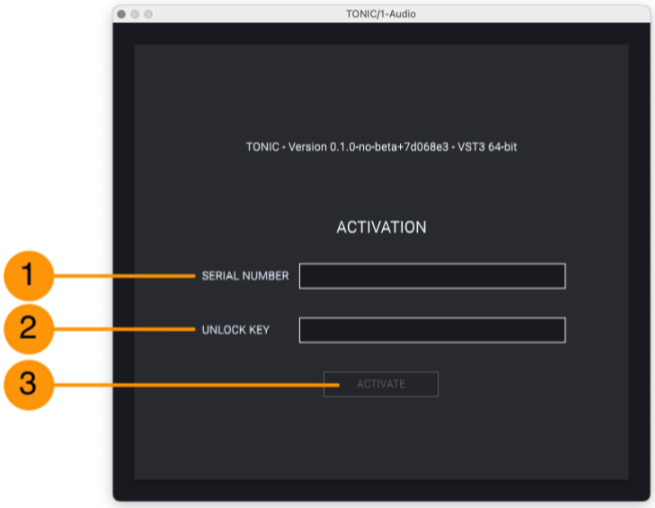

Figure 5: Serial Number and Unlock Key entry areas

3. TONIC will then be activated and will show your registered serial number.
4. After successful activation of TONIC, you can close the Activation screen and you will see the Main View:

Figure 6: Main View of TONIC

1.6 Known Issues

At the time of the 1.1.0 release, the following issues are known—we hope to address them in the next TONIC update.

1.6.1 No Keyboard Preview when Logic Pro playback is stopped

When you use TONIC in Logic Pro and stop playback, the TONIC keyboard will cease to output any tones when you click various notes. TONIC will only output tones when playback is running or if software monitoring and input monitoring are enabled on the track.

2 The TONIC Interface

The TONIC interface is segregated into two parts: The Main View and the optional Keyboard View. There are also two additional pages, Help and Settings, which can be accessed through buttons in the header.

2.1 Main View

The Main View collects the most important information and controls critical to the operation and usage of TONIC. The Main View is always visible while the Keyboard View can be hidden if desired.

Figure 7: Empty Main View with hidden Keyboard View

The Main View contains the Key Displays at the center with Analysis Controls, additional information displays, and selectors around its perimeter.

When you first load TONIC onto a track in your host, analysis will already be enabled so you can immediately start playback of the host and TONIC will begin to provide key results once enough data has been collected.

2.1.1 Key Displays

Figure 8: Central Key Displays

At the center of the plug-in are the Key Displays **(1)** which show three keys that are most-compatible with the audio being analyzed. The keys are sorted in the order of probability with the key at the top of the list being the most-likely match.

Figure 9: Selecting an alternative key

Clicking on any of the individual keys displayed in the center will select that key **(2)**, and this selection will be used for determining the valid pitches of the scale shown in the Keyboard View **(3)**.

2.1.2 Enharmonic Spelling

Figure 10: Spelling keys using sharps

Directly below the Key Displays are the Enharmonic Spelling buttons **(1)**. There are two buttons to choose from: Sharp **[♯]** and Flat **[♭]**. Use these to select your preference of how enharmonic keys are displayed. You can change them at any time—before, during, or after analysis.

For example:

- With Flat **[♭]** enabled, you would see the key of **"A♭maj"** being shown.
- With Sharp **[♯]** enabled, the same key would be shown as **"G♯maj"**

Both keys have the exact same pitches in their scales, but just use sharps or flats in their spellings. This is therefore just a visual preference.

2.1.3 Probability Ring

Figure 11: Probability Ring

Surrounding the central Key Display is the Probability Ring **(1)** which is split into three segments—the sizes of these ring segments show the relative confidence rating for the three keys being recommended by TONIC. Each of these ring segments is associated with one of the keys in the central Key Display—the selected key will have its associated probability highlighted in this ring. Clicking directly on any of the ring segments will also select the key associated with the segment **(2)** as shown below:

Figure 12: Selecting other keys on the Probability Ring

2.1.4 Tuning Frequency

Figure 13: The Tuning Display

In the lower-left corner of the Main View is the Tuning Frequency display **(1)** which shows the detected or estimated pitch of “A” based on the audio being analyzed.

In equal temperament western music and instruments designed for it, the pitch of “A” is traditionally set to the frequency of 440Hz. If the value shown here is higher or lower than 440Hz, this would indicate that some amount of retuning is likely necessary for everything to play in tune, either by changing the tuning of the audio being analyzed until 440Hz is seen here, or by retuning all other instruments to match the analyzed tuning shown in this display. The tuning deviation from 440Hz is also shown in cents as some synthesizers and samplers express detuning in cents.

2.1.5 Analysis Controls

Figure 14: The Analysis Controls

In the bottom-right corner of the Main View are the Analysis Controls which consist of two buttons:

- The smaller Reset **[⮌]** button **(1)** will reset the plug-in in order to start a new key analysis
- The larger Play/Pause **[▶/||]** button **(2)** is used to start and stop analysis

When loading TONIC onto a track in your host, TONIC will already be reset and analysis will be enabled by default such that analysis will begin immediately on whatever audio is played through TONIC.

2.2 Keyboard View

The Keyboard View is accessed by clicking the arrow button **(1)** which extends a “drawer” at the bottom of TONIC.

