

bx_limiter – the Stem Limiter & Saturation Tool.



Thank you for using Brainworx plugins.

bx_limiter – The Concept.

When you mix in the box it is important to structure your mix. To get your mixes out of the computer 'loud & proud' but grooving and without unwanted distortion, it is necessary to cut off peaks and transients in many different channels and stems (=grouped or summed audio channels). Don't just limit on the master bus!

After reading this manual you will want to use many instances of bx_limiter on a typical rock / pop mix. And still use a full blown mastering limiter (like our bx_XL V2) on your master channel.

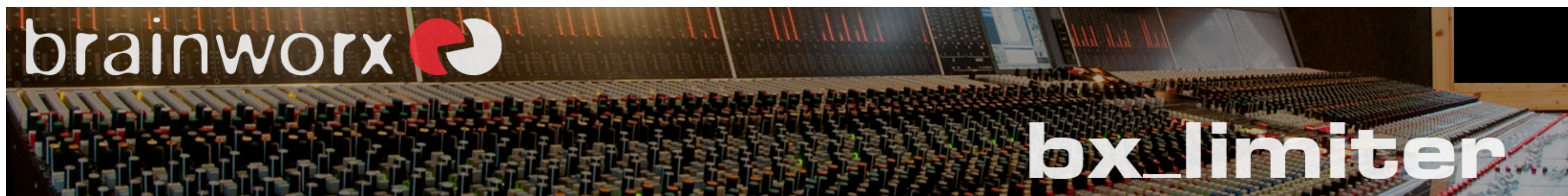
The basic idea is to determine EXACTLY how many dB of dynamics you reserve for every single dynamic signal in your mix. By limiting individual signals like bass drum, snare, lead vocals or bass you create more space and dynamic range for the overall mix.

The Basics of Dynamics.

Let's assume you're mixing a session which features 40 tracks of audio. That doesn't sound too unreasonable, does it?

Do you have an idea of how many peaks you get? Per track. Per second. Especially if you're mixing real drums, guitars, vocals, piano or even keyboards (if they were 'played' by a human being, not programmed or click-edited). The peaks will be unpredictable, they will have a wide range of dBs, and they will **add up** on the master channel.

The main limiter of the master buss will **have to** start pumping and distorting if you try to stop all these peaks in just one master channel, while aiming at the overall volume of your favorite major label CD production or Surround BluRay...



bx_limiter – the perfect Mix-Buddy.



bx_limiter – The Facts

As you might already have noticed bx_limiter has a few non-standard controls. The little extras we put into the concept.

- **CPU-friendly** but accurate limiter for Mono, Stereo & Multi-Channel signals
- **Low Latency** of just 2ms or less (depending on sample rate & system)
- **Mix** control (Dry/Wet). Blend processed & unprocessed audio
- **Seamless Channel Link**: blend between unlinked and linked peak detection
- **Output Dim**: adjust your output level conveniently in any mix session
- 1-Click **Fader Link** (<|>): drive signals into limiter while compensating level
- **XL = Saturation on board!** Add that extra dB of perceived loudness
- **4 Settings** per preset: automate complex settings
- 32 steps of **Undo/Redo**
- **Adjustable Release** Times
- Algorithms and features taken from the famous **bx_XL V2** M/S Mastering Limiter!

We recommend using bx_limiter in several situations:

- **Traditional defeating of peaks**
Just lower the Threshold to stop peaks at a defined level.
- **Maximizing the Output level**
Just boost Gain until the output level hits 0dBFS (Full Scale).
- **Loudness Maximizing**
Add that extra dB of perceived loudness using the XL saturation.
- **Sound Shaping / Extreme Effects**
Drive signals or stems (=grouped audio signals) into the limiter and saturation effect heavily while keeping your stem levels in place.
- **Parallel Dynamics & Saturation**
Overdo the settings of the limiter and the saturation effect heavily and blend the original signal with this effect sound to create vintage drum & vocal sounds or special effects of all kinds.



bx_limiter – Quick Guide

You may use bx_limiter on any channel / signal in your mix or on the master fader.

