

# Renaissance Bass

software audio processor

## User's Guide



## Read Me First!

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Thank you for buying Waves audio products. This page will give you some basic information about the products, where to start, and answer a few common questions.

- In the past, we used hardware copy-protection. In the interest of an easier installation process for you, Waves now uses a challenge/response system. Your product will work full-function for 7 days after installation, giving you plenty of time to authorize your product. This 7 day period is a one-time feature and can not be reset or reinstalled.
- Our Best Recommendation: Follow the Installation instructions on the next few pages, then read the WaveSystem Manual while you play around with one of the plug-ins. Waves processors have extraordinary power in the user interfaces and the WaveSystem offers you tips and hints that will make your work go faster and easier. You wouldn't believe how many people only find out about some of these tips 2 years after they bought a product!
- With almost every product, you can install to either Mac or PC, but only one! As always you can use your product with more than one application on your Mac or PC as long as it uses a supported protocol.

**Q:** I already own a Wavekey from a previous purchase. Can I still use it?

**A:** Yes but only with software prior to version 3. Chances are, if you have a WaveKey, you have purchased an upgrade (instructions are on the next page) and you are no longer eligible for tech support for that key.

**Q:** Can I move the authorization around?

**A:** Only if you install to an external hard drive, either SCSI or IDE; SCSI is strongly recommended.

**Kensington removables, Jaz, Zip, USB drives, and Firewire drives are not supported.**

**Q:** What are the system requirements for the plug-ins?

**A:** See the package itself for requirements. The requirements for the plug-ins vary depending on the host application and plug-in architecture you are using. For the packages which access the processing power of the TDM cards, the performance on ProTools TDM systems is relatively predictable and is determined by the number and type of DSP cards you have. Multitrack native systems (such as Cubase VST) are less predictable because they use the computer's CPU to do all the processing. The CPU not only has to run the plug-ins, it has to run the operating system, the host application, any other applications or system extensions, and other various tasks. Therefore, the faster your system, the more functionality you will gain (i.e. more real-time plug-ins).

# Installation for Macintosh or PC

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## For everyone, start here

- Inside your package is a **Product Registration** page, which has your all-important **Waves Serial Number**. The page can also serve as a “manual backup” if you are unable to access the Internet. Our online authorization procedure is available 24 hours a day worldwide. If you can't use this method, see the instructions on the Product Registration page.
- Run the installer from the Waves CD supplied in the package. The installer file is named “InstallWaves30” (Mac), or “InstallWaves30.exe” (PC). After installation, your Waves processors will work with full function for 7 days. You have until then to authorize the hard drive of your choice; an external drive would allow you to move your authorizations between machines.
- Have your Waves Serial Number with you at your online computer (does not have to be your workstation), then point your browser to **http://register.waves.com**. Now proceed to either the New Customer section or the Upgrading from WaveKey section.

## New Customer (not upgrading from WaveKey system)

- Click “I'm a new customer” to create your account, then select “Register New Product”, even if you are upgrading. A new page, “Product Registration” will be displayed. Fill out the page completely, and put your Waves Serial Number in the Product Serial # field.
- Now your account will be created. It may take a little while for your “Manage My Account” page to be updated. Your registered product will be shown on the Registered Product list.
- Proceed to the “Authorization” section on the next page.

## Upgrading from WaveKey

- Click “I'm a new customer” to create your account, then select “Register New Product”, even if you are upgrading. A new page, “Product Registration” will be displayed. Fill out the page completely, and type in your WaveKey number.
- Now your account will be created. It may take a little while for your “Manage My Account” page to be updated. Your registered product (the older WaveKey package) will be shown on the Registered Product list.
- Now register your upgrade from the Manage Account page by clicking the “Upgrade” button beside your registered WaveKey product; then enter the new Waves Serial Number from inside your package.

## Authorization of registered product

- Before you continue with this step, you must have completed one of the two sections on the previous page and have your new product serial number registered, and showing, in your “Manage my Account” page.
- From the Apple Menu (Mac) or your Start menu (PC), select the Waves Authorizer (or locate it in the Waves folder where you installed the Waves software).
- Carefully select the hard drive you wish to authorize; if you wish to have portability between workstations, install to an external hard drive (Kensington removables, Jaz, Zip, USB drives, and Firewire drives **are not supported**).
- Copy the challenge by clicking the “Copy Challenge” button. Clicking the “Web Page” button will take you to “register.waves.com” if you have an internet connection already established. If you are online, just leave the Waves Authorizer running so you can paste in the response in a few moments.
- Access your Waves account which you created by following instructions on the previous page.
- Click the “Authorize” button beside the Registered Product line (which will show your serial number). Paste or type the challenge into the Challenge field, and click “Submit Authorization”.
- The system will reply with your Response, which you can select and copy, then paste back into the Authorizer. The “OK” button will become active to show the Response was correct. Click the OK button to complete the authorization.