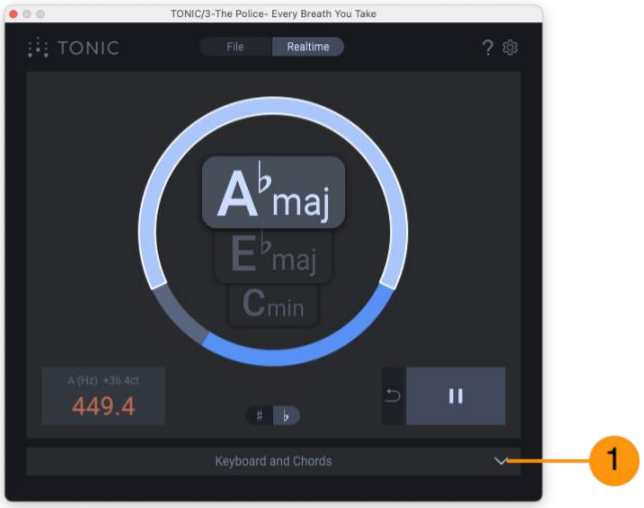

Figure 15: Expand the Keyboard View

2.2.1 The Full Keyboard

Figure 16: The Full Keyboard View

The full keyboard **(1)** shows all 12 pitches and highlights the specific pitches that are compatible with the selected key; the root pitch of the scale is shown with an inverted highlight. You will see the highlighted keys change as you select different keys in the Key Display of the Main View so you can see which pitches change with the various keys.

You can click on any of these pitches in the keyboard and TONIC will output a tone at that pitch. You can therefore use this as a way to quickly check that the pitches

in the scale indeed fit with the audio being played and analyzed—if some pitches do not, you can try one of the other proposed keys. You can change the volume of this pitch using the Volume Slider **(2)**.

2.2.2 The Folded Keyboard

Figure 17: The Folded Keyboard View

Enable the **[Fold Keys]** button **(1)** to view a variation of the keyboard where only the pitches compatible with the selected key are shown—the incompatible pitches are hidden from view **(2)**. With this mode enabled, you don't have to worry about accidentally clicking an incompatible pitch when exploring or testing the scale.

2.2.3 Chords Mode

Figure 18: Chords Mode

When the **[Chords]** button **(1)** is active, clicking one of the keys on the keyboard will cause TONIC to play 3-note chords using the clicked pitch as the root of the triad—the notes played will be highlighted in the keyboard **(2)**. This allows you to hear and see the various chords that are compatible with the selected key.

For every musical key, there are 7 compatible triads, each beginning on one of the valid pitches in the scale.

For example, in the image above, the key **[D♭]** is being clicked, thus keys **[F]** and **[A♭]** are also played and highlighted as they all comprise the fourth-degree chord of the A♭ major scale (in this case, an D♭ major triad made of pitches D♭-F-A♭). Similarly, clicking the **[B♭]** key would also highlight and play keys **[D♭]** and **[F]** as they all comprise the second-degree chord of the A♭ major scale (the B♭ minor triad of B♭-D♭-F).

If you click a note that is not part of the current scale, a chord will *not* be played. Therefore, if you enable both **[Fold Keys]** and **[Chords]** simultaneously, this ensures every note you click will be compatible with the selected key and will generate a valid chord.

2.3 Settings Page

The Settings Page is opened via the “gear” button **(1)** in the header. It provides access to the authorization mechanism as well as settings that affect the behavior of TONIC.

Figure 19: The Settings Page

2.3.1 Activation Info

The first section of the Settings page shows the serial number that was used to activate your copy of TONIC. For more information on registering and activating TONIC, please see the Registration and Activation sections at the start of the manual.

2.3.2 Match Keyboard Preview Tuning to Analyzed Tuning

“Match keyboard preview tuning to analyzed tuning” **(2)** is a setting that can be toggled on and off. This setting controls the tuning frequency of the synthesizer built in to TONIC which is triggered when you click various notes on the TONIC Keyboard.

When this setting is turned off, the tones generated by the TONIC synthesizer are based on A=440Hz tuning, the standard tuning for western music.

When this setting is enabled, however, the built-in synthesizer will use the Tuning Frequency that was detected as part of the analysis process.

For example, when analyzing “Every Breath You Take”, the Tuning Frequency is detected as A=448.9Hz. If you leave this setting turned off when clicking on the keyboard notes, the pitches you hear will sound dissonant and out-of-tune against the music even if the correct key (A♭ major) is being used. However, by leaving this setting enabled, the pitches you hear when clicking on the keyboard will match the tuning of the music, thus all the notes of the scale will sound correct against the music.

> **NOTE:** By default, this setting is enabled such that the keyboard preview will always be in-tune with the audio being analyzed, thus making it easier to confirm the scales and chords being recommended by TONIC.

2.3.3 Zoom Factor

The “Zoom Factor” slider **(3)** is used to change the size of the TONIC window. Moving the slider to the left will cause the window to become smaller while moving it to the right will make it bigger.

2.4 Help Page

By clicking the **[?]** button **(1)** in the upper-right corner of TONIC, you will gain access to the Help Page which provides a handful of useful information.

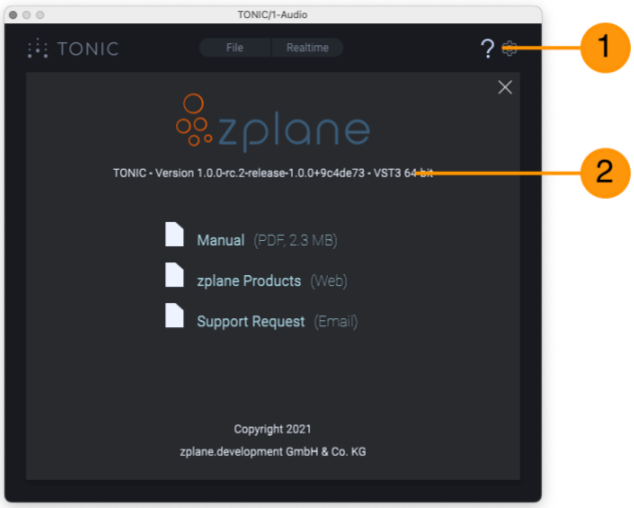

Figure 20: The Help Page

2.4.1 Product Version

At the top of the Help Page, you will see the version number of TONIC, the plug-in type, and CPU architecture **(2)** (either 32-bit or 64-bit). If you need to request support from zplane, please provide this information when submitting your support request.