Main applications of bx_limiter:

1. On a Stereo / Multichannel Master Insert

(to max out the volume of your mix):

- Turn up the Gain boost until the gain reduction meter shows 2 or 3dB of „action“.
- Use a short Release Time (around 1 – 3 ms), set Channel Link to 50% - 100%.
- Eventually use the XL Saturation to add that extra dB of loudness. Try anything from 5% - 50% (XL).
- Set the Output Dim to -0.2dB to deliver a professional master with headroom.
- Leave the Mix control at 100%.

3. On Drums, Vocals or Piano (aka „Parallel Dynamics“)

(to squash sounds on purpose, and to add heavy effects)

- Use the 1-Click Fader Link (<|>) control to drive the signal into as much Gain Reduction as you like
- Use a slower release time (try 100ms or more)
- Use a high Saturation value of 50% or more to add „color“ or even slight distortion.
- Try to overdo the limiter settings.
- Turn the Mix control down to 50% - 75%!
>> This leaves some of the original dynamics and adds some cool vibe.
- Dim the Output until the sound fits into the mix if needed.

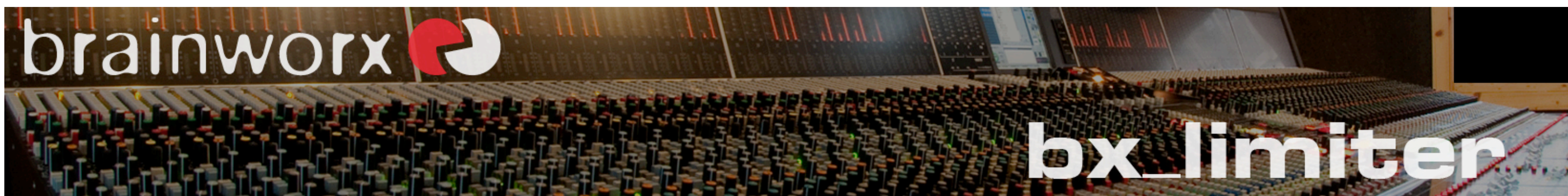
2. On a Drum Bus, a vocal or bass track

(to stop the maximum peaks and add some „color“ & „dirt“):

