dEQ6

DYNAMIC 6 BAND EQUALIZER

MANUAL

TBProAudio

2020

1   Introduction

Welcome to dEQ6V3, a 6 band stereo/MS dynamic equalizer with high quality oversampling and accurate spectrum analyzer.

dEQ6V3 controls the filter gain of each band by a compressor/expander. This reduces or increases the gain in a specific frequency range, depending on the program material. The detector signal for the compressor/expander is processed by a pre filter which is controlled by the centre frequency and Q-factor of the dynamic filter. This ensures that the compressor/expander is only activated by content in the specified frequency range.
On top dEQ6V3 comes with a new function called AB-LM Lite providing perceptual loudness matching.

dEQ6V3 makes it much easier to work with dynamic filtering:

- Monitor the difference of input and output signal. This helps to verify the correct function of the dynamic filters.
- Display the difference of input and output spectrum.

2 Features

dEQ6V3 offers following features:

- 6 independent filter + compressor/expander
- 3 filter types, analogue design, minimal phase, zero delay
- many comfort functions to setup multiple bands
- independent stereo/left/right/mid/side processing per band
- side chain support, narrow/full band
- sample rates up to 192 kHz
- "real" over sampling, up to 4x
- hi-res spectrum analyzer with 32k FFT
- pre/post-EQ spectrum, max/average/live spectrum, stereo/left/right/mid/side
- smoothed, ISO R40 smoothed, raw data spectrum and bar spectrum
- post filter predictive spectrum
- spectrum delta mode
- advanced input/output meter
- EQ cheat sheets
- spectrogram
- frequency tracker
- extended input/output meter, Peak/RMS/EBU/VU
- perceptual loudness matching (powered by AB-LM Lite)
- narrow-band sweeping mode
- spectrum freeze mode
- sample exact A/B toggle for all processing modes
- monitor delta mode
- precise parameter input
- large, resizable and easy to use GUI
- XML based preset management
- full DAW automation support, smooth parameter change
- 64-bit internal processing
- very efficient CPU usage design

3 Overview

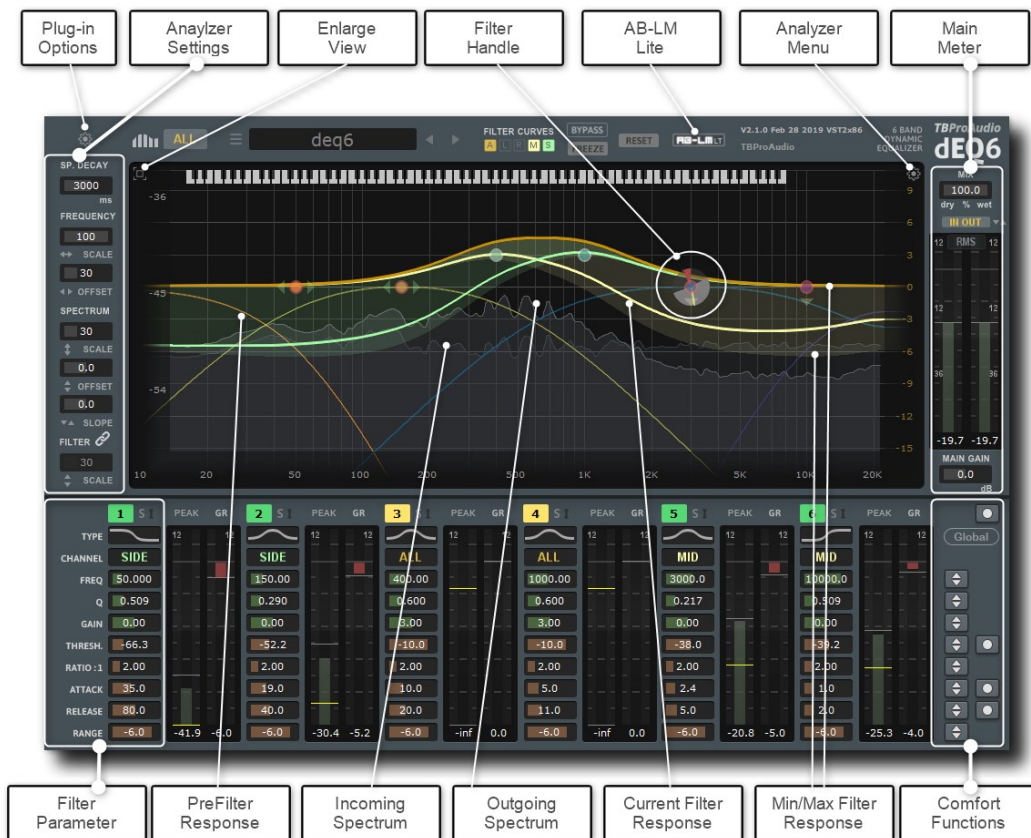The interface of dEQ6V3 is straightforward and easy to use.

