bx_hybrid MANUAL

Hi-resolution mono, multi-mono & stereo 11-band EQ with sophisticated AUTO LISTEN MODES

- for VST systems –
- for RTAS systems -
- for AU systems –

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1. What is the bx_hybrid EQ system?

bx_hybrid is a **revolutionary new 11-band EQ system** that we have designed for **mixing & mastering purposes**. Its internal **high-resolution filter algorithms** and some unique and innovative features make this an "engineer´s weapon". **bx_hybrid is a set of 2 EQs**, MONO and STERO versions of the same basic EQ concept (Mod 1.0 & Mod 2.0).

We chose **the name "hybrid" for 2 reasons**: although being a LEFT / RIGHT EQ the stereo version (Mod 2.0) bx_hybrid has **some internal M/S features**, and although being an EQ that has to be set manually it has **many AUTO features** that will help you finding the perfect EQ setting fast & convenient.

The bx_hybrid 11-band EQ comes in a mono version (Mod 1.0) - which also is **multi-mono compatible** on hosts that support this feature - and in a stereo version (Mod 2.0). You have been asking for a mono version to be able to use the critically acclaimed Brainworx filter technology in a mix session **on single channels** as well... so there you are... and we even improved the filter sound, enabling **hi-end EQ-ing up to 26 kHz... even in 44.1 kHz sessions!**

We are already working on the concept of a surround version as well (Mod 5.1) which will not be an update but a separate product and released later.

The special features of bx_hybrid include internal M/S STEREO WIDTH CONTROL, M/S MONO MAKER, sweepable SHIFTER EQs, Joystick Control & AUTO LISTEN MODES).

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. 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 a conventional stereo-signal.

In mixing and mastering situations 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 / stereo group / stereo sum.

For additional details about this 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 accoustic instruments in general.

3. Which M/S features are there in bx_hybrid for MIXING & MASTERING situations ?

The stereo version of bx_hybrid 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 we do **RECOMMEND learning a bit** about M/S when you intend to use it!

While we offer the ***bx_digital*** system to allow for **comprehensive M/S manipulations** (**separate** EQing & de-essing of the M- and the S-part of a stereo signal) **bx_hybrid** MOD 2.0 is **NOT** intended to process M- and S-signals individually, but to process stereo signals in L(eft) and R(ight) mode (linked and unlinked though, of course), while **optimizing the low-end of any stereo signal** using the internal M/S MONO MAKER - and **arranging the overall stereo width** of any stereo signal via the internal M/S STEREO WIDTH CONTROL.

Please see chapter 7 for details!

→ Note that the stereo version of bx_hybrid is a perfect "team mate" for more comprehensive M/S manipulations when used in unlinked mode and in cooperation with ***bx_control***, our separate M/S matrix!

Check **www.brainworx-music.de** for more info.

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

Well, there are several features in bx_hybrid that no other EQ system offers, and there are several features in bx_hybrid that we have optimized for you, the user, compared to other EQs available in the market. And to be totally honest there are also a few features that can be considered as "basic" for any EQ. In the end bx_hybrid being a digital filter system is supposed to be a "basic tool" for any audio engineer – namely the ones concerned about **PRECISION, ACCURACY & WORKFLOW SPEED**.

AUTO LISTEN MODES:
You will find "tuning" your EQ settings with **bx_hybrid faster and easier yet more precise** than with any other EQ system available. