Manual

bx_dynEQ

native version — PC & MAC

RTAS REAL-TIME AUDIOSUITE   Audio Units   VST

TDM version — PC & MAC

TDM   RTAS REAL-TIME AUDIOSUITE   Audio Units   VST

brainworx

INDEX

1. What is the bx_dynEQ system ??

bx_dynEQ and bx_boom! belong to a small collection of some well-thought-out dynamic tools.

bx_dynEQ is **not only** an EQ, not even only a dynamic EQ, but it also is a true dynamics processor **and** an EQ system – at the same time.

bx_dynEQ can be used to help you in many different situations.
Here is a list of some typical tasks you may use bx_dynEQ for:

- **De-Essing** (individual tracks, subgroups and master channel)
- **dynamic EQing** of mono-, stereo- and M/S signals
- **bass-drum tuning** in final mixes(!) and drum groups
- **dynamic stereo-widening** using the internal M/S features
- **M/S compression** and limiting
- **Sound-Design**

So, what´s a "dynamic EQ" then?

A "dynamic EQ" is a filter that is not limited to being set to a specific gain level, but which **changes its gain settings dynamically** – following the dynamics of a certain trigger signal. This trigger signal can be the whole signal running through bx_dynEQ or just a filtered part of that signal, due to bx_dynEQ´s internal filtered sidechain.

Although there are quite some basic dynamic EQs out in the market already we have designed bx_dynEQ (and bx_boom!) to be a set of serious tools for the engineer in mixing, mastering and sound-design.

bx_dynEQ is a quite complex tool to truly "dig into" your music.

bx_dynEQ comes in a mono version - which also is **multi-mono compatible** on hosts that support this feature - and in a stereo version, which will also work in a sophisticated M/S mode.

2. What is M/S technology at all?

Most people who are into recording music know about the M/S microphone technique where many recording engineers use 2 different microphones (a figure-of-8 mic and an omni or cardoid mic) for mid and side signals – to "bounce" them into a L/R stereo mix.

Recording a signal with M/S microphone technique means to create a stereo (L/R) signal by mixing the M and the S signal together in a special way that will create a very mono-compatible stereo signal.

In mixing and mastering situations as well as in sound-design sessions M/S technology can be used to individually process the mids and sides of a stereo signal, or to control the overall stereo width of a stereo signal.

M is the SUM of your stereo mix (L+R) that you get when while S is the DIFFERENCE (L-R).

For additional details about the M/S technique you may have a look into every decent book about recording basics if you want to learn more about this method to create very mono-compatible stereo-signals, e.g. when recording classical music, choirs or acoustic instruments in general.

3. Which M/S features are there in bx_dynEQ for my mixing & mastering situations?

The stereo version of bx_dynEQ has a built-in M/S matrix that will allow for certain M/S processing of any stereo sound. Due to this there is no specific M/S knowledge needed to adjust the M/S features – but still we do recommended learning a bit about M/S when you intend to use it!

bx_dynEQ is capable of filtering the M and the S signals of a stereo mix individually, and even "cross-feed" the trigger signal from M to S and vice versa – this means you can EQ your sides following the bass-drum in your mix (for example) and do many more creative and sophisticated things with your mix.

Please see chapter 7 for details!

4. But what´s so new about the bx_dynEQ system then ???

If you are looking for a powerful dynamic EQ and dynamic tool in general bx_dynEQ is a complex yet really unique processor.

There are features in bx_dynEQ that you won´t find in other dynamic EQs, like the built-in M/S matrix with its "cross-feed feature" between M and S signals.

Then we have a "FACTOR" circuit that will allow you to EQ your signal not only according to a fixed ratio, but with flexible conversion.

Solo buttons enable you to really hear what you are doing in detail, and a truly "complete collection" of EQ types including our bass-shifter, presence-shifter and band-pass filters make bx_dynEQ a weapon…

Internal M/S cross-feed processing:

The stereo version of bx_dynEQ has a built-in M/S matrix that lets you control the stereo width of any signal, and it can separate a stereo mix into the M and S signals (sum & difference) to process them individually – while "connecting" them via a unique "cross-feed" technique.

Trigger your S signal EQ with the M signal Sidechain – and vice versa!

Sweepable SHIFTER EQs

Taken from bx_digital and bx_hybrid we have implemented shifter EQs in bx_dynEQ. The shifter EQs are fully sweepable within certain ranges, and they have well balanced algorithms to filter out the maxxx out of any complete mix or single signal (bass drums, bass, voices, guitars, etc.).

SOLO BUTTONS:

bx_dynEQ offers solo buttons for all stages that require critical listening. Solo the M and the S signal of a stereo mix, solo the filtered Sidechain, solo the filtered part of the audio signal only, etc.