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

On the bottom are all controls of the 6 filter (e.g. type, threshold, attack/release times).

The main meters, gain and mix control are placed on the right side.

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

The top area keeps the plug-in option menu and various plugin controls like, main analyzer mode (all channels, left, right, mid or side), preset management, curve display control, bypass/freeze/reset button and AB-LM Lite (perceptual loudness matching).

Interactive EQ display

The spectrum/filter curve view can be enlarged with the top left icon.

The filter button activates the filter and can be dragged by mouse. Right mouse click open the filter popup menu. The analyzer popup menu hosts various settings of the spectrum analyzer and the reference spectrum management.

The 5 small left icons control the display of the various filter response curves.

The EQ magnitude area scales the EQ range (mouse wheel).

The frequency area scales and offsets the frequency view (mouse wheel, mouse click drag).

The spectrum magnitude area scales ad offsets the spectrum view (mouse wheel, mouse click drag).

Filter parameter
dEQ6V3 consists of 6 stereo dynamic filter in series. Each filter can be configured individually by setting type, stereo placement (all, left, right, mid and side), frequency, gain, q-factor, threshold, ratio, attack, release time and gain reduction range.
Additionally the source of the compressor detector can be changed to internal/external and narrow/wide-band.
dEQ6V3 offers 3 analogue modelled filter. The filter quality can be increased by using oversampling. This ensures "analogue" filter magnitude/phase response near Nyquist frequency.
Comfort functions
Many filter parameters can be controlled together e.g. filter gain, threshold or range.
Some parameter can be set depending on program material or frequency range e.g. threshold, attack or release. This functions help in setting up quickly and easily complex jobs.

Plugin modes
dEQ6V3 offers high-quality oversampling (up to 4x). Oversampling is used to correct magnitude/phase distortions near Nyquist frequency.

4 Minimum System Requirements

- Windows XP SP3 or newer
- Mac OS X 10.9 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 AAX
- Tested with: Cockos Reaper, Steinberg Cubase/Nuendo/Wavelab 6/7/8/9/10, FL Studio 12.x/20.x, PT10/12/2018, Reason 9.5/10/11, Studio One, Ableton Live

5 Plugin Controls

Mouse usage:

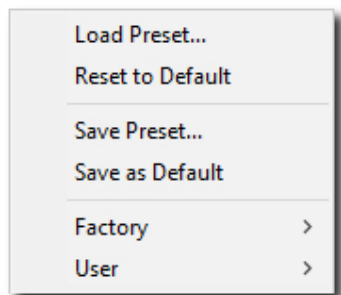Click and drag horizontally changes parameter value
Shift click and drag changes parameter value slower
Ctrl click and drag changes parameter value faster
Alt click rests to default value
Double click or right click open value edit box, finish with enter.

5.1 Presets

Preset menu loads and saves user presets. Presets stored under %localappdata%/dEQ6V3 (Windows) or /Users/xxx/Library/Application Support/dEQ6V3 (Mac OSX) are imported as user presets. Previous and next button step trough all presets.
"Reset to default" sets the current plugins settings as the default settings.
"Save as Default" sets the current settings as start-up/default settings.

5.2 Plugin info menu

Click on the dEQ6V3 logo to get information about the plugin, open online manual, change log, toggle tooltips and scale the GUI.

5.3 Plug-in settings

5.3.1 Over sampling

Incoming signal could be over sampled up to 4 times. Over-sampling reduces magnitude/phase distortions near Nyquist frequency and let the filter sound much more "analogue".

5.3.2 Analyzer

This control selects the main analyzer mode:

<u>All</u>: shows the summed left/right spectrum.
<u>Left</u>: left spectrum.
<u>Right</u>: right spectrum.
<u>Mid</u>: M/S mid spectrum.
Side: M/S side spectrum.

5.4 Analyzer Settings

5.4.1 Spectrum Decay

Adjusts the decay of the spectrum analyzer. 1 to 9999ms, 9999ms enables average mode (AVG).

5.4.2 Main Gain

Output volume.

5.4.3 Mix

Mix of original and processed signal.