Additionally, you can compare this number against the TONIC version number seen in your Account page on the zplane.de website. If the version number on the website is higher than the number shown in TONIC, then this means the version available on the website is newer and you should download and install it—this ensures you have all the latest features, enhancements, and bugfixes.

2.4.2 User Manual

Clicking the **[Manual]** button on the Help Screen will open the TONIC User Manual. The User Manual is in PDF format, so it will be loaded into your default PDF reader upon clicking this button.

2.4.3 zplane Products

Clicking the **[zplane Products]** button on the Help Screen will launch your default web browser and automatically point it to the zplane.de website. On the site, you can learn about the various zplane products available for purchase as well as access your Account and all your registered zplane products. You can also access the Support section on the site if you need to request product support, report a bug, or have suggestions for future improvements.

2.4.4 Support Request

Clicking the **[Support Request]** button will launch your default mail client and start a new e-mail which will be addressed to support@zplane.de. Use this if you have questions or are experiencing problems with TONIC and a support agent will respond to you quickly. Be sure to include information like the TONIC version number, your computer's operating system and version, as well as the software name and version in which you're using TONIC.

3 Using TONIC

There are three primary uses for TONIC:

1. Discovering the key that is compatible with audio playing in your DAW
2. Discovering the key that is compatible with an audio file loaded into TONIC
3. Learning the scale and chords that are compatible with a given key

The following sections provide detailed directions on how to perform these various tasks.

3.1 Realtime Analysis of Audio in Your Host Application

As a plug-in, the most basic use-case for TONIC is to discover the key of audio parts in your DAW. This is done by loading TONIC as an insert effect on a track and allowing it to listen to the audio as it plays. Determining which track to use is dependent on your goals:

- If you want to **determine the key of a single part/instrument** in a project, such as a sample loop or a guitar part on a specific track, then load TONIC as an insert on that track. This way, TONIC will only "hear" the audio from this track when doing its analysis, thus providing you with the possible keys of that audio only.
- If you want to **determine the key of an entire song/composition**, then load TONIC as an insert effect on the master track/bus. Since all audio from the project is mixed together on the master track, TONIC will be able to "hear" the entire composition when doing its analysis and provide possible keys for the whole song.

For the examples in this section, we will be performing analysis on the song "Every Breath You Take" by The Police. The examples here show the whole song just loaded as a stereo file into a single track in a DAW, but this same process would work on a multi-track version of a song when putting TONIC on the master bus.

3.1.1 Running the Realtime Analysis

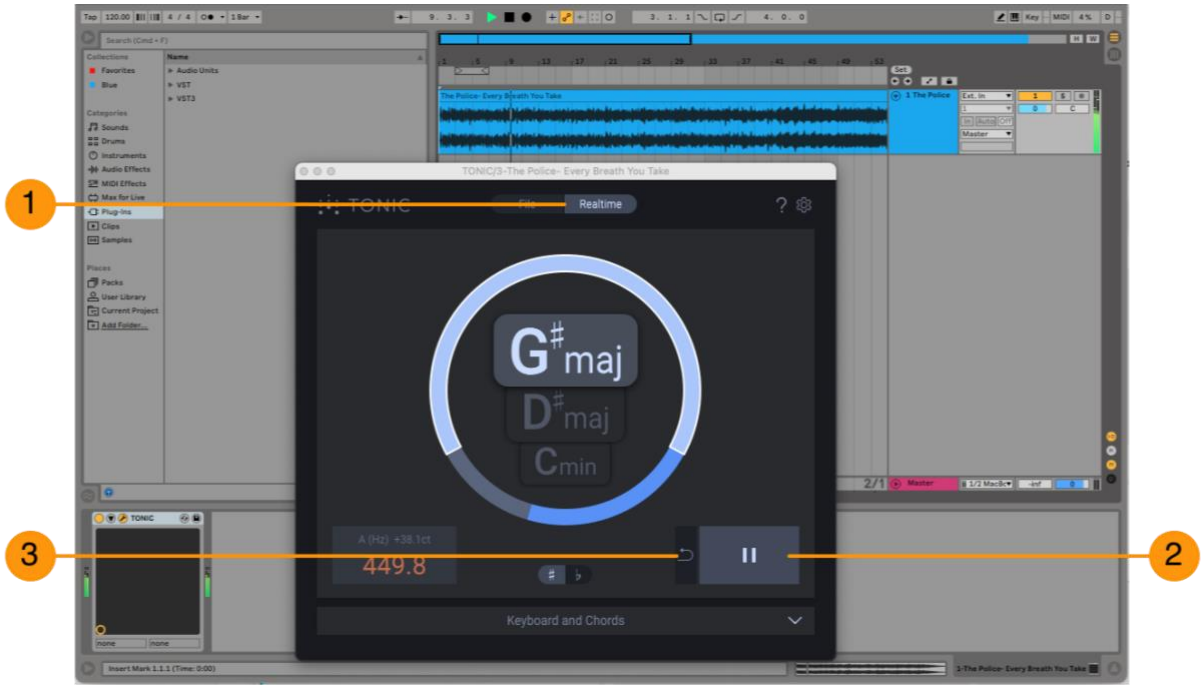

Figure 21: Running Realtime Analysis in Ableton Live

When you load TONIC onto a track in your host, Realtime Mode will already be selected **(1)** and analysis will be active. Therefore, you merely need to begin playback in your DAW for TONIC to begin analyzing the keys. The three keys with the best fit will be displayed in the central Key Displays with the top-most of the keys being the most-likely match. Depending on your preference, you can switch the enharmonic spelling of the keys being displayed with the Sharp **[♯]** and Flat **[♭]** buttons below.

