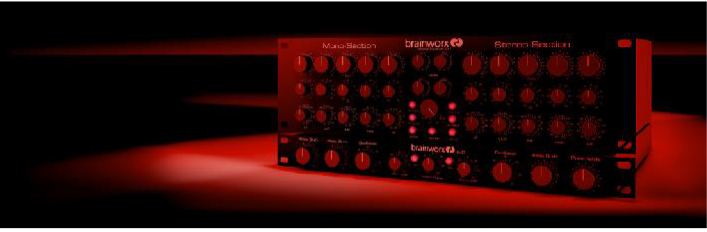


1. What is bx_digital V2?

bx_digital V2 is a latency-free 11-band stereo EQ and stereo De-Esser that works in several modes, among them 2 sophisticated M/S modes for mastering and microphone recordings.

It is based upon the "modern classic" bx_digital V1 and the analog bx1 EQ. We developed this hi-end analogue EQ 2006/2007 and we offered an emulation of this EQ ever since.

The hardware bx1 is our „MODUS EQ", an analogue high class equalizer that runs in four different modes, giving you up to three channels of extremely musical filters:

- a conventional L(eft) and R(ight) stereo mode for any stereo/dual mono applications.
- a stereo mode with a built-in M/S-matrix, mainly used for stereo mastering purposes.
- a 3-channel mode (one stereo PLUS one mono channel) for surround mastering & recording studios purposes.
- an M/S-Recording-mode that will use two individual microphone-signals (M&S-signals) fed into the bx1 to create a highly mono compatible stereo signal, mainly used for orchestral recordings, choirs or for recording accoustic instruments in general.

The hardware bx2 is an „Image Shifter" and De-Esser that can work in M/S mode as well and therefore is the perfect extension to our bx1 when it comes to mastering stereo signals. It also includes a „Mono-Maker" that allows you to mono the bass frequencies of your mix from 20 Hz up to 22 kHz to make sure your bass-section is „tight" and compatible for vinyl-pressings.

The bx_digital V1 was an exact emulation of both units´ features, our state-of-the-art equalizer bx1 and its expansion unit bx2, with only one mode of the hardware (the 3-channels-mode) not working (for audio host standard reasons). Together these two units are the perfect choice if you are looking for an extremely musical and tasty way of eq-ing and de-essing stereo signals (mixes), most likely in a mastering process, or if you are into mixing and sound-design as well as recording with M/S-microphone-technique.

bx_digital V2 now offers additional features that neither the original bx1 analog EQ nor the v1 plug-in offered.

Details: see chapter 5.

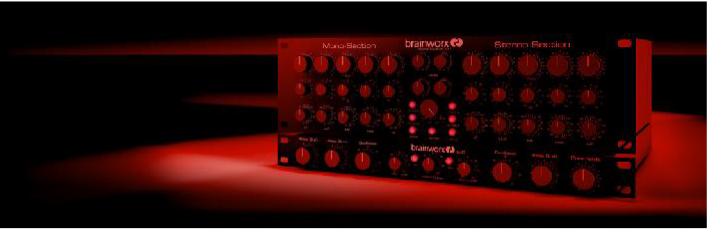
2. What is M/S technology?

Most engineers who are recording music know about the M/S microphone technique (two different microphones for stereo recordings - an OMNI or CARDIOID microphone for the M (mid) signal and a "FIGURE-OF-8 microphone" for the S (side) signal).

Recording a signal with M/S microphone technique means to create a stereo (L/R) signal by mixing the M and the S signals together in a special way that will result in a very mono-compatible stereo signal. To record in M/S you have to feed the M-signal to the Left and Right channel of your mix and the S-Signal will be fed phase-correct to the Left channel and phase-reversed to the Right channel. This means you will have to split the S-signal and use a total of 3 channels for only 2 microphones that will be mixed together to create a conventional stereo-signal. Quite confusing?

Well, bx_digital V2 does all that work for you, just feed it with the separate M- and S- microphone signals and switch it to M/S Recording…

For additional details about this technique you may have a look into any decent audio book. Please do so if you want to learn more about this method to create very mono-compatible stereo-signals, e.g. when recording classical music, drums, choirs or acoustic instruments in general.



3. What is M/S good for in Mastering?

Well, it may sound simple, but the bx_digital V2 has a built-in M/S matrix that will separate any stereo signal into its mono sum and the stereo difference signals. Thus you are able to separately control these two signals which can be very useful when you work on a stereo mix that has certain „problems“ - or if you simply want to enhance certain elements in the mix.

