



LINEAR PHASE & PHASE EQUALIZER:

EQ-C™

“C” for Corrections!

USING FIR TECHNOLOGY,
AND NOW ..
INCLUDING A PHASE EQUALIZER!” TL

USER MANUAL

<https://omade-tl.com/>

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Congratulations on finding EQ-C! Because you have put the hand on a master piece of art! With it, you can correct the sound of your audio system with a high grade quality using FIR filters, including linear phase equalizer and phase corrections! To be convinced, try it, free trial available on our website https://omade-tl.com/software_eq-c.html under the Support tab, where you will find video demonstrations on how to use it, also there is a lot of information in this manual, you can trust us, you will enjoy using EQ-C!

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1 PRE-REQUISITS

1.1 PRODUCT COMPATIBILITIES

- AAX® Compatible (Audio plugin for DAW);
- *AU® Compatible (Audio plugin for DAW);
- *AUv3® Compatible (Audio plugin for DAW, untested);
- VST3® Compatible (Audio plugin for DAW);
- **Standalone plugin (Application for the desktop).

(*) Even if the plugin is specified as Sandbox, it uses libraries, and need to access external binary files. Lower the security to allow it when required.

(**) Requires a virtual audio cable, which is a driver that you can find on the Internet.

Third-party logos:



1.2 MINIMUM REQUIREMENTS

- A PC or a Mac with minimum CPU of 2,5 GHz, 2 Core;
- Mac® version 10.11 and later;
- Windows® 7,1 and later (64-bit);
- A “Virtual Audio Cable”, is a driver used to connect the audio outputs of the operating system to the inputs of the “Standalone Plugin”, from which, output must be adjusted to output on the audio system, via the audio card, putting the Standalone plugin in series into the audio chain;
- An Internet connection to access the license to authorize the launch of the application.

(*) Even with this configuration, limitations of functions may occur due to lack of resources, try it at the lowest samplerate for the first time.

1.3 SPECIFICATIONS

- Linear phase equalizer;
- Phase equalizer;
- Automatic level function;
- Clipping indicator with another way to level at -3dB peak,
- Load/Save from or into a text file (import function);
- Invert function;
- Link function;
- True bypass function;
- The product accept Mono, Stereo, and Mono to Stereo configurations;

1.4 DEFINITIONS

FIR : Finite Impulse Response;

DAW : Digital Audio Workstation;

OS : Operating System;

2 SETUP

2.1 INSTALL

2.1.1 For Mac:

Download EQ-C for your daw from our website, double click the installer and follow the instructions.

NOTE: The AU EQ-C-S audio plugin requires the use of the EQ-C Standalone plugin to register it , and to be allowed in the corresponding DAW for the Audio Unit plugins "AU".

2.1.2 For Windows:

Download EQ-C from our website, double-click on the exe file and follow the instructions to install.

2.2 UNINSTALL

2.2.1 For Mac:

To uninstall, go to the Application or to the daw audio plugin folder, and drag the application/plugin into the trash. Send the HOME/Music/EQ-C folder to the trash, take care to keep a copy of your correction files for future use.

For other installed files, use the terminal as administrator to uninstall it using the following command line:

```
sudo rm -R /usr/local/lib/libOMADE_TL_FIR_PH.dylib
```

And for the older installation, before the version 1.3, use:

```
sudo rm -R /usr/local/lib/libOMADE_TL_FIR.dylib
```

2.2.2 For Windows:

To uninstall, use the Control Panel/Programs and features, localize the EQ-C product and click on uninstall.

3 PRODUCT

3.1 OVERVIEW

The audio plugin EQ-C, permits to load the frequency response data for level and phase corrections of an audio system, using simple text files, the values may be directly taken from the manufacturer's website, using the frequency response curve and phase measurements, or measured in an an-echoic chamber, or measured using a specific head simulator for headphone's frequency response measurements with some correction added on it.

There exists free software permitting to get these values directly from images. You can find video demonstration by visiting our website at https://www.omade-tl.com/software_eq-c.html Click on the "Support" tab. If needed, we can help you making the correction files following your audio system (with a service fees).