Hearing the individual M/S signals individually sometimes makes EQ-ing stereo signals much easier. The same goes for finding noise / sounds in a mix that might all in a sudden be heard much clearer.

Extensive metering and graphic feedback:

bx_dynEQ enables you to visually control the sidechain EQ and the dynamic main audio signal EQ in one graphic window together with your individual settings for maximum EQ gain.

Standard in/out level LEDs are on board as well, of course.

A decent GUI makes choosing the desired filter types easy due to the complexity of bx_dynEQ.

5. Features of the bx_dynEQ EQ system:

- 1-band and 2-band dynamic EQ
- mono, multi-mono and stereo (L/R & M/S)
- BRAINWORX critically acclaimed filters
- complete set of filter types for both, main audio path and sidechain:
- low & high shelving, peak bands, band-pass filters, high-pass, low-pass, bass-shift, presence-shift
- new and innovative solo modes
- M/S inside… M/S stereo width control on any stereo channel
- M/S cross-feed feature for sophisticated results
- dedicated BYPASS switch in the plug-in GUI
- mouse wheel feature: adjust the parameters by holding the mouse over any knob and simply turn your mouse wheel.
- direct access: just type in any valid number into the text fields for direct access to the exact value
- EQ panel with multi-mode EQ display (actual EQ-curves & sidechain filter curves).
- fully automatable

6. How do I get started with bx_dynEQ in a typical session?

EQ-ing mixes or individual elements of a complex mix is all about hearing objectively… and enhancing musical performances or "fitting" additional elements into an existing mix… and (often enough…) it is about correcting mistakes that have been made during the recording process (it wasn´t you, of course! ☺) …

This sounds basic, but we do mean it absolutely literally!

We assume that most if not all people who are reading this manual are familiar with using a standard EQ, so we will skip the total basics of "how to use an EQ" and go on with less obvious points.

The difference of bx_dynEQ compared to a "standard EQ" is that it will react on an incoming signal (or filtered parts of the incoming signal) and change gain-settings and / or frequencies constantly depending on the incoming signal.

First steps:

Play some mixes through the stereo version (use the "regular" L/R mode for now...) of bx_dynEQ and click on the 4 preset buttons in the GUI. First turn up the threshold knob(s) until the right EQ curve starts moving. If this is the case you may start changing the UPPER row of the EQ centered knobs (f & type) to change the EQ type and its center frequency. Also you might want to change the LOWER row of the EQ knobs (f & type again) to change the sidechain EQ filter. This sidechain determines what signal the EQ will *react on*.

Use the various solo buttons to hear the details of what you are doing and also to understand exactly how the numerous knobs affect each other.

Watch the EQ graphics all the time and use the MAX GAIN feature to limit the maximum boost or cut to a certain dB value. Avoid overall output level clipping when boosting a lot...

Please see chapter 7 for the details!

Adjusting the STEREO WIDTH right in your stereo EQ is as easy as never before. Make your mix wider than it originally was by increasing the output gain of the S section without losing the center of your recordings! You will not lose bass drum power or your vocals in the mix by making your mix a bit wider this way... and it will not sound different played back in mono at all!

Otherwise, if you have a drum-loop that was recorded with too much ambience sounds / reverb, just get rid of it by decreasing the STEREO WIDTH!

Use bx_dynEQ to adjust the stereo width of *each* individual stereo signal in your mix and you will find out that mixing some elements of your mix a bit more narrow while spreading other signals (fx returns, guitar groups, keys, etc.) wider than the regular stereo field will *enhance* the depth and stereo image of your whole mix drastically.

Enjoy bx_dynEQ – please go on checking the details in chapter 7!

7. bx_dynEQ - overview and details

bx_dynEQ mono version

bx_dynEQ stereo version (M/S mode)

1. Help button

  click here to **get info** (version no etc) about bx_dynEQ and general **BRAINWORX control shortcuts**:

- **SHIFT / MOUSE CLICK** on any knob will change the bx_dynEQ´s knob behavior (toggle between linear and circular)
- **ALT / MOUSE CLICK**: will reset any knob to its initial value
- **APPLE key** (MAC) or **CTRL key** (PC) plus MOUSE CLICK (or SCROLL WHEEL USE above any parameter!) will allow for fine tuning of any knob.
- **SCROLL WHEEL CONTROL**: place your mouse above any knob and turn the mouse wheel to increase / decrease values.
- Any bypassed feature of bx_dynEQ will not use any CPU power. (Native versions only)

   Typing in values into your plug-ins will save you some time.
   General style:
   10.000 Hz can be typed in as "10k", 12.000 Hz would be "12k", etc.
   → "m" or "M" will set the **Stereo Width** to "**mono**".
   → "l" or "L" ("r" or "R") will set Balance to left 100% (right 100%)

2. input & Output Gain

Adjust the input and output levels individually (-oo dB to +12 dB) to make sure that your signal is leveled properly - yet not clipping.