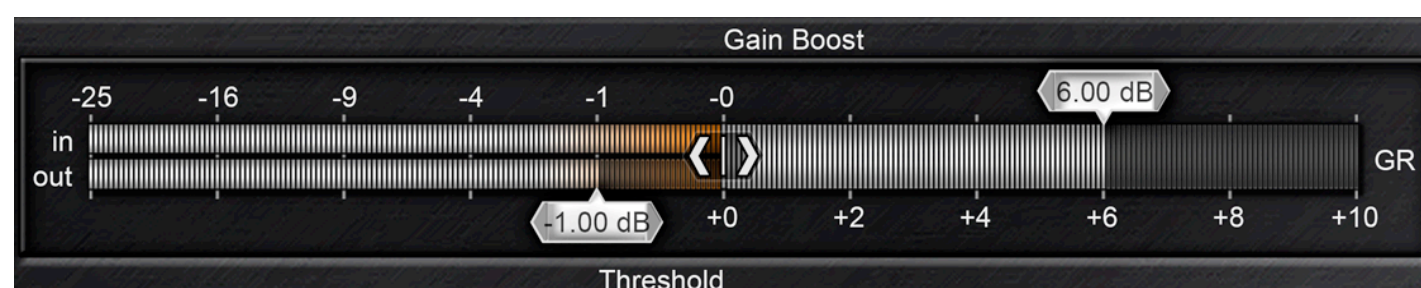
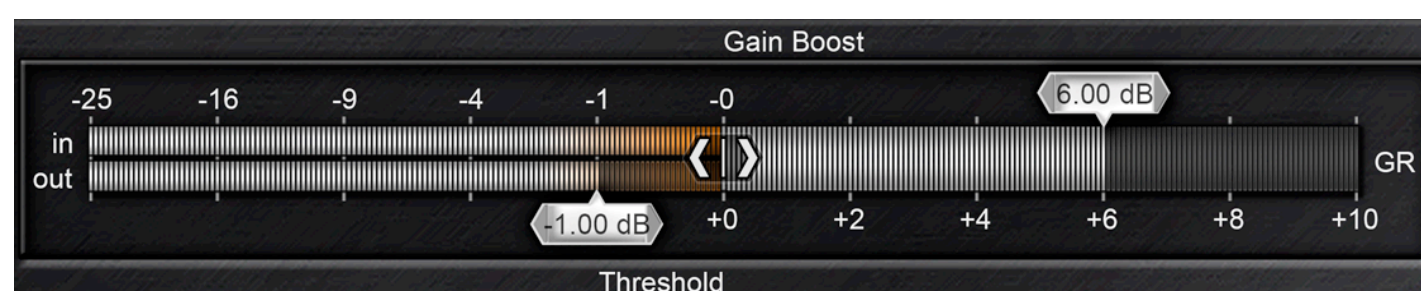
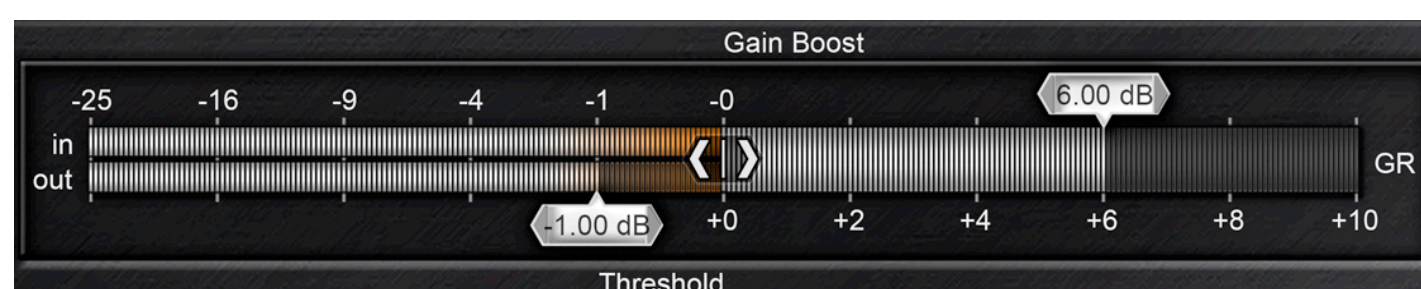
- Just lower the Threshold until the Gain Reduction Meter shows 1 – 3 dB of „action“
- Use release times of 10ms or more (up to let´s say 100ms)
- Eventually use the XL Saturation to add some color.
- Leave the Mix control at 100%.



For detailed info about every feature please check the next pages.



bx_limiter – Features and Details



Limiter Controls & Meters

This section contains several controls and the main metering sections:

Threshold Slider

Moving the slider to the left lowers the Threshold value. The internal limiter will start working as soon as the audio signal exceeds the level determined with the Threshold slider.

To stop peaks of your signal without altering (boosting) the output volume of your signal please just move the Threshold slider to the left until the Gain Reduction meter (GR) displays the desired Gain Reduction (mostly this will be 1 – 3 dB max).

Gain Boost Slider

This can be imagined as an internal Input Gain stage. Moving the slider to the right increases the internal volume of the signal. Ultimately the internal limiter will start working when the Threshold level is reached, so you can use the Gain Boost to „drive“ the signal towards the Threshold.

If all you want is to increase the output level of your signal please just move the Gain Boost slider to the right (keeping the Threshold value at 0dBFS) until the Output meter hits 0dBFS at peaks.

