WinTuner Help

Tutorial

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Registration

This version of WinTuner is Shareware. This means you can try the program and evaluate it before buying. The unregistered vesion of the program is not fully functional. You can use all the functions of the full version, except that when you try to tune your instrument, the tuning will change to Open C# tuning. Also, you won't be able to reload the changes you've made to the Tuning Library.

Registering benefits:

When you register the program, you will be able to use other tunings than the Open C# tuning, and WinTuner will save and load your Tuning Library changes. The bottom line is, you will be able to use WinTuner at its best. If you just want to use the Open C# tuning, go ahead, don't register! As a registered user, you will be able to get the later versions a lot cheaper. (Of course, minor bug-fixes are free). If you are registered, your suggestions about the further developig of the program will be taken a lot more seriously. By registering, you will also support the shareware concept, and our purse of course :).

I'm sure, that by now you are anxious to register! So here's

How to register:

- Select the Register command from the menu, and write down the number shown.
- Fill the registartion form Register.wri, preferably using Microsoft Windows Write.
- Send the *filled* Registration form to:
  - Velvárt, András
    BUDAPEST
    Ond vezér ut 17/B
    H-1144
    (HUNGARY)

  - or via e-mail:
    bandi@frey.inf.bme.hu
- Send $20 (or equivalent in convertible currencies) to the above mailing address.
- If you cannot be reached by e-mail, please send an envelope with your name and address, and add $5 as posting cost.

Legal stuff

The authors of this program are not responsible for any damage, data loss, etc caused by using / misusing WinTuner. Use at your own risk.

You may only distribute the original wintuner.zip file, but you are encouraged to do so (upload to your favorite BBS, ftp-site, etc.)   You may put the file on any shareware-collections or similar, but it would be nice, if you at least have sent me an e-mail about doing so. (This way I will know of the collections on which this program can be found). You may not sell this product without written permission from the authors.

You may not modify/disassemble any part of this program without written permission from the authors.

Introduction To WinTuner

WinTuner is a tuner program especially for guitarists, but it suits the needs of a lot of other instruments. It helps you tune quickly and easily even with non-standard underlined tunings, and non 440Hz "A" frequencies. It also includes the unique **Calibrating** function, which allows exact tuning even with soundcards with not too precise sampling frequencies.

WinTuner vs pocket tuners

Even though you cannot take easily a PC to the stage (except when your synth-man uses a sequencer) , WinTuner can help you tune up your instrument while / before practising. It also provides features not every (or none of the) pocket tuners do: full chromatic tuning, adjustable "A" frequency, reference tones and a user-expandable tuning library. The other advantage on the side of WinTuner is the price: $20. You won't get a pocket tuner for this price!

System requirements

In order to run WinTuner you need a Windows 3.1, and a computer which is able to run Windows 3.1. If you want to get reference tunes, you will also need a MIDI driver on your system, as well as a MIDI synth. (Reference tones use MIDI out). If you want to get the most out of WinTuner, you will also need a soundcard able to digitize from a MIC-IN and/or a LINE-IN port. In addition, you will need cables/microphone to connect your instrument into this port.

If you are new to WinTuner...

...then you should go through the tutorial section of WinTuner Help. To do so, press the **>>** button. Even if you decide not to,   you should read the How WinTuner Works section in this Help file, because WinTuner has a unique way of working, which is not comparable to usual tuners.

How WinTuner Works?

Most tuner programs try to analyze the input they get from the soundcard, thus consuming valuable CPU-time. The algorithms used by these programs are usually based on FFT (Fast Fourier Transform) which is not sufficient for tuning, especially in lower frequencies. You may be over a halftone sharp or flat, and the tuner program may still tell you that you're as close as one can be. WinTuner uses a different approach. It has reference tones for you to tune your instrument close to the right pitch, then you can finetune with WinTuner's new technology. This way you do not lose your hearing, but even train your ears while tuning, because you may use reference tunes, then check your tuning with the tuner. But reference tunes is NOT all WinTuner can give you!

Tuning with WinTuner

- **Using the reference tones**

  Reference tones use the MIDI Interface of your computer. You will find a button labelled "LISTEN" at the bottom left corner of the WinTuner window. If you press this button, you will hear the pitch you have selected to tune your string to (see The Tuning Library). You can press this button three ways, producing three kind of reference tones:
  - If you simply click on the button, it will play the tone **once**, for the duration set in the Configure|MIDI dialog box. (See Configuring the MIDI)
  - Double clicking the button will result in **continous playing**, that is the tone will be heard for the duration set in the Configure|MIDI dialog box, then the tone will start again. This is useful if you choose to tune to a fast decaying instrument. (Like the guitar) .
  - Clicking on the button and holding down the mouse button for longer than 0.5 seconds will invoke the "**Play Until Release**" option. The note will be played until you release the mouse button.

- **Using the Scope for tuning.**

  If you prefer using the reference tone, you can still check your ears using the Scope display on your screen. If you do not want to invoke the reference tune, you may use the Scope instantly.

  To understand how the Scope can help you in tuning, we have to make a little detour.

  In films, when the car gets faster, its wheels seem to stop, then move backwards. This is becouse if the wheel turns around exactly one times between two frames of the film, the wheel will get to the same position it were on the previous frame, so it will seem to be standing still. If it gets faster it will seem to be moving forward slowly. If the wheel turns around less then 360 degrees (say 350) in a frame, it seems to be moving backwards.

  The same is true for sounds. Let's say your signal's period (period = 1/frequency) is 1000 units long. Then if you set the scope to jump back to the left side after 1000 units have passed, your signal will stand still. If your signal gets higher or lower, it will move in one or another direction. WinTuner uses this phenomenon: it sets the period   of the Scope, then you can see in the Scope whether your signal is moving (you're out of tune) or standing (you're tuned). This approach is so exact, that you can even see the guitar strings getting lower as they become faint. (When you strike a string, its

amplitude is bigger, which makes its tension bigger, and therefore the pitch the string produces is higher as well.)

Imagine now the above example (the wheel of a car moving) with a little twist: We photograph the two succeeding frames of the film together. This way we will see two wheels, except when the wheel is rotating exactly 360 frames per second.

WinTuner draws two curves on your screen: the second one is shifted exactly one period later than the first one. (This is analogue to mixing the two frames of the wheel together.) So, if you are in tune, these two curves should more or less **cover** each other, and should be **standing still** on the screen. And this is your goal when tuning.

The Tuning Library

The tuning library is a very powerful feature of WinTuner. (Especially if you're a guitarist.) You can use the tuning library to quickly change the tune for each string according to predefined tunings. For example, if you choose "Standard tuning" from the tuning combobox, the notes for each string will change to "E", "A", "D", "G", "B", "e". This way you don't have to set each string to the note you want every time you want to use alternate (other than the standard) tunings. You can use the Tuning Menu to manage your tunings to the library.
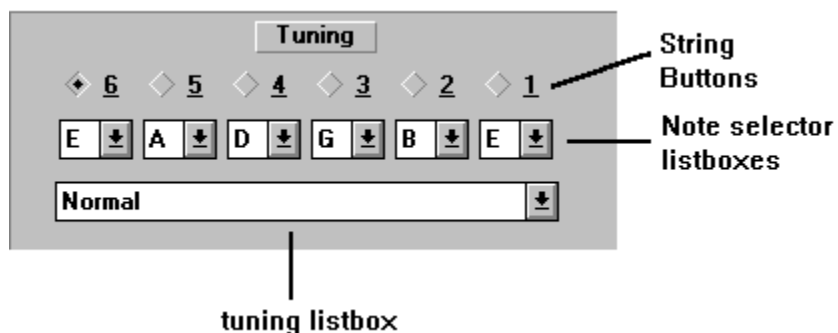
tuning listbox

You can select the string you want to tune with the String Buttons using the mouse or the "1".."6" keys.

With the listboxes, you can choose a note for each string. If you change a note in the list box, WinTuner will search its library for a tuning with the notes you set. If it finds one, the right tuning name will apppear in the tuning listbox. If not, "User defined" will be displayed. You can add your new tuning to the tuning library by choosing Tuning | Add from the menu. You can also delete a selected tuning by choosing Tuning|Delete from the menu.

Setting Up your system (Tutorial)

First check on the Control Panel in the Drivers section whether the MIDI and Wave In Devices are properly installed and ready to use. If you're not sure, then try digitising a little with the Sound Recorder, and playing a sample MIDI file with the Media Player. (Both Applications are sold with Windows 3.1) When you're done, connect your instrument to the MIC-IN or LINE-IN input of your soundcard. **WARNING! Do NOT plug an amplified signal into these ports!** Also make sure that you only use MIC-IN when LINE-IN is not loud enough. Usually LINE-IN is good for the output of distortion or other effects, and MIC-IN for non-amplified guitar or microphone.

Next set up your Mixer program using the Configure | Mixer command. If your soundcard does not have a Windows Mixer program, make sure that the MIC-IN and LINE-IN inputs are enabled. (Your card may have a DOS Mixer program or may not need a mixer program at all.) Check the mixer settings by clicking on the Mixer button. (It should invoke your mixer)

Configure your MIDI and Wave In devices using the Configure | MIDI and Configure | Wave In commands. This may not be needed if you only have one digitiser and MIDI device.

Calibrate WinTuner for your soundcard using the Configure | Calibrate command.

After this WinTuner is set up, and you may tune your instrument. You have to setup WinTuner only once, becouse it stores the configuration values in its .ini file.

Configure Menu

Use the Configure menu to configure WinTuner to your hardware.

MIDI
Wave In
Mixer program
Calibrate

See also:
Setting Up your system

Configuring the MIDI

Use the Configure|Midi command to customize WinTuner for using your Midi device as a reference tone.