The stereo version of bx_dynEQ has COMBINED gain knobs for L&R channels.

To alter the L/R levels individually use the BALANCE knob (see 3.)

3. Balance and Stereo Width (stereo version only)

Use the BALANCE knob to center mixes with inappropriate levels or to simply change the L/R levels of your signal according to your taste.

With the WIDTH control you can alter the stereo image of any stereo sound. Values <100% will result in more narrow signals, with "O" being equal to MONO. Vales above 100% will increase your stereo image (wider than "stereo") but may cause phase problems.

4. Modus Switch (stereo version only)

Switch between "Regular" stereo mode (L/R linked) or M/S stereo mode. In M/S mode the plug-in GUI will pop up and show a second EQ panel for individual M/S settings. Still you can link some or all functions / features via individual link buttons.

In "Regular" mode the plug-in will only show one EQ panel, working as a standard linked stereo device. The side-channel will then use the mono-sum as a reference.

5. Master Bypass Switch
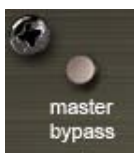
The Master Bypass switch in the GUI will switch off ALL functions of bx_dynEQ. No processing will take place.
If your host doesn´t support general plug-in bypass control or automation you may use THIS bypass switch to use and even automate the bypass feature of bx_dynEQ.

6. The bx_dynEQ main panel

dynamic control   EQ types & settings   factor & max gain

6.a - the KEY EQ (your internal sidechain filter, user adjustable)

The "key" EQ section contains "f" (frequency) and "type" (EQ type) controls.

The blue LEDs indicate certain features of the M and S EQ-section to be linked (only available in the stereo version when used in M/S mode).

The arrows indicate certain parameters of the "key" and "filter" section to be linked – which is a feature available in all modes.

The EQ band labeled "key" can be used to filter the <u>internal sidechain</u> signal. This means, your audible audio-filter (that you setup in the –identical- "filter" EQ window above this "key" EQ panel) will react on the signal you determine - <u>after</u> it has surpassed this key EQ stage.

Examples:
Use a hi- or low-pass filter to cut away bass or treble from the sidechain signal, use a peak band to *aim* for certain parts of the sidechain signal, or use any of the available filter types to pre-shape your sidechain audio.

6.b - key S / key M – "Cross-feed" for the sidechain filters

→ only available in the M/S mode of the stereo version

The LEDs next to the keys or keyM feature indicate whether the internal sidechain channel is triggering the M-section or the S-section of the audio running through bx_dynEQ.

Example: If you want to EQ the S-section of your signal triggered by the Bass Drum sound (most likely to be found in the M-signal), then check this LED on to "keyM" on the S-section EQ panel.

If the LED is <u>OFF</u> the filter EQ will be "triggered" by its <u>own</u> audio part (M or S). The LED ON means that the filter EQ uses the opposite signal (M-signal for the S-channel or S-signal for the M-channel).

Use the respective Solo buttons to LISTEN to which signal runs through your sidechain filters (M or S signals).

6.c - the sidechain compressor / gain control

→ the dynamic control section of bx_dynEQ…

After passing the "key" EQ your sidechain signal controls a compressor. The more gain this compressor reduces (triggered by your EQ-ed sidechain audio) the more gain your "filter" EQ will apply to the audible audio path.

The gain reduction (in dB values) is being used to control the gain of the "filter" EQ band in real-time. You can adjust the *attack* and *release* time of the sidechain compressor in milliseconds (ms). The *threshold* can be set from "off" (no reaction of the compressor to any sidechain audio) to -60dB (maximum gain reduction of the compressor).

All compressor features can be linked or unlinked in M/S mode.

6.d - "FACTOR", MAX GAIN and the "CUT/BOOST" switch

Factor:
As the "key" EQ controls the compressor gain setting for the "filter" EQ in real time (as explained above) its values are being <u>multiplied by the "factor"</u> (0,1 – 5). Higher factor settings result in higher cut / boost processing, which can lead to distortions in extreme settings.

In case of distortions and clippings please turn down the factor and / or the threshold knob. Leave the Max Gain on at all times to reduce the risk of distortions.

If a lot of dynEQ action is wanted but causes distortions, please lower the input gain and adjust the threshold.

Lower factor values will cause the gain changes to be less effective, higher values – especially above "1" – may cause HEAVY gain changes.

Max Gain:

This knob controls the maximum gain setting (in dB values) that can be reached by bx_dynEQ. On rhythmic material – combined with high threshold settings - you may very easy reach higher dB values than 12 dB, depending on the actual audio signal, threshold and the factor settings.

Use Max Gain to adjust the maximum gain change (aka the "EQ boost") to a reasonable level.