If you want TONIC to ignore a certain portion of the audio or song (such as an interlude, skit, or other inharmonic section), simply press the Pause **[||]** button **(2)** to turn it off and TONIC will temporarily stop collecting data. When the part you want to ignore has passed, press Play **[▶]** button again to resume analysis.

If at any time you want to reset the analysis data to collect new, fresh data, click the Reset **[⮌]** button **(3)**.

> **NOTE:** Because key analysis is a realtime process when using TONIC as an insert plug-in, you will likely see the three proposed keys at the center of TONIC change often and quickly when you first begin analysis as TONIC starts to build up its dataset—this is entirely normal. Similarly, the confidence ratings for each key shown on the Probability Ring will also change size often. However, the longer the audio plays (which allows more data to be collected) the fewer changes in keys and probabilities will be seen as TONIC becomes more certain of the keys it is proposing.
>
> If you're analyzing a short loop of audio, you can usually just play part for a few repetitions and the proposed keys should be fairly accurate by that point.

However, if you're attempting to analyze the key of something that doesn't repeat or are trying to detect the key of an entire composition, it is still better to allow the entire track or composition to play all the way through to ensure that TONIC gets to "hear" every pitch that exists in the song. This is essential because, as a realtime process, TONIC cannot "look ahead" to analyze the audio that hasn't yet been played.

3.1.2 Verifying Key Compatibility

Figure 22: Verifying the proposed key

You can use the Keyboard View to verify the compatibility of the currently selected key **(1)** to the audio being analyzed by clicking the various notes that are highlighted on the keyboard **(2)**.

First, begin playback of the audio in your DAW so you can hear it. Then, click the highlighted the pitches in the Keyboard View **(2)**. TONIC will output a tone of the corresponding pitches when you click them. If all the highlighted pitches sound harmonious with the audio when clicked, then you'll know the selected key is compatible with the audio.

PRO TIP: Enable the **[Chords]** button **(3)** when verifying the keys. It can often be much more obvious if a key is correct or not when hearing the compatible chords in context of the music rather than just comparing single pitches one at a time.

Figure 23: Checking alternate keys

However, if any of the pitches sound dissonant against the analyzed audio, then this would indicate that one of the other keys **(1)** could be a better fit. Select one of the other keys and the highlighted pitches in the keyboard will change accordingly—you can then click them to see if this other key is a better fit for the audio.

Additionally, check the Tuning Frequency display **(3)** to see if perhaps the overall tuning of the original song deviates from A=440Hz. If the result is not 440Hz, then you can expect this audio to sound dissonant against other parts that are tuned to the default A=440Hz standard.

In the case of this particular recording of “Every Breath You Take”, the tuning is A=448.8Hz, likely due to the fact that the song was recorded and mixed on analog tape. You can use zplane Elastique Pitch V2 or similar tools to shift the tuning of parts to A=440Hz if needed. The offset is also shown in cents in case your instrument tunes via cents.

3.1.3 Dealing With Key Changes

Music is a complex and varied artform, and it's possible that a song can contain one or more *key changes*. Whenever a key change occurs, the scale that was compatible with the music up to that point becomes partially incompatible within the context of the new key. The number of key changes that can exist in a song is entirely up to the composer, as is the duration of those changes.

Normally, a key change isn't immediately catastrophic in terms of harmonic compatibility as many of the pitches in the previous scale will still exist in the new scale. However, a few of the pitches will likely be shifted up or down by a semitone in the new key compared to the previous key. Therefore, if you don't adapt the scale you use for the new key, these particular pitches in the previous scale may sound dissonant within the new key and its accompanying scale.

TONIC is designed to provide key recommendations for the *entirety* of the audio you analyze; TONIC assumes there are no key changes within the audio you analyze. Therefore, if you play a piece of music through TONIC that does contain key changes, TONIC will not be able to give you any indication of if or where those key changes occur. The keys being suggested by TONIC will be the ones that fit the entire song the *most often.*

If there are key changes, what will likely happen is that, during analysis, TONIC will show the main key that fits the audio up to that point with a high probability rating, then the probability rating will start to drop when the key change is encountered. Other keys might start to appear in the central Key Displays, too. This is because TONIC will notice that some of the pitches it now detects are no longer fitting to the proposed keys.

If you are finding that the scale recommended by TONIC works for the majority of the music, but suddenly sounds dissonant in a particular portion of the song, it could very well be that a key change has occurred at that point of the song.

We've been using the song "Every Breath You Take" by The Police to illustrate the use of TONIC, and this song includes a key change at the bridge around the 1:24 mark (beginning with the lyric "Since you've gone..."). While the key of A♭ major proposed by TONIC sounds correct for the majority of the song, it sounds wrong during this bridge.

The good news is that you can still use TONIC to help determine this new key by running analysis just on the portion of the music where the usual scale doesn't seem to fit anymore, e.g. only during the bridge.