5.4.4 Freeze

Freeze current spectrum measurement.

5.4.5 Reset

Resets spectrum display.

5.4.6 A/B

Passes the incoming signal directly to the output.

5.4.7 Monitor

Lets you monitor the delta signal IN - OUT. In this mode you can easily verify the correct functioning of your dynamic filter.

5.4.8 AB-LM Lite

Please refer to chapter 6.

5.4.9 Frequency Scale

Scales the frequency range of the spectrum display

5.4.10   Frequency Offset

Offsets the frequency range of the spectrum/filter curve display

5.4.11   Spectrum Magnitude Scale

Scales the magnitude of the spectrum analyzer

5.4.12   Spectrum Magnitude Offset

Offsets the spectrum curve

5.4.13   Spectrum 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.

5.4.14   Link filter to spectrum

Links the scaling of spectrum and filter magnitude range.

5.4.15   Filter Magnitude Scale

Scales the magnitude of the filter curve display.

5.5 Main Meter

A small LED On top lids up if level goes over 0.0 dBFS.
Numbers below the meters display the maximum values. Reset by mouse click.

5.5.1 Channel Mode

In/out, In Left/Right, Out Left/Right, In Mid/Side, Out Mid/Side and off.

5.5.2 Meter Mode

Peak (dBFS), RMS (AES 17, dBFS), EBU ML (LUFS), EBU SL (LUFS) and VU (dBVU).

5.6 Dynamic Equalizer Parameter

5.6.1 Off/Static/Dynamic
Sets filter band to inactive, static (filter only), dynamic (filter plus compressor).
ctrl + left-click: Static -> Bypass -> Static.
alt + left-click: Dynamic -> Bypass -> Dynamic.

5.6.2 (S)olo
Solos the band, band needs to be active (static or dynamic)

5.6.3 (I)nternal/(S)ide-(C)hain
Each filter band uses the intern or the external side-chain signal as input for the compressor, either narrow band or full band ("+" mode).
I: internal, narrow band
I+: internal, wide band
SC: side-chain/channel 3+4, narrow band
SC+: side-chain channel 3+4, wide band

5.6.4 Type
Selects the filter type of the band:

LowShelf: to boost or attenuate low frequencies
Peak EQ: traditional peak filter
HighShelf: to boost or attenuate high frequencies

5.6.5 Channel
Controls which part of the signal (all/left/right/mid/side) is affected by the filter

5.6.6 Frequency
Sets the frequency of the filter band from 10Hz to 22kHz

5.6.7 Q-Factor

Set the bandwidth of the filter band, widening or narrowing

5.6.8 Gain

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

5.6.9 Threshold

Level in dBFS where compressor starts to work. Change actives dynamic mode.

5.6.10   Ratio

Controls the compression ratio above threshold from 0.5 - 50.0
Values above 1.0 *compress* the signal, values below *expand* the signal

5.6.11   Attack

Calibrated in ms, adjusts attack time of the compressor from 0 - 1000 ms

5.6.12   Release

Calibrated in ms, adjusts release time of the compressor from 0 - 1000 ms

5.6.13   Range

Calibrated in dB, adjusts maximum gain reduction of the compressor from -60 - 0 dB

5.6.14   Global

This set of buttons modify all parameter in a row, if filter is active (e.g. all Q-factor values of all active filter).
E.g. In order to initialize dEQ6V3 at the beginning, load the initial program, set all filter to "dynamic", let the audio run, click "set threshold" button (which sets all active threshold values to max peak value) and decrease threshold level further until red filter curve starts to moving and/or GR meters start to glow red.

Off/Static/Dynamic: toggles all static bands to dynamic and visa versa, shift mouse toggles all disabled bands to dynamic and visa versa.
Freq: increase/decrease dynamic filter centre frequency (mouse click and drag up/down, mouse wheel)
Q: increase/decrease dynamic filter steepness
Gain: increase/decrease dynamic filter gain (static)
Threshold: increase/decrease dynamic filter threshold level, set threshold to max peak level (mouse click)
Ratio: increase/decrease dynamic filter ratio
Attack: increase/decrease dynamic filter attack time, set attack depending on dynamic filter frequency
Release: increase/decrease dynamic filter release time , set attack depending on dynamic filter frequency
Gain: increase/decrease dynamic filter gain range

5.6.15   Peak Meter

Displays current peak value in the range of -60 dBFS and +12 dBFS. The small gray line indicates max peak value, the small yellow line the current threshold value which can be

changed by mouse click and drag, or mouse wheel. Change by mouse activates dynamic mode.
Below the LED meter the numerical value of the maximum peak value is display. It is reset by mouse click.