### After installation is complete:

- Increase the memory to your applications as indicated below in the Memory Allocation section.
- Launch the application you wish to use.
- (Note for Pro Tools only): During launch, Pro Tools will display a dialog with several options: [1] Don't use AudioSuite; [2] Extended backward compatibility; [3] Don't ask me again. If checked, the first option no Waves processors will be in the AudioSuite menu (for speed and menu length advantage). The Extended compatibility option will load any old sessions which used the “+” plug-ins (such as +Q10); however, you will see those plug-ins listed twice in the menu, so don't check this unless you need it. The final option prevents this dialog box from being shown each time you launch Pro Tools. You can force the dialog to be shown by simply holding down the space bar during any launch of Pro Tools.
- In all applications, you will be prompted to locate the folder where the Waves plug-ins are found. Navigate to the Waves folder, then Choose the sub-folder “Waves Plug-ins”. This creates a preference file (such as

WaveShell-DAE Preferences, or WaveShell-MAS Preferences) which “points” to the Waves Plug-ins folder.

## **Memory Allocation**

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For each application installed, open the application’s information dialog box and add the following memory:

- ProTools and all other DAE applications - Add at least 8MB to DAE (located in the System Folder in the DAE folder) to the minimum and preferred size. We recommend adding at least 16MB. For more information, check the recommendations of your application. For Pro Tools|24 Mix systems, make sure that DAE has at least 10MB “headroom” on large sessions.
- Cubase VST - Add 750KB per plug-in instance to VST.
- All other native applications - Add 3MB to the application’s minimum and preferred size.

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## Technical Support

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In order to provide you with the best technical support possible, Waves has a variety of technical support services available.

You must be registered to be eligible for technical support, and must be prepared to give your serial number, User ID, or other requested information in order to proceed with technical support services.

Technical Support options:

- First, check the read me files in the Waves folder and the rest of this manual. The answer could be right under your right (or left) thumb.
- Go to our website at [www.waves.com](http://www.waves.com) for updates and FAQs.
- Email our tech support team directly at the address listed below.
- If you live outside of the US, you can contact your local Waves dealer. Most local dealers can provide you with authorizations, upgrades and technical information. A list of worldwide dealers and distributors is available on our website.

We invite you to check out [www.waves.com](http://www.waves.com) for technical information and all the latest information about Waves products.

### Worldwide technical support

(Monday-Friday, 9am-6pm east coast)

tech support:

[support@waves.com](mailto:support@waves.com)

306 West Depot, Suite 100

Knoxville, TN 37917 USA

tel: 865-546-6115

fax: 865-546-8445

For sales and pre-sales product information:  
[sales@waves.com](mailto:sales@waves.com)

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## Chapter 1 - Quickstart

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Waves created the Renaissance Bass to answer the demands of the market: an easy-to-adjust processor that delivered a great sound, quickly.

Renaissance Bass uses patented technology that Waves developed for the original MaxxBass processor. Over the years we've been able to refine the algorithm for many licensing agreements, and felt it was time to bring the fruits of our labor back to the pro audio world, where it all started. Therefore, we created the Renaissance Bass processor, with significant improvement in the psychoacoustic bass performance, easier adjustment, and clip-free performance.

### **What is the secret?**

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Of course we can't tell you everything we're doing, but in general, the process is very simple.

The brain can reconstruct a "missing fundamental" from just the harmonics the ear is hearing. For example, if you have a radio with a small speaker, the bass guitar in a rock song, or the double bass in a concerto, can not be reproduced by that very small speaker, that is, the fundamental pitch is too low for that speaker to produce.

However, the harmonics are coming out of the speaker (they are higher than the fundamental of course, check your physics of sound book gathering dust on your shelf for a lot more information). Your ear can hear these harmonics, and the "hearing mechanism", more like "hearing software" of the brain recognises that these harmonics are related to each other (i.e., correlated), and reconstructs the missing fundamental.

Therefore, you hear the low bass note, even though it is not coming out of that speaker. This phenomenon has been well known for centuries (pipe organ builders use exactly this technique to emulate very long pipes that might have been too expensive for the owner).

Waves created the MaxxBass algorithm to do exactly this, taking the very low bass (user controllable) and creating harmonics that can be added into the signal (variable by user). Waves has patented this technology, refined it, and has put it into the Renaissance Bass processor.

## Chapter 2 - Controls

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Signal flow in the Renaissance Bass is from the left to right, so it's easy to see how the original bass signal and the new harmonics are contributing to the total output.

On the left side is the meter for the Original Bass level.



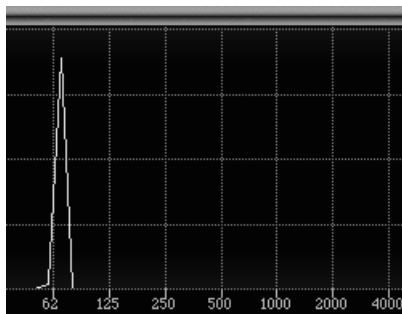
In the middle is the level meter for the Harmonics that are created.