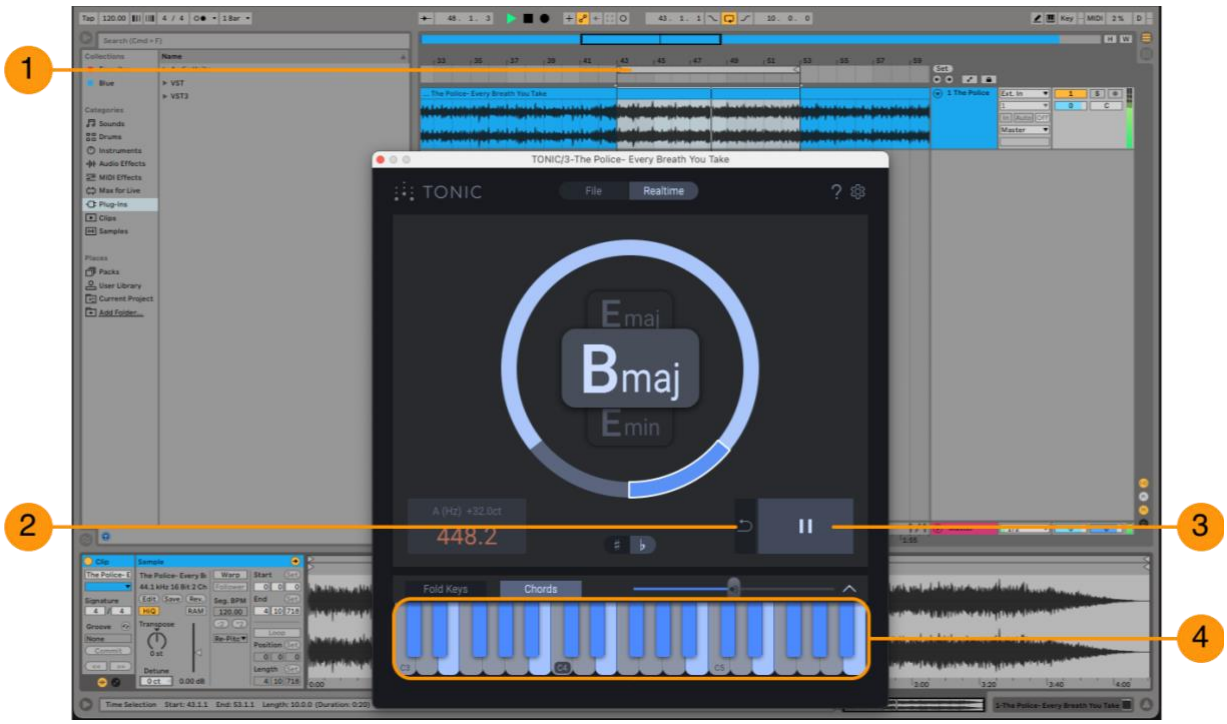

Figure 24: Detecting the key of a song section

1. Set a loop in your DAW around the section where you think the key change has occurred **(1)**
2. Click the Reset **[↺]** button **(2)** to ensure TONIC is starting fresh with no previously analyzed pitch data
3. Start playback in the DAW
4. Click Play **[▶]** to enable analysis in TONIC **(3)**

As the DAW plays this specific section of the music, TONIC will analyze it for its key. Depending on the length of the area being analyzed, you might need to let the section loop a few times so TONIC can build up a larger set of data. As the analysis runs, you will see TONIC show the likely keys for this section of the music. If the keys are different from the ones recommended when you previously analyzed the whole song, then you've very likely discovered an area with a key change.

Once analysis seems to stabilize, you can then use the Keyboard View to check which of the proposed keys fit this section by continuing to allow the section to play in a loop as reference while clicking the pitches in the keyboard **(4)**. If all the pitches in the selected key sound correct against the music, then you'll know you've got a good match for the key in this section of the song (in the case of "Every Breath You Take", B major actually seems to be the best fit for the bridge).

3.2 Offline Analysis of Audio Files

Figure 25: Setting up offline analysis of an audio file

You can also use TONIC to detect the key of audio files which is a process that runs faster than realtime. To do this:

1. Load TONIC as a plug-in onto any track in your DAW.
2. Click the **[File]** button **(1)** at the top of TONIC to switch to File Mode. The Play **[▶]** button will change to the File Load **[♫]** button.
3. Click the File Load **[♫]** button **(2)**. A standard dialog box will open which you can use to select an audio file to load. Alternatively, you can drag-and-drop an audio file onto TONIC to load it.
4. Once the audio file is loaded, TONIC will immediately analyze it and present the 3 potential keys with their associated probabilities shown in the surrounding ring **(3)**, as well as the Tuning Frequency **(4)**, as shown below:

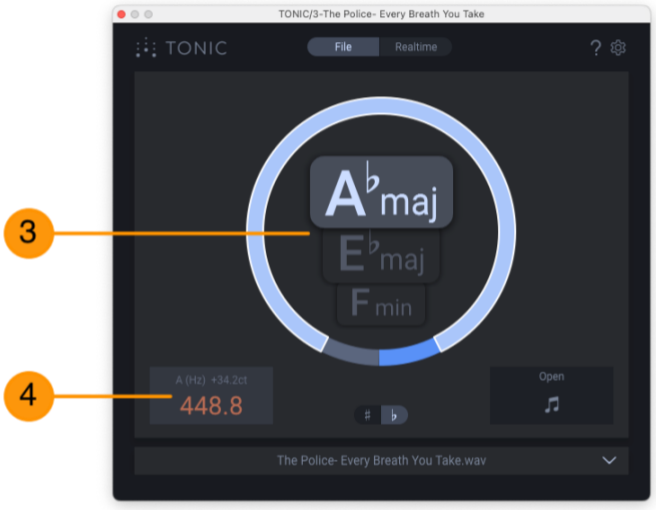

Figure 26: Results of offline analysis

> **NOTE**: If the audio file you've loaded for analysis contains key changes, you'll need to use the realtime method described in the previous section to find those key changes as it is not possible to analyze only a portion of an audio file in the offline File mode.

3.3 Discovering the Compatible Scale and Chords

The Keyboard View can be used as a guide for which pitches are compatible with the selected key. You can use this information to help you create melodies that are compatible with the selected key. There is also a Chords mode which can guide you through all triads compatible with the key, as well.