We recommend using this audio plugin with only one wide-range speaker for the left and right channel, no tweeters, no sub-woofer.

We hope you will get complete satisfaction using our product EQ-C!

3.2 DESCRIPTION

3.2.1 INTERFACE

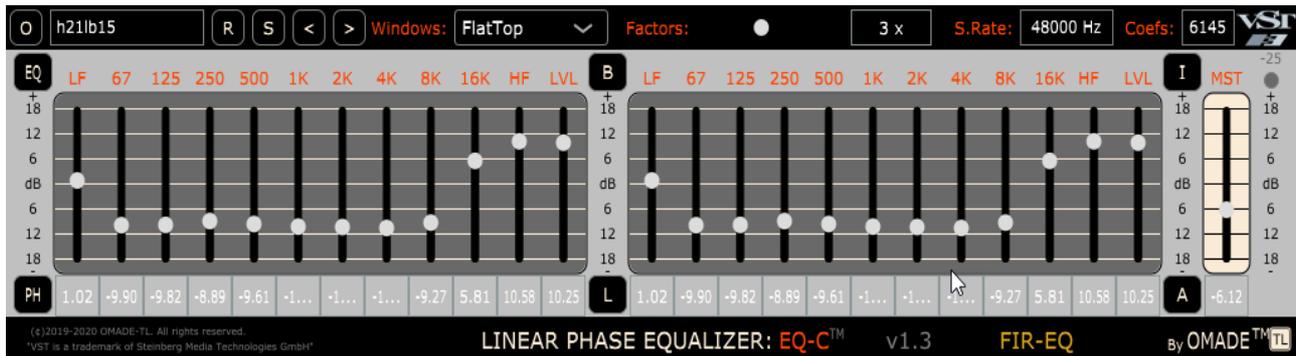


Fig. 1_INTERFACE OF EQ-C-S

(The aspect may slightly change between daws).

3.2.2 FUNCTIONS

1. “O” button is provided to reset all Eqs, Phases and the Master to zero, it can be used as a bypass with the use of the undo button “<” (For a true bypass use the DAW bypass button);
2. Options, on Standalone plugin only, this is the audio settings, input and output & the buffer size settings, it requires to restart the app after a change;
3. File name input to specify for the correction-1.txt & correction-2.txt files to import or to export as “correction”;
4. The “R” button is used to read/import the values from the previously specified file name ;
5. The “S” button is used to Save the EQ’s sliders settings in a filename-1.txt & filename-2.txt files;
6. The “<” button is an undo button, which permits to recover the previous EQ’s settings after a change;
7. The “>” button is a redo button, the undo and redo button can be used to compare different settings;
8. The combo box lists the Window’s functions to be selected;
9. The “Factors” slider is a global “FIR factor” setting, relatively to the selected window function, it acts as an all EQs slope setting;
10. The “S.Rate” or Sample Rate indicator.
11. The “Coeffs” indicates the maximum number of coefficients in use per filter;
12. EQ for the left and right channel, in mono or mono to stereo configurations;
13. dB Indicators are provided on the right and left of the EQs for the sliders;
14. LF is for the lower frequencies range, HF for the higher frequencies range, all others are Band-pass filters;
15. The LVL slider provided for each channel can also be used as a balance control and also, it automatically limits the sound level when correction-x.txt are imported;
16. There are direct numerical value indicators and also input editors for the filters, the Factors, and the Master sliders;
17. The “MST” slider acts as a global output level in stereo.
18. The button L for “Link”, permits to link the control of the right channel to left channel.
19. The buttons EQ & PH will display the Eqs or the Phases corrections sliders.
20. The button A for Auto Level, will set the outputs peak levels corresponding to the inputs levels, also the level indicator which only take measurements of the left channel, while clipping will show the maximum measured peak, and by clicking on it, it will reduce the level by this value and - 3dB, resetting also its original state and the memorized values for the Auto Levels button “A”.
21. It was also added a bypass button “B” which is a true bypass of the equalizer itself.
22. Also, the “I” button was added to help invert the EQ’s levels or the Phases Deviations.

