

gEQ12

Manual



by tb-software 2016

1 Introduction

Welcome to gEQ12, a 12 band stereo/MS graphic equalizer with accurate spectrum analyzer and minimum/linear phase modes.

Today's mixing and mastering processes require a full featured and flexible, but easy to use equalizer which can accurately shape the tone of a track , bus or master track. gEQ12 provides all necessary tools in one package paired with some unique features.

2 Features

gEQ12 offers following features:

- 12 independent filter bands, extended frequency range 10Hz - 48kHz
- 17 filter types, analog/digital design, zero delay IIR
- filter slope up to 96dB
- independent stereo/left/right/mid/side processing per band
- 7 processing modes: zero latency, minimum/linear phase
- stereo/MS processing (e.g. stereo/mono split for EDM/Dance productions)
- sample rates min. up to 192 kHz
- "real" over sampling, up to 4x
- hi-res spectrum analyzer with 32k FFT based on ISO R40 frequencies
- pre/post-EQ, average/live spectrum, stereo/left/right/mid/side
- narrow-band sweeping mode
- spectrum freeze mode
- very easy alignment of filter response curve to audio spectrum
- sample exact A/B toggle for all processing modes
- precise parameter input
- large and easy to use GUI
- interactive EQ display
- full DAW automation support, smooth filter frequency change
- 64-bit internal processing
- very efficient CPU usage design

3 Overview

The interface of gEQ12 is straightforward and easy to use.

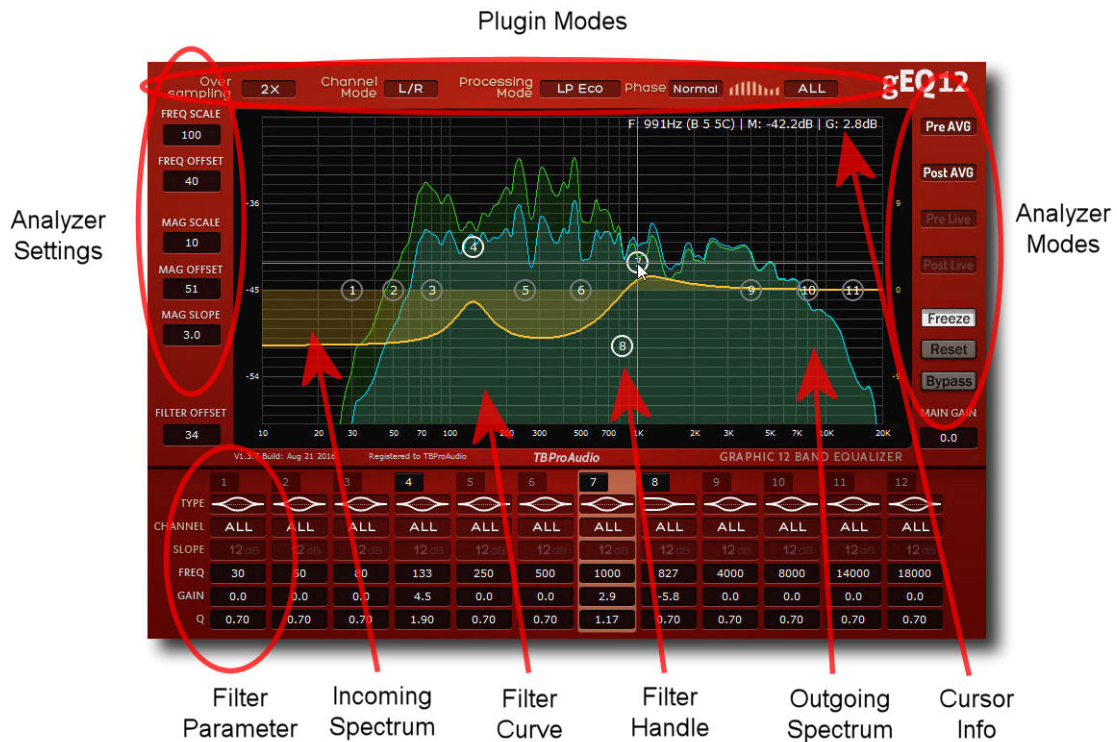
In the middle, you find the main EQ/spectrum display which lets you monitor the incoming and outgoing spectrum and adjust the filter response curve.

On the bottom, you find all control of the 12 filter (e.g. type, slope and gain).

On the right side, the controls for the analyzer modes are placed (e.g. enable display of incoming/outgoing spectrum or spectrum freeze).

On the left side, there are the controls for the analyzer settings (e.g. frequency/magnitude range).

The top area offers various plugin settings like oversampling (1x,2x or 4x), channel mode (stereo or mid-side), processing mode (zero latency, minimum phase or linear phase), plugin phase mode (normal or inverted) and main analyzer mode (all channels, left/mid or right/side).