3.3.1 Exploring Scales with the Keyboard

There will always be 7 pitch-classes highlighted blue in the Keyboard View representing the pitches that are part of the selected key—these 7 pitches are the *scale* that is compatible with the key.

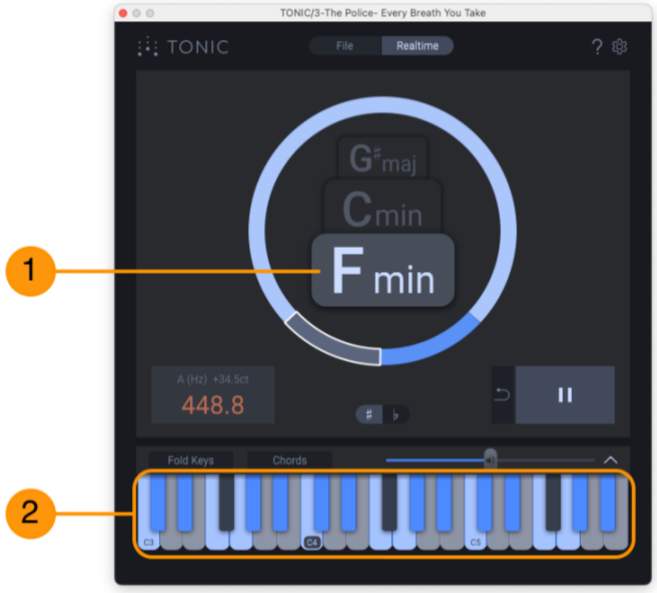

Figure 27: Exploring Scales on the Keyboard

As you change the selected key in the main Keys Display **(1)**, the highlighted pitches in the keyboard will change accordingly so that the compatible scale is always shown **(2)**. You can then use these highlighted pitches as a guide to the pitches you can use for creating melodies that are compatible with the analyzed audio.

You can also enabled the **[Fold Keys]** button **(3)** to reduce the keys of the keyboard to a single octave containing only the valid pitches **(4)**. This will ensure that every note you click is within the scale of the selected key:

Figure 28: Exploring Scales on the Folded Keyboard

3.3.2 Exploring Chords with the Keyboard

Figure 29: Using Chords Mode

If you enable the **[Chords]** button **(1)**, clicking the pitches in the keyboard will have a new behavior: For each key clicked, TONIC will play a compatible triad (3-note chord) using the clicked pitch as the root (first) pitch of the chord and will also display the chord name above the keyboard. With this feature, you can find all the triads that are compatible with the current key. For example, if the selected key is **"Fmin"**:

- Clicking the **"F"** pitch **(2)** will generate an F *minor* triad consisting of pitches F, A♭, and C as shown in the image, above.

- Clicking the **"G"** pitch will generate a G *diminished* triad consisting of pitches G, B♭, and D♭.
- Clicking the **"A♭"** pitch will generate an A♭ *major* triad consisting of pitches A♭, C, and E♭.

> **NOTE:** If you click on a pitch that is not compatible with the selected key (an unhighlighted pitch), TONIC will not play a triad—just the clicked pitch will be played by itself.

Figure 30: Using Chords and Folded Keys together

It is also possible to use **[Chords]** and **[Folded Keys]** simultaneously **(3)** to reduce the keyboard down to only valid chord pitches. In this mode, when one of the 7 visible keyboard keys is clicked **(4)**, it will always produce a valid chord for the current key.

3.4 Using TONIC with a MIDI Keyboard Controller

It is possible to trigger the TONIC note previews with a MIDI keyboard controller. This is done by using your DAW to route a MIDI signal into TONIC. When set up, playing notes on your keyboard controller will have similar behaviors to those mentioned in the previous section but with a few enhancements:

- The TONIC synthesizer will play previews over the entire octave range of your keyboard, even if this extends beyond what is visualized in the TONIC Keyboard View.
- You can limit playback to only work for notes that are in the scale of the selected key.

While each DAW will have a specific method for routing MIDI to an audio effect, descriptions for a few popular DAWs are provided, below, as examples—consult the documentation of your DAW if a specific example is not provided here.

3.4.1 Setting up MIDI Control in Ableton Live

The process for controlling TONIC with a MIDI keyboard in Ableton Live requires the following steps:

1. Load TONIC onto the Track you want to analyze—this can be an Audio Track or a MIDI Track loaded with a software instrument
2. Create a MIDI Track—this track will be used to capture MIDI notes from your keyboard controller and route them to TONIC on another Track.
3. Specify the MIDI Input to use—this is “All Inputs” by default, but can be changed to a specific MIDI Device/Port and MIDI Channel if desired.
4. Route the output of the MIDI Track to TONIC—TONIC is an audio effect rather than a MIDI effect, so TONIC will be either on an Audio Track or on a MIDI Track where an instrument plug-in has been loaded.
5. Enable MIDI input monitoring on the MIDI Track—this allows live input to go through the track and out to TONIC.