5.6.16 GR Meter

Displays current gain reduction value in the range of -60 dB and +12 dB. The small gray line indicates max gain reduction value.
Below the LED meter the numerical value of the maximum gain reduction value is display. It is reset by mouse click.
Right click opens options menu for GR meter range (12, 6, 3db). Ctrl mouse wheel changes meter range, alt left mouse click resets to default.

5.7 Interactive EQ/spectrum display

The interactive display combines filter curve and frequency spectrum in one display. The view and all filters can be fully controlled with the mouse.
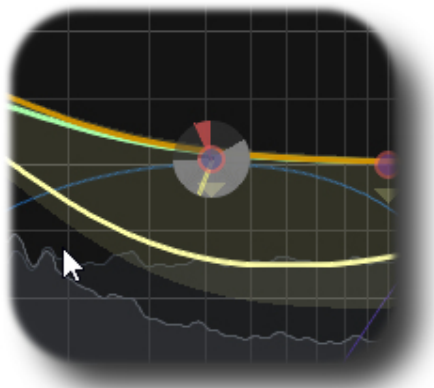
5.7.1 Enlarge view

Toggles size of spectrum/filter curve view.

5.7.2 Filter button

Click and drag the filter button to set frequency, gain or Q of the filter. Additional shift key slows down the mouse movement.

Dynamic mode: The current level is displayed as grey circular bar. The current gain reduction is shown as red bar and the threshold as yellow line.

Alt key + mouse drag: changes **threshold** and activates dynamic mode.
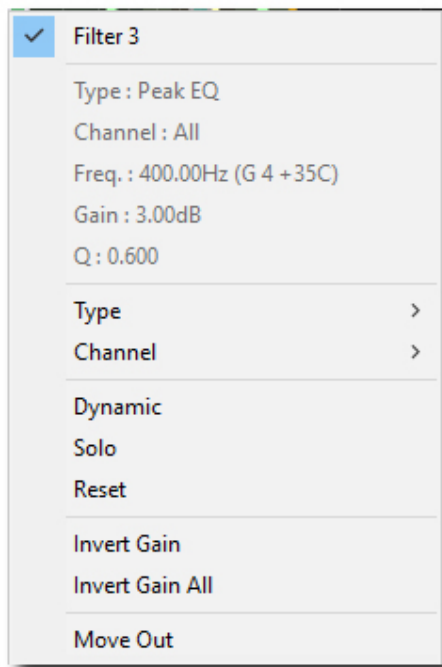Alt + shift key + mouse drag: slows down change of **threshold** and activates dynamic mode.
Alt + ctrl key + mouse drag: changes filter **range** if filter is in dynamic mode.

Alt key + mouse wheel: changes **threshold** and activates dynamic mode.
Alt + shift key + mouse wheel: changes **threshold** slowly and activates dynamic mode.
Alt + ctrl key + mouse wheel: changes filter **range** if filter is in dynamic mode.

Double click on the button activates/de-actives the filter. Additional ctrl key resets filter settings. Right mouse click (or shift + ctrl key + left mouse click) opens the filter popup menu:

✓	Filter 3	
Type : Peak EQ	
Channel : All	
Freq. : 400.00Hz (G 4 +35C)	
Gain : 3.00dB	
Q : 0.600	
Type	>
Channel	>
Dynamic	
Solo	
Reset	
Invert Gain	
Invert Gain All	
Move Out	

Title: activates/de-activates the filter
Type: selects current filter type
Channel: selects current stereo placement
Dynamic: enables dynamic filter
Solo: solos filter
Reset: resets filter to default values
Invert Gain: inverts filter gain (where applicable)
Invert All Gain: inverts the gain of all active filters (where applicable)
Move Out: resets and de-actives the filter and sets the filter frequency to highest value (moves the filter out of the view)

Mouse drag: changes filter **frequency** and **gain**
Shift key + mouse drag: slows down mouse movement
Ctrl key + mouse drag: changes filter **frequency** only
Ctrl + shift key + mouse drag: slows down mouse movement

Mouse wheel: changes filter **Q**
Shift key + mouse wheel: changes filter **Q** slowly
Control key + mouse wheel: changes filter **channel**
Control + shift key + mouse wheel: changes filter **type**

5.7.3 Spectrum and filter curve view

The frequency range can be changed by placing the mouse over the frequency area and using the mouse wheel (or shift key + mouse). The frequency offset is changed by dragging the mouse. Alt key + mouse click resets view settings.
The range of the spectrum magnitude can be changed by placing the mouse over the spectrum magnitude area and using the mouse wheel (or shift key + mouse). The spectrum offset is changed by dragging the mouse.
The range of the filter magnitude can be changed by placing the mouse over the filter magnitude area and using the mouse wheel (or shift key + mouse). Alt key + mouse click resets view settings.