Ever tried to cut high frequencies of a mix to reduce the „essing“ of the lead vocals and at the same time boost high frequencies of your harmony instruments (guitars, keyboards, pianos, etc… most likely recorded or mixed in stereo)?

With bx_digital V2 and its M/S modes you can do exactly that.

4. But what´s so new about V2 then?

First of all, all the great things about bx_digital are still in V2, we have not sorted out anything. M/S modes, Solo S and Solo M etc. are still on board.

Then we have added features from both, the TDM version of bx_digital (7-bands, Auto Solo Mode, etc.), and from bx_hybrid as well (Auto Listen Mode).

Add all new and improved audio filters (EQ bands) and you have a GREAT stereo EQ.

EQ-ing in M/S will cause “non-linear” phases, but most experienced mastering engineers use this technique if a mix needs it, and if used with caution (a great advice on most things that are fun…) M/S processing can be a very creative and powerful weapon.

Since bx_digital V2 also has a “regular L/R mode”:
You don´t have to do all this all the time… but you can… :-)

Also, while there were quite some M/S - tools released after bx_digital V1 first came out, one original BX feature is the possibility to SOLO your M or S - signal, which means you can listen to ONLY the M or S signal of your mix and work on these two signals individually – phase corrected automatically.

“Why is this so unusual?” you might ask now. Well, although the S signal is included in a regular L/R stereo signal, it is not in phase on both channels, so we had to come up with an easy way to correct that each time you want to listen to your S-signal solo…

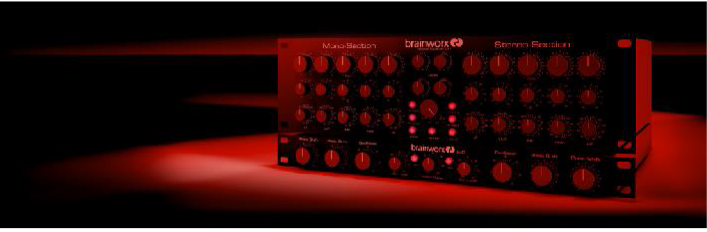
Start by playing some stereo mixes through your bx_digital V2 plug-in and push the solo button of the S-section… you will be amazed of what you will hear… you will be able to correct stuff you have never even heard before in your mixes!

Then dig some deeper, try the Auto Solo and Auto Listen Modes, the Shifter EQs, etc. You will quickly get the concept this way.

5. Features of the bx_digital V2:

bx1:

- 7-band mastering quality EQ with Shelving, Bell and Pass-Filters.
- “Auto Solo” and “Auto Listen” Modes
- Unique and new “SixPack” master section: (6 knobs)
- Input Gain and Balance features to adjust incoming levels and to balance out mixes that are not 100% centered.
- Individual PAN for M and S signals (in all modes) to control the output balance - with more precision than ever.
- Stereo Width Control for your mix. Make your mix wider without an effects processor by increasing the S-Signal – in ALL modes.
- Filter section includes new Lo-Shelving, Hi-Shelving, full-parametric Bell type, Lo-Pass & Hi-Pass filters. All 7 bands have been adjusted in frequency-range and type-selection by international mastering engineers to help you get



professional results for your mixes instantly.
- Output Gain to adjust overall levels.
- New mouse wheel control (place the cursor above any knob and use the mouse wheel…)

bx2:

- 4 more EQ bands (in the Shifter EQs), a dynamic EQ/De-Esser & more.
- Image Shifters for your bass frequencies and high frequencies. Tune your lo-end and hi-end of your mix for a „bigger" overall sound with „more air" at the same time and control potential harsh frequencies in your mixes.
- De-Esser/dynamic EQs. Solo buttons let you listen to what you cut away separated from the mix.
- Mono-Maker: Adjust the MonoMaker from 20 Hz to 22 kHz and your stereo mix will be Mono up to that frequency by cutting away the low-end of the stereo-difference of your stereo-mix - and adjusting the potential loss of bass frequencies in the Mono-Sum automatically! Ever had problems to cut your electronic music mixes with synthesizer basses to vinyl? Do you want to make sure your bass sounds are tight on disco speakers that might be spread all over the place? Try the Mono-Maker.
- the bx2 works in M/S - modes just like the bx1, so you can give your mixes that extra lo-end on guitars and synths that the pros have without getting rumbling on your bass drums, basses, etc., or de-ess your voice very tight without making your whole mix dull, etc.