Below is a screenshot showing a MIDI Track and adjacent Audio Track set up such that the MIDI is routed to TONIC:

Figure 31: MIDI control of TONIC in Ableton Live

3.4.2 Setting up MIDI Control in Logic Pro

Setting up TONIC to be playable with a MIDI Keyboard in Logic Pro is somewhat unusual due to how Logic Pro handles MIDI. If you wish to trigger TONIC via a MIDI keyboard, you will *not* load TONIC as an insert on the track you want to analyze. Instead, you will create a new MIDI track and load TONIC into it as a "MIDI-Controlled AU effect". You will then choose the audio track you want to analyze as the "side-chain" input to TONIC. Because TONIC passes through all of the audio it receives, you will need to mute the original audio track so that you don't hear the content twice (resulting it in being extremely loud). Below is an example of TONIC set up as a MIDI-controlled AU effect on Track 2 using Track 1 as the side-chain audio source:

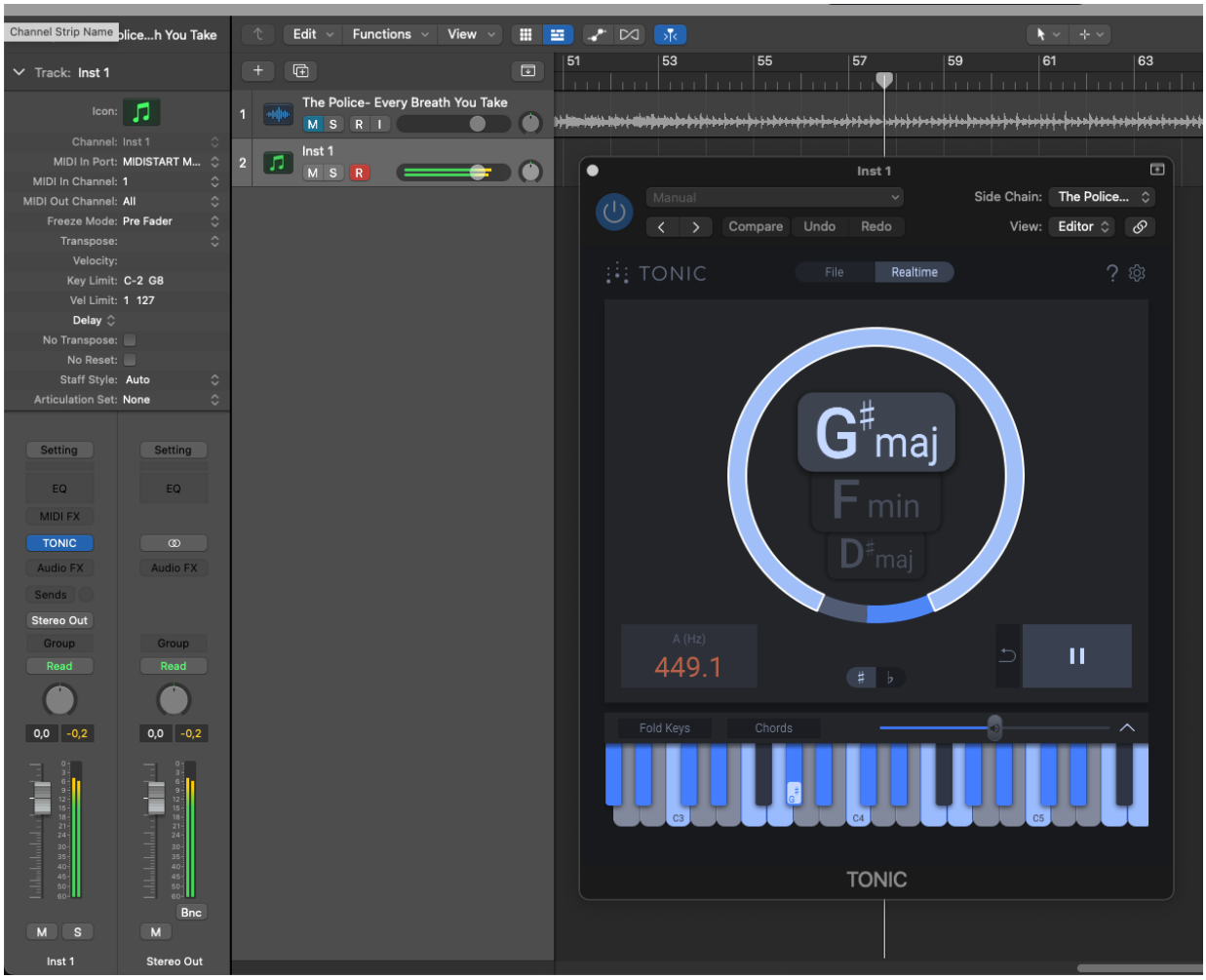

Figure 32: MIDI Control of TONIC in Logic Pro

3.4.3 Setting up MIDI Control in Reaper

Unlike many DAWs, Reaper does not use different track types like “audio tracks” and “MIDI tracks”; the track’s behavior is dictated by the content it contains, be it audio or MIDI. Therefore, to control TONIC with a MIDI Input, you create a new track and enable its Record button—this will expose a set of controls to choose the input for the track. You can select your MIDI keyboard as the input to the track, and then add a “send” object on the track which sends the MIDI over to another track containing TONIC. Below is an image of Track 2 set up to receive MIDI input with a send to Track 1 containing TONIC:

Figure 33: MIDI Control of TONIC in Reaper

3.4.4 Setting up MIDI Control in Studio One

To control TONIC with a MIDI keyboard in Studio One, load TONIC onto the track you want to analyze and then create a new MIDI track. When setting up the MIDI track, you set the output to an “Existing Instrument” and select TONIC from the list. The final setup should look similar to this:

