

bx_digital MANUAL

- for CreamWare SCOPE -



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1. What is the bx_digital?

We at BRAINWORX manufacture hi end analogue hardware audio tools, and we offer digital emulations of these units at the same time. Our first products are the bx1 and the bx2.

The hardware bx1 is our "MODUS EQ", an analogue high class equalizer that runs in 3 different modes, giving you up to 3 (!) channels of extremely musical filters:

- a conventional L(eft) and R(ight) stereo mode for any stereo / dual mono applications
- stereo mode with built-in M/S-matrix, mainly used for stereo mastering purposes
- a 3-channel mode (stereo PLUS mono) for surround mastering & recording studios

The hardware bx2 is an "Image Shifter" and De-Esser that can work in M/S mode as well and is therefore 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 400 Hz to make sure your bass-section is "tight" and compatible for vinyl-pressings.

The bx_digital for CreamWare SCOPE systems that you have purchased is an exact emulation of the M/S - mode of both, our state-of-the-art equalizer bx1 and its expansion unit bx2. Together these 2 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.

2. What is M/S technology ???

Most people who are into recording music know about the M/S microphone technique where you have 2 different microphones for mid and side signals. 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. You may look for details about this technique in every book about recording basics if you want to find out more about this topic.

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

Well, it may sound simple, but the bx1 has a built-in M/S matrix that will separate EVERY stereo signal into its mono sum and the stereo difference signals. This way you are able to separately control these 2 signals which can be very useful when you work on a stereo mix that has certain "problems" or just 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)??? Well, with the bx1 and its M/S mode you can do exactly THAT!

4. But what´s so NEW about the bx1 then ???

While there are already some M/S - tools on the market, the unique feature that only the bx1 gives you 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.

Why is that 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 a way to correct that each time you want to listen to your S-signal SOLO, and we did...

Play some stereo mixes through your bx1 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 before even HEARD in your mixes!

5. Features of the bx digital:

bx1:

- 5-band EQ-bands for mastering purposes with Shelving, Bell and Pass-Filters.
- Input Gains L and R to adjust levels and to balance out mixes that are not 100% centered.
- Individual Output Gains for M and S signals to control the stereo width of your mix. Make your mix wider than it is without an effects processor by outputting more S-signal!
- 4 switchable Inserts inside the M/S-matrix that allow you to chain other plug-ins into the matrix. Even analogue and digital outboard gear can be routed into the M/S-matrix via the SCOPE routing window, so you can even combine the high quality digital

filters of your bx1 with analogue EQs if you own a decent stereo EQ!

- Filter section includes Lo-Shelving, Hi-Shelving, full-parametric Bell type, Lo-Pass & Hi-Cut. All 5 bands have been adjusted in frequency-range and type-selection of the bands by top professional mastering engineers to help you get top-professional results for your mixes.

bx2:

- "Image Shifter" for your bass frequencies and high frequencies. With single knobs you can "tune" your lo-end and hi-end of your mix for a "bigger" overall sound with "more air" at the same time.
- De-Esser that works with adjustable and dynamic EQs. SOLO Buttons let you listen to what you cut away.
- Mono-Maker: Adjust the MM-knob from 20 Hz to 400 Hz and your stereo mix will be MONO up to that frequency! 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 - mode 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 9 bands of EQ for M and S separately (for all bx1 and bx2 EQ bands)

6. How do I get started with the bx_digital in a typical mastering session?

Mastering music is all about HEARING OBJECTIVELY...and enhancing music 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!

It's just... how can you correct problems you can't even hear???

That's over now... we transform your stereo mix into 2 easy-to-adjust mono-sums (M & S), and the bx1 lets you hear both sections perfectly in-phase so you can hear any problem of your mix really easy and also make any improvements to your mix very simple but precisely.

We propose that you start to work with your bx1 / bx2 bundle by simply listening to some of your mixes that you know very well or some of your favorite CD-tracks through the bx1 / bx2, and while you do so press the SOLO - buttons of the M and S - sections alternating 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 SOLOing the respective section, and don't forget to switch the SOLO-buttons off in intervals to listen to your complete mix in regular L/R-mode again to get a feel for how your adjustments on the individual sections effect the whole stereo mix! After you have eq-ed a few EQ-bands on your mix compare it to your original mix by using the BYPASS switch of the whole unit.

Mastering in M/S takes a little time to get used to because it's just really different to eq 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 be the key for your music to sound just as big yet still open and clear as productions often referred to as being "BIG"... ☺

Once you are used to the basics 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 SOLOing the S-section and adjusting the L and R Gains 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!