Interactive EQ display

The display shows the spectrum curve of the incoming (green) and outgoing (blue) signal. It is controlled by the analyzer modes and settings.

gEQ12 has the unique feature that the outgoing spectrum is directly calculated from incoming spectrum (incoming spectrum - filter curve = outgoing spectrum). This allows you to capture the incoming signal, to freeze it and then to modify the filter curve based on the altered outgoing spectrum.

The filter response is displayed as a yellow curve and can be controlled by the 12 individual filter bands. Each filter band has its own handle (white), which can be moved around by mouse.

Filter parameter

gEQ12 consists of 12 stereo filter in series. Each filter can be configured individually by setting type, stereo placement (all, left/mid and right/side), slope, frequency, gain and q-factor.

gEQ12 offers 9 analog modelled and 8 digital (Butterworth) filter. The filter quality can be increased by using oversampling. This ensures "analog" filter magnitude/phase response near Nyquist frequency.

On top of it gEQ12 can operate in several minimum or linear phase modes, which can lower CPU usage and makes filter phase response linear.

Plugin modes

gEQ12 offers high-quality oversampling (up to 4x). Oversampling is used to correct magnitude/phase distortions near Nyquist frequency.

The plugin can run in "normal" stereo mode or in Mid-Side mode. Mid-Side mode is used for e.g. stereo/mono split for EDM/Dance productions.

gEQ12 can work in several processing modes (zero latency, minimum phase and linear phase) with variable quality resolution. In addition the phase of the outgoing signal can be inverted.

4 Minimum System Requirements

- Windows XP or newer
- Mac OS X 10.5 or newer
- Win: 32/64 Bit VST, 32/64 Bit VST3, 32 Bit RTAS, 32/64 Bit AAX
- OS X: 32/64 Bit VST, 32/64 Bit VST3, 32/64 Bit AU, 32 Bit RTAS, 32/64 Bit VST3
- Tested with: Cockos Reaper, Steinberg Cubase/Nuendo/Wavelab 6/7/8, FL Studio 12.x
- All sample rates

5 Knobs and Buttons

gEQ12 uses various graphical elements to control the parameters of the plugin:

Value button:



Mouse click and drag up/down changes value of the parameter.
Mouse double click or right mouse click opens value input box.
Mouse wheel (+shift, control) over the parameter changes the value of the parameter.
Mouse shift click resets value.

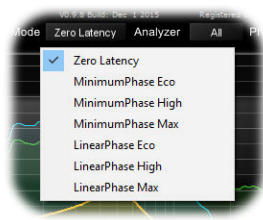
Buttons:



Mouse click enables/disables function,



Popup menu button:



Mouse click opens popup menu.

Mouse wheel over the popup menu changes the entry.

6 Plugin Controls

6.1 Plugin modes

6.1.1 Oversampling

Incoming signal could be oversampled up to 4 times. Oversampling reduces magnitude/phase distortions near Nyquist frequency and let the filter sound much more "analog".

Please to note that the spectrum display is reset.

6.1.2 Channel Mode

Left/Right: "normal" stereo processing. Each filter either works on both stereo channels or on a individual channel (left or right).

Mid/Side: Enables Mid-Side processing. Each filter either works on both channels or on a individual channel (mid or side). Mid-Side processing is used e.g. for mono/stereo split (Highpass-filter on side channel).

Please to note that the spectrum display is reset.

6.1.3 Processing Mode

Zero Latency: This is gEQ12's most efficient processing mode without introducing any latency and sufficient for most applications

Minimum Phase: Working with a lot of filter bands combined with high filter slopes could consume some CPU resources. Minimum phase modes process the windowed impulse response of all filter bands by convolution. Minimum phase modes introduces significant latency, depending on impulse length and quality.

Eco: 2048 samples

High: 8192 samples

Max: 32786 samples

Please to note that longer impulse length gives better response in the low frequencies.

Linear Phase: Traditional digital and analog filter do not only change the magnitude of the signal's spectrum but also introduce phase changes as well. There are many applications where the phase changes should be as low as possible e.g. working with very steep (high slope) filter settings. Linear phase modes introduces significant latency, depending on impulse length and quality.

Eco: 3072 samples

High: 12288 samples

Max: 49152 samples

Please to note that longer impulse length gives better response in the low frequencies.

Changing processing mode resets the spectrum display.

6.1.4 Phase

This control Flips the phase of the outgoing signal.

6.1.5 Main Gain

Adjust output gain of gEQ12 in dB.

6.1.6 Analyzer

This control selects the main analyzer mode:

All: In Channel Mode "Left/Right" interactive EQ display shows combined left/right spectrum.

Left/Mid: Only left or mid spectrum is shown, depending on plugin Channel Mode.

Right/Side: Only right or side spectrum is shown, depending on plugin Channel Mode.

6.2 Analyzer Modes

gEQ12 measures signal's spectrum constantly. You can switch the display of different spectra on and off. Spectrum measurement costs CPU resources. You can "bypass" spectrum measurement by switching "Freeze" on. The current spectrum data are still displayed.

6.2.1 Pre Average

Shows averaged spectrum of incoming signal.