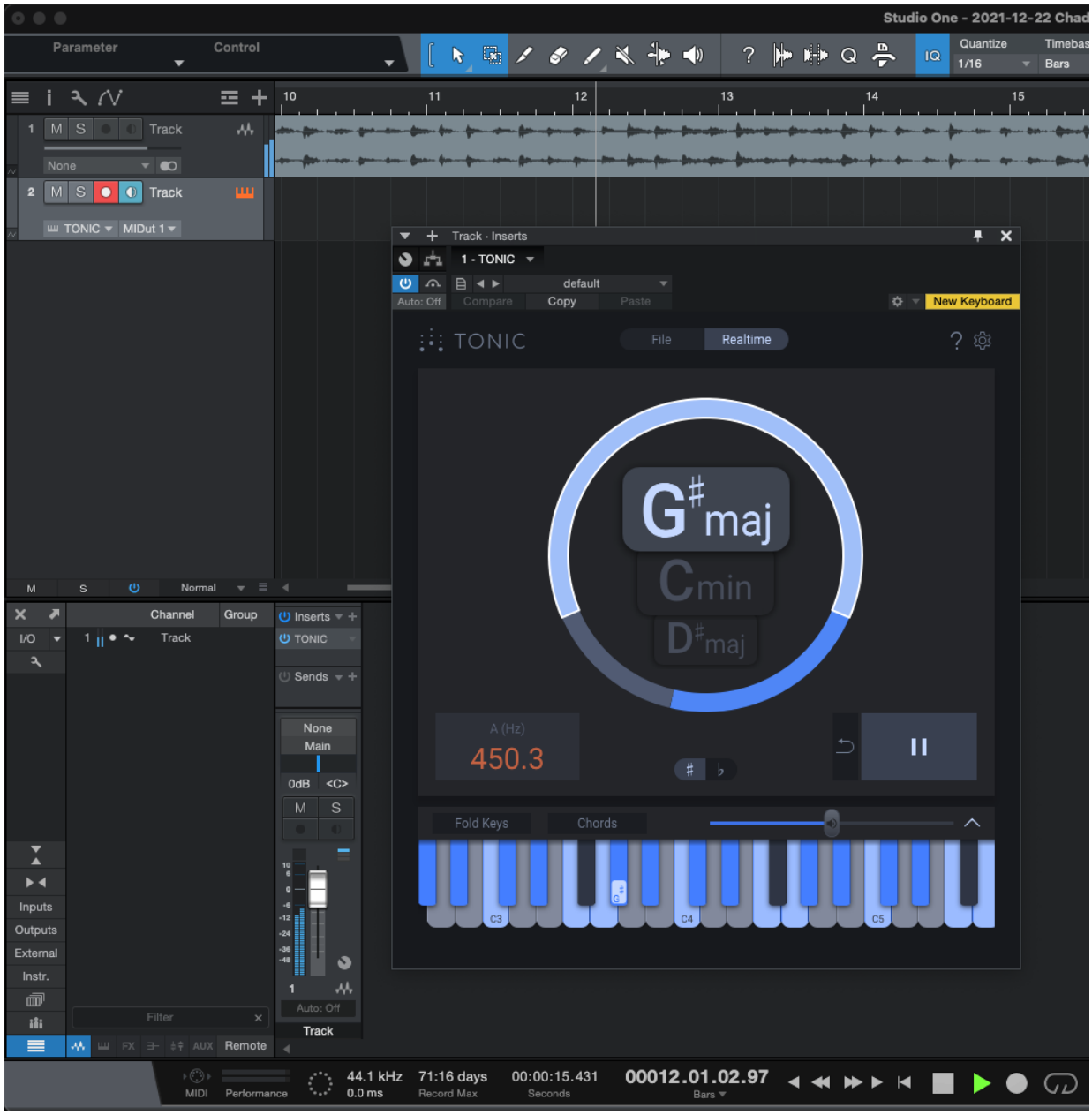

Figure 34: MIDI Control of TONIC in Studio One

3.4.5 Setting up MIDI Control in Pro Tools

In order to send MIDI to TONIC in Pro Tools, set up a new MIDI track. In its I/O settings, choose your MIDI keyboard as the input. For the output, select the TONIC instance on the track being analyzed. Click the Record button on the MIDI Track to enable monitoring of the MIDI input, and you can then trigger TONIC from your MIDI keyboard. The setup should look something like this:

Figure 35: MIDI Control of TONIC in Pro Tools

3.4.6 DAWs Without Necessary MIDI Routing

Unfortunately, not all DAWs include the necessary features or architectures to route incoming MIDI data to TONIC. While TONIC can be used to analyze audio in these DAWs, you will be limited to using the mouse to trigger the keyboard preview in TONIC. The DAWs we have tested which lack the necessary support are:

- **Apple GarageBand**—While GarageBand is similar and related to Logic Pro, GarageBand lacks “MIDI-Controlled AU Effects” which is necessary for playing the TONIC keyboard with MIDI input
- **FL Studio**—While it is possible to place TONIC on a track and enable MIDI Input, triggering the keyboard in TONIC also triggers the content on the track making it difficult to do accurate previewing

4 Technical Specifications

Operating Systems	• macOS 11, 12, and 13 • Windows 10 & 11
CPU Architecture	• macOS: Intel & M1 64-bit • Windows: Intel 32- and 64-bit
Audio Formats	• 1-2 channels (I/O) • 32kHz - 192kHz sample rate
Plug-in Formats	• VST3 • AU (macOS only) • AAX
Audio Latency	• None

5 Feedback & Support

Our website products.zplane.de always provides the latest information and news about our products. Any issues you encounter may either be addressed in the FAQ section of the appropriate product or reported directly to us via post or email. Before contacting us directly, please ensure you are using the latest version of the product. Please also make sure that your issue is not covered in the manual, the forum, the FAQ or elsewhere on our website.

If you cannot find answers using the methods above and need to contact us directly, please provide the following details to enable us to help you as fast as possible:

- Your registration information (such as the name of your User Account or your login e-mail)
- Your system specifications (hardware, operating system, host software)
- The exact version number of the plugin (see the “About” box by clicking on Help **[?]** button located at the upper-right of the TONIC interface)
- Include a detailed description of your problem with a step-by-step description of what led up to it so we can try to reproduce the issue

Please use the following contact methods:

✎ : zplane.development GmbH & Co. KG
Grunewaldstr. 83
D-10823 Berlin
Germany

∅ : products.zplane.de/support

@ : support@zplane.de