Cut / Boost:

This switch determines whether the "filter EQ" band cuts or boosts.
This surely is what you´d expected… :-)

6.e -   the "filter" EQ section (the one you will actually *hear*…)

The same controls as in the "key" section, with all the same EQ types, but this section actually filters the audible audio running through bx_dynEQ. This is where your sound is being altered / filtered / EQed.

7. the filter types / EQ types in bx_dynEQ:

Here is a list of all the different EQ and processing types available for both, the "key" and the "filter" section.

- Flat (causes level-changes instead of filtering / EQ)
- Compressor (level changes) with High-Pass filter (12 dB per octave)
- High-Pass filters with 24, 12 or 6 dB per octave
- Low-Shelving EQ
- Bass-Shift EQ
- Peak EQ (various Qs from 0,3 to 15 dB per octave)
- Band-Pass filters 1 – 5 (variable widths)
- Presence Shift EQ
- High-Shelving EQ
- Low-Pass filters with 6, 12 o 24 db per octave
- Compressor with Low-Pass filter (12 dB per octave)

8. Level LEDs / in & out metering

These hi-resolution LEDs show you the levels pre and post processing. Red lights indicate distorted signals and should be avoided at all times.

9. linking parameters

There are 2 different types of link buttons in bx_dynEQ:

Arrows will link the 2 buttons the arrows point at, e.g. the frequencies or the filter types of the "filter" and the "key" EQ band.

Blue linking LEDs (stereo version only) indicate that the corresponding features of the M-section and the S-section are being linked. This can affect single knobs or complete sections.

10. BYPASS M and BYPASS S

The M- and S-sections of bx_dynEQ can be bypassed individually. This enables you to easily compare on/off settings.

11. PRESETS

We have included four presets in bx_dynEQ´s GUI.
They are labeled   - dynEQ
                    - compressor
                    - de-esser &
                    - boom! ("boost" in the mono version)

You can use them to easily recall the initial settings for the most common applications, but you can also <u>alter</u> them completely and use them to <u>compare</u> different settings.

Let´s have a closer look at the default presets on the next page.

bx_dynEQ – DEFAULT PRESETS

dynEQ - setting

This setting can be used to cut or boost certain frequency bands and is the "classic" dynamic EQ setting.

compressor - setting

Using "flat" setting in the "filter" EQ selection you can make bx_dynEQ become a compressor.

de-esser setting

Basically another dynamic EQ setting. Fast attack and release times allow precise processing.

boom! – setting (stereo version only)

This is the exact setting that is being used by the separate bx_boom! plugin.
Use the bx_dynEQ setting to adjust this setting to your needs. Especially the M-section "filter" EQ and the max gain settings should be set precisely for best results.

Your imagination is the limit.

Once you start experimenting with hi-pass filters and lo-pass filters (that can be dynamically triggered to achieve wild drum-loop sounds and sound-design fx!) or bass-shift and presence-shift EQs bx_dynEQ will be much more than just an "EQ".

We hope you´ll have as much fun using bx_dynEQ as we had developing it!

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12. TROUBLESHOOTING

→ Incomplete signals
You might have clicked on one or (or more) SOLO-buttons of one section (L/R), so you only hear parts of your signal. Make sure both SOLO buttons are switched OFF to hear your full stereo mix.
> → Switch all SOLO switches OFF, and you should hear your regular stereo signal.

→ Heavy phasing
Did you spread the STEREO WIDTH toooooo faaaaaaar??
> → Try setting the MONO MAKER higher or turn down the STEREO WIDTH a bit.

→ NO sound
  Do you feed any sound into the bx_dynEQ EQ at all??? ☺

→ DISTORTED sound
  Turn DOWN the threshold and factor knobs.

ENJOY WORKING WITH THE bx_dynEQ EQ SYSTEM!

For more information and a video tutorial please visit:

www.brainworx-music.de
www.brainworx-usa.com

PLEASE CHECK THE NEXT PAGE FOR OTHER BRAINWORX PRODUCTS!

All BRAINWORX products can be downloaded and tested.
14-days fully functional demo versions available for FREE at
www.brainworx-music.de and www.brainworx-usa.com.

THE bx_SNEAK_PREVIEW

bx_digital – our critically acclaimed M/S recording and M/S mastering software with built-in De-Esser, Mono Maker, Solo buttons (M/S/L/R) and Shifter EQs.

bx_control – a nice and easy M/S matrix and M/S recording processor, plus a great control listening tool. Chain <u>any</u> stereo or multi-mono plug-in into the BRAINWORX M/S circuit, extract M & S signals individually. Built-in M/S Stereo Width Control, Mono Maker & Solo buttons (M/S/L/R).

bx_solo – a FREE plugin from Brainworx with basic stereo width control and our critically acclaimed solo buttons (M/S/L/R).

info & free trials: www.brainworx-music.de
www.brainworx-usa.com