3.2.3 KEYBOARD SHORTCUTS

- ✓ Holding the ctrl keyboard key and grabbing a slider to change its values with more precision;
- ✓ By holding the alt keyboard key and clicking on a slider knob, the slider goes to its initial value, it could also be done by double clicking the slider knob.

3.3 GENERALITIES

The frequencies indicated on the interface are relative and rounded for 44.1 and 48 kHz, if you use 88.2 or 96 kHz, the frequencies will be approximately the double of the values displayed. And for this reason, the EQ-C needs a high number of points provided in the audio correction files in order to ensure greater accuracy.

3.4 LOADING THE AUDIO CORRECTION FILES

To load the frequency response data from the audio correction files into EQ-C, enter the file name without the extensions "-1.txt" or "-2.txt" and click the Play "R" button.

Loading the file will automatically invert and normalize these values in EQ-C, values which could be those of the measured frequency and phase response curve of an audio system, so there is no need to manually invert these values to perform audio correction.

Thus, to create an audio correction file, it suffices to obtain the points of the frequency and phase response curve and to specify them in the audio correction files, with per line, the frequency in Hz, the sound level in dB, the phase in degree, these values are separated by a space or a tabulation.

3.5 SAVING THE AUDIO CORRECTION FILES

Saved equalizations are written for left and right channels, under the "specifiedFileName-1.txt" and "specifiedFileName-2.txt".

If you wish to create a custom equalization, and to save it, edit the file name in the input box corresponding and click on the Save button "S".

WARNING

If another file with the same name already exists in the EQ-C folder, this would overwrite its content without notification. Avoid loading a detailed response curve file and saving it over, it would affect the quality by its number of points, which are useful when changing of sample-rate, re-load after changing it.

3.6 CUSTOM AUDIO CORRECTION FILES

Configuration files use the extension .txt.

For each line, the first term is the frequency value in Hz, the second is the measured level in dB, the third is the Phase deviation in degree, and the separator between each value, is a space or a tab.

There can be as much frequencies as measured, the audio plugin will convert and import them (min and max dB values are automatically normalized within the -18 and +18 dB range available for each EQ sliders), each EQ's LVL will automatically correct each channel maximum output peak level.

Sample of frequency response levels and phases saved for an audio system corrections in the files "default-1.txt" for the left channel, and "default-2.txt" for the right channel, at a samplerate of 44.1KHz:

```
"
31.250000 -0.000000 -0.000000
70.312500 -0.000000 -0.000000
140.625000 -0.000000 -0.000000
281.250000 -0.000000 -0.000000
562.500000 -0.000000 -0.000000
1125.000000 -0.000000 -0.000000
2250.000000 -0.000000 -0.000000
4500.000000 -0.000000 -0.000000
9000.000000 -0.000000 -0.000000
18000.000000 -0.000000 -0.000000
36000.000000 -0.000000 -0.000000
"
```

WARNING: There must be frequencies indicated for the lowest and highest frequencies, for 96 KHz, there must be at least one line with corresponding values for the EQ & Phase correction, at 72000 Hz, which is 0.75 times the frequency sample rate, and this divided by 2 for the other frequencies until you reach the highest specified one, else the plugin will see infinite values if the original values exceed -18 or 18dB.

3.7 INSTALLING THE AUDIO CORRECTION FILES

The folder EQ-C is located under the user profile or home directory, Music folder, if not exists it should be created automatically, otherwise please create a folder with the name "EQ-C" under your HOME/Music directory, all ResponseCurve.txt files are located in this folder.

Install the custom ResponseCurve.txt into the EQ-C folder under your HOME/Music/EQ-C folder, or on PC under your C:/users/YourUserName/Music/EQ-C.

While adding configuration files in the EQ-C folder manually, duplicate if mono, and rename the files with the "-1" for the left channel and "-2" for the right one.