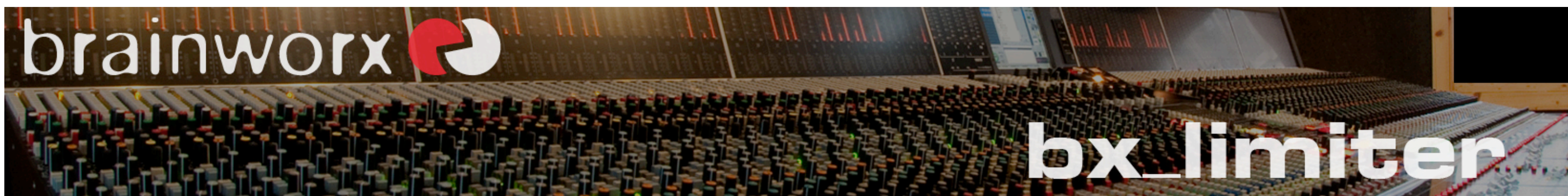
If you want to deliver a „loud“ mix you might want to add even more Gain Boost, which will make the limiter cut off peaks. A Gain Reduction of up to 2dB upon peaks should be more or less inaudible while increasing the output level significantly.

1-Click Fader Link

You might want to drive your signal into the limiter to get that squashed sound on purpose. This sounds cool on drums, vocals and many other signals for example.

If you decide to do so you might not necessarily want your signal get way louder than it actually is. To drive the signal into the limiter heavily while keeping the output volume around the original level you would have to reduce the Threshold a lot and then use the Gain Boost to readjust the output level.

With the Fader Link you have a way to link Threshold and Gain Boost and control them in one go. Drag the fader-link arrows to the right for more effect.



Extended Limiter Controls

Channel Link

Linking a limiter means that the limiter reacts to the highest peak in ANY of the channels of the internal sidechain. This means the limiter will reduce the volume on both channels (in stereo) or on all channels (in a surround setup) even if there is only one channel peaking.

An unlinked limiter will only reduce the level of the channel that is actually peaking (only L for example).

Many compressors can be linked or unlinked. We went a bit further. You can blend between linked and unlinked behaviour seamlessly with bx_limiter!

A linked limiter will preserve a perfect stereo image all the time as both channels will always be reduced at the same time.

An unlinked limiter will give you slightly more perceived „loudness“ if there is a peak only on one channel, as the other channel(s) still stay untouched.

Unlinked limiting can be desired on complex audio signals such as a complete drumkit, for example.

Using a Channel Link of 50% will give you a pretty good maximum level while keeping the stereo image OK for most applications. Use 100% if a perfectly stable balance is crucial for your mix.

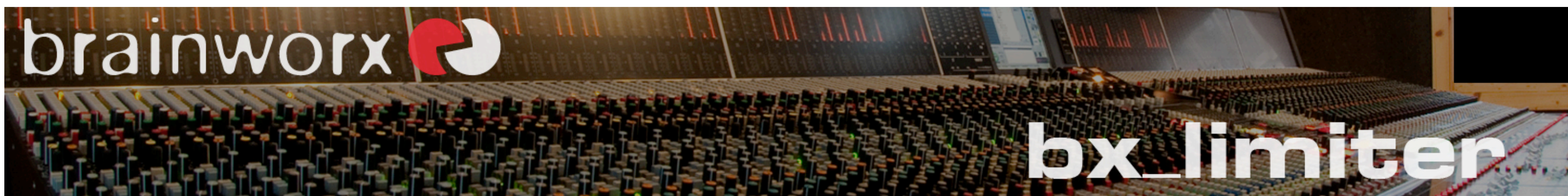
Release Time

The Release Time is the time the limiter takes to fade back up to the original level after the signal has dropped underneath the Threshold value.

The faster the Release Time is set the more loudness will be achieved, but please be careful: Heavy Gain Reduction settings at ultra-fast Release Times will result in audible distortion in the audio, and in heavy „pumping“ of your output level.

In general please don't overdo the maximum output level, watch your meters and trust your ears. There are too many mixes out that have been killed at the very last stage of processing with a limiter that was set just a dB or two too loud.