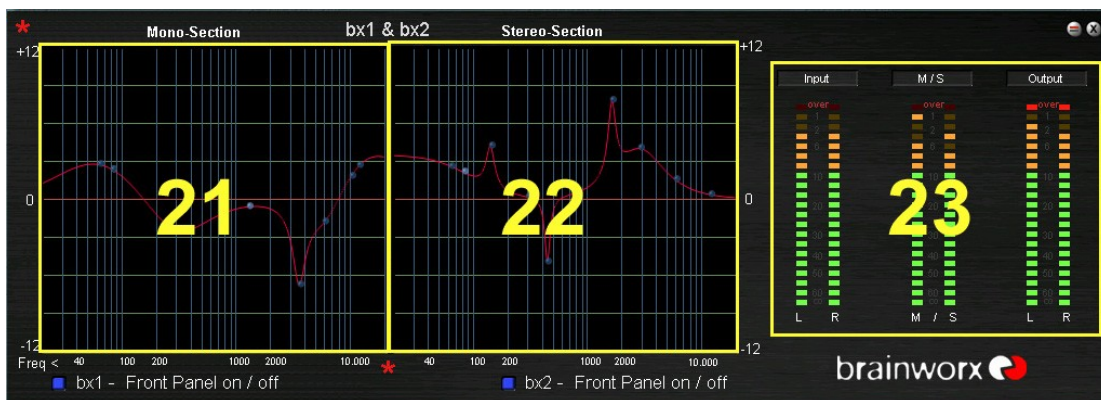
Make your mix wider than it originally was by increasing the output gain of the S section without loosing the center of your recordings! You will NOT loose bass drum power or vocals by making your mix wider this way...

Otherwise, if you have a drum-loop that was recorded with too much ambience sounds / reverb, just get rid of it by decreasing the S-section output gain or increasing the M-section output gain!

7. Overview and Details



bx1 and bx2 Screenshot



bx1/bx2 EQ-Panel Screenshot

1. EQ-Section M (Mono)

5 Bands, each with G (Gain), f (Frequency) and Q (Quality) pots

- LF: switchable from SHELIVING to PEAK via Q-pot
- LMF: switchable from HI-PASS to PEAK to LO-PASS via Q-pot
- MF: PEAK
- HMF: switchable from HI-PASS to PEAK to LO-PASS via Q-pot
- HF: switchable from SHELIVING to PEAK via Q-pot

2. Input GAIN for L (left) and R (right) channels

Adjust input levels for L and R individually (up to +24 dB) to adjust levels and to balance out mixes. (press "SOLO S" to balance out your mix!*)

3. Output GAIN for M (Mono) and S (Stereo / Difference) signals

Adjust your levels, and change the stereo width of your mixes:

- increasing the output level of your S signal will result in a wider mix
 - decreasing will make your mix less wide, at the same time your (stereo) effects and reverbs will be less loud. Turning OFF your S output will make your whole mix MONO!!!
- Be carefully with these knobs... you can get great results by increasing your S gain by 1 or 2 dB, but don't overdo it...*

4. The MODUS switch

This knob switches between the 3 different modes of the bx1... on the ANALOGUE UNIT ONLY!!! We have kept it in the graphics to make the bx1 look accurate... we might update to more modes for the bx_digital later...

5. INSERT switches

The bx_digital features 4 switchable insert points, just like the bx1 hardware.

You can insert other plug-ins into the M/S-matrix (PRE and POST EQ for the M and S section) and even connect analogue and digital **outboard** (!) equipment to these inserts. This way you can use any outboard EQ with your M/S matrix, or try inserting dynamics (compressors, etc.) here as well.

→ Be VERY careful with WHAT you insert here... you MUST make sure that you are not getting time difference (delay) between the M and the S section... which might happen easily when you insert other plug-ins, because calculating any plug-in process takes your DSP some time...

→ The bx_digital is equipped with an automatic delay compensation, but it can only compensate delays between the M & S sections up to a certain number of samples. Enough to compensate any delays caused by the bx_digital's operations, but especially be careful when using any plug-in as an insert that works with "pre-delay", "look-ahead-functions" or similar operations that cause delay.

Any delay between the M and the S section will result in phase problems, which can cause DIFFERENT problems in M/S mode than in regular L and R mode... your signals might be changed in panorama, so PLEASE take this advice serious when working with the bx_digital... it's a powerful tool. → it is a VERY good idea to insert the SAME plug-in into the M and the S section even if you want to change only **one** of the two sections... just leave the other plug-in at "zero-settings"... this way you can be sure to avoid delays between M and S.