6.2.2 Pre Live

Shows live spectrum of incoming signal

6.2.3 Post Average

Shows averaged spectrum of outgoing signal. This spectrum is calculated from incoming signal and filter response curve.

6.2.4 Post Live

Shows live spectrum of outgoing signal. This spectrum is calculated from incoming signal and filter response curve.

6.2.5 Freeze

Freeze current spectrum measurement. Please to note that outgoing spectrum is still altered by filter settings. Freeze on helps you to change the filter parameter carefully without continuous measurement.

6.2.6 Reset

Resets spectrum measurement. Same as shift mouse click into interactive EQ display.

6.2.7 A/B

Passes the incoming signal directly to the output.

6.3 Analyzer Settings

6.3.1 Frequency Scale

Increases/decreases frequency range of the EQ/spectrum display, 100% means full range (10Hz to 22kHz)

6.3.2 Frequency Offset

Moves frequency range of the EQ/spectrum display from lower to higher frequencies, 100% means 22kHz on the right side of display

6.3.3 Magnitude Scale

Increases/decreases magnitude range of the EQ/spectrum display, 100% means full range (-144dB to 48dB)

6.3.4 Magnitude Offset

Moves magnitude range of the EQ/spectrum display from lower to higher dB values, 100% means 48dB on the top side of display

6.3.5 Magnitude Slope

Slope tilts the graph of the frequency spectrum around 1kHz with the given slope in dB. Values from 3dB to 4.5dB give a more "natural" balance between low and high frequencies, mapping the human hearing.

6.3.6 Filter Offset

Sets the base line of the filter curve towards the spectrum curve.

6.4 Filter Parameter

6.4.1 On/Off

Enables/disables the filter band.

6.4.2 Type

Selects the shape of filter band:

Peak EQ: traditional EQ filter

HighPass: to pass high frequencies

LowPass: to pass low frequencies

HighShelf: to boost or attenuate high frequencies

LowShelf: to boost or attenuate low frequencies

BandPass: to pass a range of frequencies

Notch: to cut a small part of the spectrum

AllPass: to modify signals phase only

Tilt EQ: LowShelf/Highshelf in one filter, cuts the lows and boosts the highs

The "A" filter types approximate magnitude and phase response of their analog filter equivalents.

The "D" filter types follow pure digital filter design

6.4.3 Channel

All: The filter band affects all channels

Left/Mid: depending on plugin channel mode either left or mid channel is processed

Right/Side: depending on plugin channel mode either right or side channel is processed

Please to note that one half of the filter handle is coloured depending on the filter band channel mode: right/blue, left/red, mid/yellow, side/green. White handle indicates that all channels are processed.

6.4.4 Slope

Sets the steepness of the filter (if applicable) from 12dB to 96dB/octave.

6.4.5 Frequency

Sets the frequency of the filter band from 10Hz to 48kHz

6.4.6 Gain

Sets the filter gain (if applicable) from -48dB to 48dB.

6.4.7 Q-Factor

Set the bandwidth of the filter band, widening or narrowing

6.5 Interactive EQ/spectrum display

The interactive display combines EQ curve and frequency spectrum in one display. The left scale shows the spectrum magnitude in dB, the right scale the filter magnitude. You can match both magnitude curves by using the parameter "Filter Offset", overlaying EQ curve and frequency spectrum.

The mouse can be used to either change the frequency/magnitude range of the spectrum/filter curve or to modify the filter curve directly.

6.5.1 Spectrum

Mouse click into the display area and drag changes frequency/magnitude offset, so it moves the display pane around. Please note that frequency/magnitude scale needs to be less than 100%.

Cntrl + mouse wheel (over the display pane) changes magnitude scale, shift + mouse wheel changes frequency scale.

6.5.2 Filter curve

The filter response of the left/mid channel is displayed as light yellow curve; the filter response of the right/side channel is displayed as dark yellow curve.

Mouse double click on the filter band handle (the number surrounded by a small circle) activates/deactivates the filter band.

Mouse click and drag changes frequency and gain (if available) of the filter band.

Mouse wheel (over the filter band handle) changes q-factor (if available).

Shift + mouse drag changes only the gain (if available) of the filter band.

Cntrl + mouse drag changes only the frequency of the filter band.

6.5.3 Cursor display

The display on the top right side shows frequency, piano key, spectrum magnitude value and filter curve magnitude value under the cursor.

6.5.4 Narrow-band Sweeping Mode

This mode is enabled by holding the "Ctrl" ("Command" on Mac OS X). Please note that also the gain of the narrow-band is affected by the cursor position. The narrow-band filter gain is determined by the scale on the right side (filter magnitude).

7 Demo mode versus Registered mode

In demo mode (without registering) the plugin mutes audio every 90 seconds for a short period. This could be circumvented by clicking on the "gEQ12" logo within 90 seconds.

You can register at <http://www.tb-software.com/tbproaudio>.

8 Conclusion

So finally if you have any questions or suggestions just let us know. And have fun with our tools.

Your team from TBProAudio :-)