EQ-Panel:

- shows up to 11 bands of EQ for M and S separately (for all bx1 and bx2 EQ bands)

6. How do I get started with bx_digital V2 in a typical mastering or recording-session?

Mastering music is all about hearing objectively and enhancing musical performances if possible… but it is (often enough) about correcting mistakes that have been made in a mix session. This sounds basic, but we mean it very literally!

We assume that most if not all people who have purchased bx_digital V2 are familiar with using a standard L/R-EQ, so we will skip the total basics of "how to use an eq" and go on with less common-known EQ-techniques…

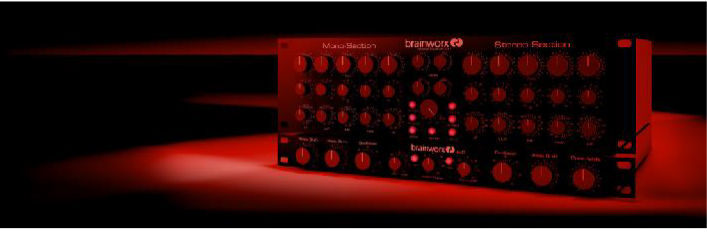
In fact if you have a more or less "perfect" stereo-signal to work on (e.g. a very good mix) it might be a good idea not to change it at all or at least not very much, so you might be ok with using the "regular" L/R-mode of the bx_digital and use the EQs rather carefully.

But, let´s assume we have an average stereo-signal (e.g. a mix) with some problems that we want to correct. – It´s just… how can you correct problems you can´t even hear exactly?

That´s over now… in the M/S-mastering-mode bx_digital V2 can transform your stereo mix into 2 easy-to-adjust mono sums (M & S, or "Sum & Difference"), and the bx1 lets you hear both sections perfectly in-phase. This way you can hear any problem of your mix very obviously and also make any improvements to your mix simple but precisely.

We propose you start working with bx_digital V2 in M/S-Mastering mode (that´s the default setting) by simply listening to some of the mixes that you know very well or to some of your favorite CD-tracks.

While you do so press the solo - buttons of the M and S - sections alternately to get used to how your mixes sound separated into these 2 mono sums. You will very fast be able to hear stuff inside your music that you might want to correct / adjust, so why don´t you just do it?



Start EQ-ing the M- and S-section individually while Solo-ing the respective section - and don´t forget to switch the Solo-buttons off from time to time and listen to your complete mix in “full stereo sound” again. This way you get a feel for how your adjustments on the individual sections effect the whole stereo mix! After you have used a few EQ-bands on your mix compare it to your original mix by using the Bypass switch of the whole unit and/or of individual EQ bands (a new feature in V2).

Mastering in M/S takes a little time to get used to - it´s just really different EQ-ing 2 separate mono-sums than EQ-ing conventional L&R-signals. But, it´s a very musical way of working, and there IS a reason why some of the top mastering studios in the world have been working like this for ages with custom-made M/S-boards - without really telling anybody…

M/S-Mastering might just be the key for your music to sound as big - yet still open and clear - as productions often referred to as being „BIG“… :-)

Many people who have used the M/S-modes for the first time told us that they had the impression of a “3D-like” depth in their mixes after processing the M- and the S-Signals individually. While using the M/S-technique for mastering does affect your phases in the stereo-signal we do not see this as a problem. In M/S modes altering phases is done intentionally. Of course, though, the M/S mastering mode works best if you want to correct small mistakes in your mixes… for adding or cutting away big amount of general bass or treble signals you might be better off working in L/R-mode…

t TIP: if needed simply use two instances of bx_digital on your master bus. one in L/R mode, the second in M/S mode.

Once you are used to the basics of M/S you might easily get into more detailed functions… try balancing out a mix that is not centered 100% (most mixes that come from an analogue desk with inserted compressors, EQs, in the main stereo insert, etc. are not balanced 100%!) by Solo-ing the S-section and adjusting the Balance Gain until all the things that should be centered (like bass drums, snares, lead vocals, bass, etc.) in your mix disappear completely.

If that´s the case you can be sure that your mix IS balanced!

Make your mix wider than it originally was by increasing the Stereo Width without losing the center of your recordings! You will not loose bass drum power or vocals by making your mix 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 (in all modes!).