3.8 KNOWN ISSUES

- It seems that the level meter takes sometimes false measurements: - click on the level indicator to reset the counter, and then click fast on the auto level button “A” to adjust the output level peak to be equal to the input level;

We look forward to improve it!

4 MISCELLANEOUS

4.1 THEORIES FOR CORRECTION OF AUDIO SYSTEMS

4.1.1 AUDIO CORRECTION OF THE SPEAKERS

We recommend using generic speaker measurements made by the manufacturer, incl. frequency response and phase curves to get the data, using software to convert the graphics into a spreadsheet, then have your own speakers calibrated by dedicated companies where they use an anechoic chamber to take measurements and help you to get better sound accuracy!

With EQ-C indeed, you will be able to correct the frequency response and the phase of your speakers which are valid in an anechoic room, but not in a real room, you will probably also have to correct the reverberation of the room, which can be done by doing an IIR (Infinite Impulse Response) of the room, and using its reverse phase in an IIR reverb audio plugin.

For now, this reverb correction system is not implemented in EQ-C, but as there are many such reverberations and because we can always use a mini-DAW to load the EQ-C and an IIR reverberation, this function will probably not be added to EQ-C.

4.1.2 AUDIO CORRECTION OF A HEADPHONES

We recommend that you use generic headphone measurements made by third parties to start with, and then have your own headphones calibrated by dedicated companies where they use a simulation head to help you get better sound accuracy.

4.2 TROUBLESHOOTING

ID #	CONDITION	POSSIBLE REASON
1	NO SOUND	<p>If using the Standalone application, open Options and check that there is audio coming at the inputs, check the outputs selection, and that you have the virtual audio cable driver installed and correctly adjusted;</p> <ul style="list-style-type: none"> - Try reducing the audio samplerate in your DAW or OS;
2	CRASHING ON STARTUP	<ul style="list-style-type: none"> - Try to reduce the sampling frequency; - Check if your Internet connection is active and functional; - If you purchased the audio plug-in, enter your account credentials to activate the software, then restart;
3	NOISES: POP, CUTTED SOUND	<ul style="list-style-type: none"> - Try to reduce the sampling frequency; - Reduce the number of FIR factors, or change the windowing function;
4	COMBO BOX NOT RESPONDING (ProTools for Windows)	<ul style="list-style-type: none"> - Try to click on the combo box and use the arrow keys to change the window function, then click on the Load button "R";
5	UNABLE TO WRITE CORRECTLY IN THE TEXT AREA (Cubase for Windows)	<ul style="list-style-type: none"> - Use the Alt and Shift keyboard button, alone or together, while you modify the input area;
6	AU PLUGIN NOT RECOGNIZED IN DAW	<ul style="list-style-type: none"> - There is a method to delete specific files in the system on Mac, to reset the list of audio plugins seen by the DAW, on request, we will give you the procedure to do the same. - Try removing all EQ-C AUv3 plug-ins and restart the computer;
<p>For any other problem related to this audio plugin, please contact us directly via our contact form on the website: https://omade-tl.com/contact.html Specify the DAW used, the operating system and describe the problem, we will help you as soon as possible.</p>		

4.3 CREDITS

“Mac, AU, AUv3 and Appex are registered trademarks of Apple® Computer.”, “Windows is a registered trademark of Microsoft® Corporation”, “Pro Tools® and AAX® are registered trademarks of Avid, Inc”, “VST3 is a registered trademark of Steinberg Media Technologies GmbH”, “Cubase is a registered trademark of Steinberg Media Technologies GmbH”, “Juce is a registered trademark of Juce, LLC”, “Loopback is a trademark of Rogue Amoeba Software, Inc”, “Virtual Audio Cables is a trademark of VB-Audio”, “EDEN Tool is a registered trademark of PACE-ANTI-PIRACY”, EQ-C™ is a trademark of OMADE™ / OMADE-TL, TL being the initials of the author, all other name, brand-name of mark may be owned by their respective representative OR company.