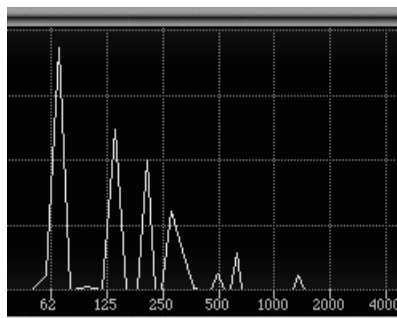
On the right side is the output meter, with infinite peak hold numbers at the bottom of the meters.



Here's a screenshot of a sine wave input to Renaissance Bass, without any Harmonics being added.



When adding the Harmonics, the same signal produces this output:



## In/Out (Original Bass)

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Switches the original bass (frequencies below the Freq value) in or out of the final output signal of the processor.

## Intensity

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This control is simply a level control of the Harmonics that are generated. It ranges from -24dB to +24dB. The zero reference level (0.0) is just a rough approximation for most systems to achieve a perceived equal bass level. For example, if you completely remove the Original Bass (the In/Out button is set to Out), an Intensity setting of 0.0 will very roughly give you equal perceived bass by using only Harmonics. Of course this will change a great amount depending on the source material, your speakers, the room you are in, and so forth. It's not a recommended starting point, it's just the middle of the control range.

The higher the Intensity value, the more Harmonics are added to the output signal.

## Freq

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This simply controls where the process begins (much as in a crossover). Therefore, with the setting shown above (65Hz), all frequencies below 65Hz will have harmonics generated by the system and added by the Intensity control.

## Gain

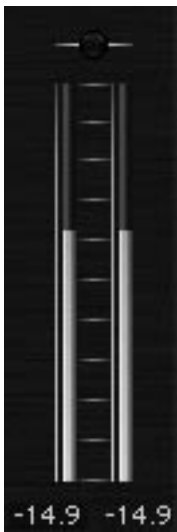
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The output gain control, which is reflected in the output meters immediately beside the gain control.

## Output meters

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These meters show the output level of the processor. Just below each of the meters are infinite peak hold numeric indicators, showing the highest peak (sample accurate) since the last reset. To reset, just click the meters anywhere. There's lots more information in the WaveSystem manual, which explains common controls and amazing shortcuts that are found in every Waves software processor.

At the top of the meters is a clip light. Click it to reset.

## Chapter 3 - Basic Adjustment Procedure

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Adjusting Renaissance Bass is basically the same, no matter the application. What you want to do is enhance the perception of bass frequencies in a “proper” mix. It doesn’t depend on the speakers you have (we are assuming that you are using widerange speakers for monitoring). It depends only on your ability to use this tool as in any other (such as EQ, compression, etc.) and to use it in a reasonable way to get a balanced sound.

### Mixing or mastering

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Let’s suppose the bass guitar of a mix is a little low.

Instead of adding EQ, which would boost the bass and surrounding harmonics, and boost other instruments in the same range as the harmonics, use Renaissance Bass. By taking all the frequencies below, say 100Hz, and creating new harmonics that are laid on top of any other sounds, the bass guitar will be heard more clearly, without becoming muddy from boosting other instruments at the same time.

Here are the steps for adjusting the previous scenario:

In a multitrack mix, you can insert Renaissance Bass on just the track (recommended in this example), or you can insert it on the 2-mix (master output), as you would do in a mastering application.

- Set Freq to 100Hz.
- Adjust Intensity to a low level (say, -10 or so)
- Use the Bypass control to compare between the harmonically-enhanced signal, and no processing.
- Adjust Freq and Intensity for desired effect.

In this case, a low level of Intensity is probably enough, but of course it depends on the problem you are trying to fix.

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## **Fixed installation adjustment**

A very different situation would be for a playback system that has a specific speaker system that does not have good bass, such as a kiosk, a commercial installation, an art installation, or any situation where you know exactly what speakers will be used, and have one with you to do the mixes with.

For example, you are doing sound for a theme park such as Disneyland, and the speakers are 5" drivers that have a cutoff frequency of about 110Hz. You want to extend the bass response from these speakers, and you know that only these speakers will be used.

Now you can do a more severe adjustment to the sound, knowing that the playback will be on this particular system by completely replacing the low bass with harmonics. This keeps the small speaker from trying to reproduce the low frequencies, saves amplifier usage, all while sounding better than the speaker can actually sound!

- Set Freq to the cutoff frequency of the playback speaker (in this example, 110Hz)
- Set Intensity to 0.0, then move upward until the bass is heard in a balanced way.
- Fine tune the Freq and Intensity for the smoothest bass response. Frequency sweeps can be used, as well as the source material you are mixing.