→ For sound-design you might want to try inserting different plug-ins into the M and S section on sub-groups or individual stereo signals when you are MIXING!!!

Try distortion, modulations, delays, etc. on only ONE of the sections.. or use different settings... you will be amazed what your drum-loops or keys might end up sounding like...*

With the switches you can turn the individual inserts on and off.

6. SOLO Buttons and EQ on/off

With the SOLO buttons you can listen to either your M or S section individually. This is extremely useful when you want to filter out certain frequencies that might be disturbing in your mix. Try soloing the S section and EQ-ing your guitars, keyboards, cymbals or stereo effects signals of your mix! You will be amazed how easy it is to actually HEAR what you are doing...

EQ on/off does exactly what you would think it would do...☺

EQ on / off works for ALL EQ-Bands of the bx_digital INCLUDING the BASS SHIFT and PRESENCE SHIFT of the bx2 panel.

7. EQ-Section S (Stereo / Difference)

The same EQ section that you also have for the M section, please check 1.

8. & 9. LEDs for the M and S sections

Contrary to the bx1 hardware unit we have included a digital level control for the bx_digital.

Try balancing your levels so the 2 highest LEDs light GREEN... if the highest LED blinks RED, you should increase levels on either the M or S section. Since this will affect the stereo width of your mix you might instead of doing so also just increase the L and R input gain **equally** until neither the M nor the S section indicate any red LEDs... otherwise your mix will get out of balance.

10. & 11. BASS SHIFT (for M and S)

The bass shift is an "intelligent" EQ band for the bass frequencies of your mix. We call it BASS SHIFT because different frequencies will be "shifted" against each other with the turn of one knob. The frequencies have been pre-set by very professional mastering engineers, so all the SHIFTS in the bx_digital can be used to easily adjust the overall bass and presence sound of your recordings in a professional way... Turning your BASS SHIFT knob to the right will "push" your bass down one octave by boosting one part of your bass frequencies while at the same time cutting other (higher) bass frequencies. Turning the BASS SHIFT to the left will cause the opposite...

→ Please check the EQ panels (21. & 22.) to actually see what you are doing when working with the BASS SHIFT!

Turning your BASS SHIFT to the right will result in a more "indirect" and "deep soft" bass sound, while turning to the left will result in a "drier" bass sound.

→ A lot of contemporary pop & rock productions can be enhanced with "phatter" guitar / keys sounds by turning the BASS SHIFT to the right up to 3 or 4, and the same setting will make your bass drums sound HUGE!*

12. & 13. PRESENCE SHIFT

A similar function to what the BASS SHIFT does to your bass signals for the hi end of your recordings.

Turning the PRESENCE SHIFT to the right will put more "air" into your mixes without making them harsh!

→ Try filtering out all harsh frequencies of your mix in the M section with your EQ M and the M section of the De-Esser M (14.) and then make sure your mix doesn't sound dull by putting back some high frequencies into the mix via the EQ S (7.)

→ The PRESENCE SHIFT boosts frequencies above the ones that usually cause "ess-ing" of your voice. So you can try to de-ess your main voice (most likely to be in the center of your mix) with the M section of the bx's De-Esser (14.) and then set your PRESENCE SHIFT to 3 or 4...

14. & 15. DE-ESSER with M/S mode

The bx_digital De-Esser works with dynamic EQs, that you can adjust to the needs of your mix. With the SOLO buttons of the De-Esser section it is possible to listen to **only** the frequencies that you want to filter **out** of your mix.

→ SOLO the M or S section on the bx1 panel. SOLO the respective section of your De-Esser on the bx2 panel. Turn up the THRESHOLD knob until you start hearing some high frequencies. Adjust the frequency to be filtered with the "f DSR" knob and set the THRESHOLD knob to a value where the De-Esser will deduct as much high frequencies as you want.
→ Use the De-Esser's LEDs to control your gain deduction.

16. MONO MAKER

The MONO MAKER will mono bass frequencies of your stereo mix, adjustable from 20 Hz up to 400 Hz.

→ This is a great tool for vinyl mastering, since it is essential to make sure that your lowest bass frequencies are mono, otherwise the needle could jump off the groove of the vinyl record. Especially when you master electronic music with huge stereo bass sounds to vinyl for promotion copies / DJ copies make SURE to mono out your deep bass sounds.

→ Mono-ing your bass up to 60 / 80 Hz can also make a big impact on bass and bass drum sounds in general, and it will make sure that your bass sounds sound "tight" on EVERY single speaker of a big disco speaker systems that might use a lot of speakers (combinations of L and R signals) throughout the room(s).