 The small icons "A", "L", "R", "M" and "S" toggle the display of the respective filter curves:

5.7.4 Analyzer popup menu

This popup menu hosts many options to adjust the spectrum analyzer and the curve display.

Pre Filter: toggles display of pre-filter-spectrum
Sidechain Filter: toggles display of sidecahin spectrum
Post Filter: toggles display of post-filter-spectrum
Post Predictive Spectrum: toggles display of pre filter spectrum plus filter curve
Delta Spectrum: toggles display of IN/OUT difference spectrum curve
Spectrum Type: smoothed (moving averaged), ISO smoothed (frequencies according ISO R40), raw data, ISO bar 1/x
Max Spectrum: show additional maximum spectrum
HiRes Spectrum: activates high resolution FFT
Spectrogram: off, standard, heat map (normalized spectrogram)
Frequency tracker: shows frequency maximum
Show Grid: toggles display of spectrum/magnitude grid
Show Add EQ Curves: toggles display of individual filter response curves
Show Musical Note: toggles display of piano key display
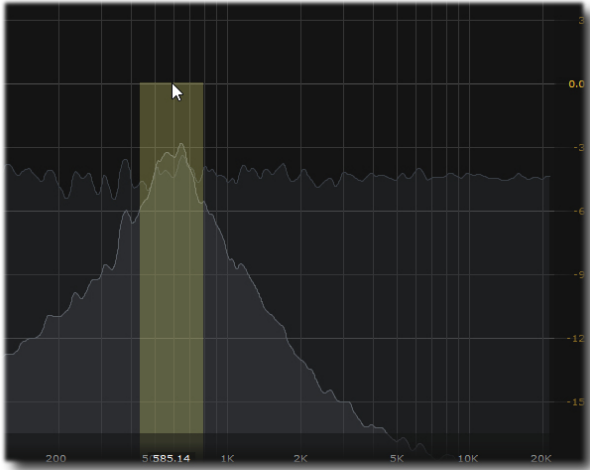Show only selected curve: displays only the curve belonging to the active filter. Filter becomes active through a click on the filter button
EQ Cheat Sheet: toggles display of various cheat sheets.
Reset Analyzer: resets settings of the spectrum/filter curve view

5.7.5 Narrow-band Sweeping Mode

Enabled by holding the ctrl key. 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).

6   AB-LM Lite

AB-LM Lite is a **perceptual A/B loudness matching** algorithm to help you avoid the pitfall of 'louder is better', so you can evaluate the impact of the plugin on your incoming and outgoing audio signal at equal loudness.

When you engage AB-LM Lite, the algorithm analyzes the incoming signal and compares it to the outgoing signal via its RMS values and applies an automatic gain adjustment so you can focus on the plugin settings and what they are actually doing to your audio, without being distracted by loudness differences.

Please to note that AB-LM Lite limits the gain adjustment to +/- 12dB to avoid gain overshoots.

AB-LM Lite lets you automatically minimize the loudness either quickly (mode fast) or gently (mode slow).

AB-LM Lite is an automatic, simplified algorithm to help your workflow, based on our more advanced dedicated AB-LM plugin, which allows perceptual loudness matching of third party plugins and even complete plugin chains. AB-LM also offers more advanced options, including advanced measurement modes and snapshots. For the more advanced features of AB-LM, please see https://www.tb-software.com/TBProAudio/ab_lm.html

7   Demo mode versus Registered mode

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

You can register here: http://www.tb-software.com\tbproaudio.

8 Registration/Activation

This plugin must be registered and activated in order to be fully functional. You can purchase the license key here: http://www.tb-software.com\tbproaudio.

After purchase, you will receive the license key packed in a zip file by email. Unzip the license file to a suitable location on your PC (e.g. desktop). The license file is called "product name.license". Add the plug-in to any track in your DAW, click on the text "Demo: Click here to activate it" and select the license file. Remove the plug-in in your DAW and add it again. The GUI now says "Registered to your name".

9 Conclusion

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

Your team from TBProAudio :-)