You can choose on of the available MIDI devices from the... YES! The Available Devices list. You can enter the patch # (MIDI Instrument #) and velocity (volume) of the reference note in the appropriate edit fields. The Length edit field contains the duration of the reference tones (or the interval between two notes when using "Play Until Release" mode. See How WinTuner Works? for further details on different listening modes.) I won't talk about OK, Cancel and Help buttons... :)

Patch cache-ing is supported where available.

Configuring the Wave In Device

This command will bring up the Configure Wave In Device dialog box. In this dialog box you will see those devices which you can use as input. (into wich you can plug your instrument.) Select the device from the list box, choose a sampling frequency, then press the OK button to confirm.

See also:

Calibrating WinTuner

Configuring the Mixer

This command allows you to tell WinTuner which mixer program you want to be invoked by pressing the Mixer button. If you have not done so before using the Mixer button, WinTuner will automatically ask you about the mixer program.

Calibrating WinTuner

Some soundcards (like some SoundBlaster clones) do not sample exactly at the frequency requested. Since exactly known sampling frequency is critical for tuning precisely, you will need the Configure|Calibrate command to determine the card's exact frequency. Some soundcards even have different correction value for different sampling frequencies. So if you change the sampling frequency, you may have to recalibrate your soundcard.

Press the Calculate button. WinTuner will try to calculate the correction value for your sound card settings. This will take about 30 seconds. Please do not switch to other applications during calibration! Also it is suggested, that when calibrating, you do not have other programs running (except for Program Manager, of course.) After the 30 seconds, WinTuner will return to the Calibrate Dialog box, where you can modify the result of the calibration, reject or accept it. If the suggested correction value is below 0.2%, you may ignore the result, and set the value to 0%.

You can set the correction value manually as well, but this way you may lose accuracy, so use it only if you are sure of the right value!

Tuning Menu

You can use the Tuning menu to manage the <u>tuning library</u>, and to change the frequency of the Normal "A".

<u>Transpose</u>
<u>Add</u>
<u>Delete</u>
<u>Change "A" Freq</u>

Transposing the current tuning Up/Down

Using the Tuning|Transpose   command, you can quickly transpose the current tuning with any number of halftones up or down with the "**Semitones**" slider. This is like changing all the notes in the list boxes.

Use the "**Octave**" slider to make the whole tuning some octaves hihger or lower. This setting has effect when you want to hear the reference tone and to make the whole tuning applicable to other instruments which doesn't have the same frequency range as the guitar does. (Like bass-guitar or piano).

Tuning | Add

This command allows you to expand the built-in <u>tuning library</u> by custom <u>tunings</u>. First set the notes for all the strings you want to use, then choose Tuning|Add. You will then be prompted for a name for your new tuning.

See Also:
<u>The Tuning Library</u>

Deleting tunings

The Tuning | Delete command

To delete custom <u>tunings</u> from the <u>tuning library</u>, select the tuning you wish to delete using the Current Tuning combobox, then choose the Tuning | Delete command from the menu. You will be asked to confirm your deletion.

See Also:

<u>The Tuning Library</u>

Tuning | Change "A" Freq

Some orchestras, groups etc are not using the standard "A" frequency of 440Hz. (440 periods per second) To be able to play along with these bands, you can change the frequency of the standard "A" tune in WinTuner. To do this, invoke the Tuning | Change "A" frequency command, then set the new frequency in the dialog box.

Note: Since MIDI specification says Pitch wheel steps depend on the manufacturer, it is not guaranteed, that with non-440 Hz tunings, you will hear the right reference tunes. However, most MIDI devices use logarithmic steps for the Pitch Wheel, so WinTuner uses this, too.

Version info

This is the first, non-Beta release of WinTuner. See <u>Registration</u> for details on registering.

Thanks to **Martin Pergler** for telling me about the problem with cheaper soundcards regarding to wrong sampling frequencies, and for all the other good ideas he has sent me.

Revision history

(+)   means new feature added
(-)   means feature removed
(f)   means bug fixed

1.0 Shareware 08-15-95

(+)   Registration handling routines added
(f)   Modified built-in tunings

0.11 Beta 07-25-95
(+)   Calibration value is now saved when exiting WinTuner. Thanks for pointing this out go to Dawid Lewis in the U.K
(+)   Wintuner now saves (and of course restores) the position of the window of the program on the screen.
(f)   Midi reference tune now works with non-440Hz A frequencies. Warning! Since MIDI specification says pitch wheel effect depends on the manufacturer, it may not work well on your system. It seems to work well on GUS, though, and I believe it will work on Roland products as well.
(f)   Strings are now numbered in correct order: 6 is the lowest, 1 is the highest. Thanks to Carl Mercier.
(f+)   Some minor modifications in the Help file.
0.1 Beta
First release for Beta testers

Tunings are predefined pitch values for each string. For example, 'standard tuning' refers to the usual "EADGBe" tuning,