→ Setting the MONO MAKER too high can result in an audible loss of stereo width for certain instruments, i.e. low-end heavy guitars or synthesizer basses.

17. INSERT text fields

These text windows will tell you which plug-ins are inserted into which Insert slot. Click here to connect other plug-ins to the bx_digital system or just drag&drop plug-ins from the plug-in directory (explorer) of your SCOPE system.

→ You can insert analogue and digital outboard gear as well.

→ You can chain several plug-ins by using the MULTI FX insert.

→ Both channels (M and S) are MONO-SIGNALS, so please make sure to insert mono plug-ins only. (if you wonder why both signals (M&S) are MONO, please check your "recording basics" book about M/S technique...

*)

18. & 19. SWITCHES for graphic panels

With these switches you can switch the graphics of the bx1, bx2 and the EQ panel on and off from every unit for all other units.

→ The bx_digital graphics are pretty big on the screen, but we assume that in a "normal" mastering session you don't use dozens of plug-ins.

And the bx_digital graphics carry a lot of information, so we didn't want to make it tiny...

→ If you run into space problems on your screen just click away the graphics you don't need when working on other stuff...

20. BYPASS & PRESET LIST

With the BYPASS button you can bypass the whole bx_digital plug-in to compare your original mix and your corrections / improvements with the bx_digital.

The PRESET LIST button will give you access to the PRESET LIST where you can store and recall your various settings. It works in standard SCOPE style.

→ It's a good and professional idea to store one preset for EVERY song that you master, maybe even make folders for certain projects, albums, etc.

This way you can easily recall any preset you made to change settings after you checked your mixes on other stereo systems (outside the studio). Keep in mind: if YOU don't do it... your customers WILL! ☺

→ Please notice: any other plug-ins connected to your INSERTS will be stored within the bx_digital presets! This makes it VERY easy to store complete settings for your different songs, sounds, etc.

21. & 22. EQ-PANEL

The EQ panel shows you all the EQ curves of your bx_digital separately for the M and S section of your mix. Unlike a lot of other EQ plug-ins we have NOT included any possibility to change your EQ settings via the graphic panel. We did that on purpose. There are simply too many EQ-bands (if you keep in mind that the BASS SHIFT and PRESENCE SHIFT are displayed additionally to the 5 "regular" EQ bands of each section.

Otherwise we feel that mastering music is all about making cautious changes to your mix (unless your mix was completely screwed up...*), and when we tested the bx_digital working in the EQ panel often led us to making pretty big changes very fast.

In the end we also wanted to give you the "feel" of the hardware as authentic as possible, so we decided to make the EQ panel only a control tool for what you do.

→ Please notice that it is very easy to type in exact values to ANY parameter of the bx_digital by simply clicking on the value fields (text fields) below each knob. This makes it particularly comfortable to tune your EQ-bands to certain frequencies.

23. LEDs

We have included dedicated LEDs for the Input Section (L&R), the M&S Section and the Output stage (L&R again), so you have total optical control over what you hear and what you do. Like with every other digital audio tool you should NOT push your levels into the RED!*

8. TROUBLESHOOTING

→ Incomplete signals

You might have clicked on one or (or more) SOLO-buttons of one section (M or S), so you only hear parts of your signal. Make sure both SOLO buttons are switched OFF to hear your stereo mix. Or you have switched ON one (or more) Inserts without any Plug-Ins inserted into them, which will result in a break of the signal for that specific Insert – and therefore also mute either the M or S signal.

→ Switch all SOLOS and INSERT switches OFF, and you should hear your regular stereo signal.

→ Phasing / wrong panoramas

If you hear parts of your stereo signal not properly in place panorama-wise you have most likely inserted a plug-in that causes delay (e.g. all plug-ins that use a “look-ahead” function in only ONE section, which means you have generated a delay between M & S!

→ Either put the SAME Plug-In into the other section as well and leave it at “zero-settings” take out all Plug-Ins to check again.

→ NO sound

You might have switched ON two Inserts (or more) on BOTH sides (M & S) without Plug-Ins inserted into their slots, which will cause BOTH, the M and the S signal to be interrupted.

Switch all INSETS back to OFF and you should hear SOMETHING again.*

→ NO sound

Is your bx_digital connected properly??? Do you feed any sound into the bx_digital at all???

→ ENJOY WORKING WITH THE bx_digital !!!!!

For more information and a video tutorial please go to:

www.brainworx-music.de
www.creamware.de