If you want to get your mixes really loud and still avoid heavy clipping, pumping and distortion: This is what we have designed bx_limiter for. Use it on individual signals, stems and groups to catch peaks where they appear, then use an easier setting on the master bus! You'll be surprised.

Output Dim

You may stop peaks, squash your sounds or even distort them on purpose with bx_limiter, but you don't always want an output level of 0dBFS. If you want to use an EQ or any other processing after using bx_limiter you will be happy to be able to reduce the overall output level by up to -9dB.

A lot of professional mastering engineers use a maximum level of -0.2dBFS for individual songs to have a mini-headroom that they might need in order to arrange an album playlist.

Crossfading 2 mastered songs can easily result in clipping, so leaving just a tiny bit of air might be a good idea.

If you need to win the loudness war (sometimes it might have to be...) leave the Output Dim at 0dB for sure as this will give you the highest possible output level.

Mix

With the mix control you can blend between the unprocessed input and the processed signal. Blending some unprocessed signal with your limited audio can result in a loud yet slightly more vivid sound than using 100% limited signal only.

Please note that clipping can occur with Mix values below 100% (if the INPUT level is clipping already, for example).

Clip LED

If this LED flashes RED your signal is clipping (exceeding 0dBFS) at the plugin output. Since the plugin limiter will not allow for overshoots this means your INPUT signal must be clipping already.

Maybe you have pushed the output of the plugin(s) before bx_limiter too hard?





The XL Saturation knob

XL (=Saturation)

Saturation is the secret weapon in audio production for many things. Secret, because it is just not obvious enough to be clearly recognised when you hear it sometimes.

The XL feature is taken from our famous bx_XL M/S Stereo Mastering Limiter and adds harmonics to the signal.

This will result in a tighter sound, so you can achieve a higher RMS and perceived loudness.

So, if you're after the maximum output level for your mixes you should try to use a few % of XL in addition to a Gain Boost to push your signal above 0dB. Use fast Release Times in this case.

XL is also a great feature to get vocals, bass, acoustic guitars and many other sounds sticking out in mixes without having to raise their volume too much in the mix. So you may try to use the XL knob as an „effect“ on its own!

„bx_saturation“ plugin (available separately)



If you need more control over the saturation we recommend you test our bx_saturation plugin. It offers multi-band and M/S technology. M/S means „Mid / Side“ and is a technology to adjust the mono and the stereo elements of a stereo signal (or mix) individually.

If you are not familiar with M/S technology please watch our M/S tutorial videos on the Plugin Alliance website. There is a whole new audio world to be discovered using M/S technique during recording, mixing and mastering!

We also offer an M/S Stereo Mastering limiter, the bx_XL V2, which offers the same M/S technique for limiting purposes. Please check www.plugin-alliance.com for details.



The Brainworx Toolbar

This toolbar features many useful little helpers.

Bypass

This is an automatable Bypass switch which lets you compare the unprocessed and the processed signal.

Undo / Redo (arrows)

32 steps of Undo & Redo make it easy to try out experimental sounds. If you don't like what you've dialed in just redo it. Or if you accidentally changed anything and don't know what it was (it happens...).

A B C D Settings

You can work in 4 settings that will automatically be stored. If you work in setting A you can press „copy“, then switch to setting B and „paste“ the setting. This way you can create identical settings which you may now alter slightly, for example to use different master bus limiter settings on 2 parts of the song you're mixing.

„Reset“ will set back this very setting to the default settings while keeping the other settings untouched.

A preset of bx_limiter will always store 4 settings (A B C D), so you can easily store your 4 favorite settings in one preset and automate these settings during a mix even if your host doesn't allow for preset automation!

Info

Press info to see the splash-screen. It has all the info about the good fellas who have developed this plugin, as well as a version control.

PDF Manual

The PDF version of the manual will be saved on your computer during installation and can be accessed via the Plugin Alliance toolbar underneath the plugin graphics.



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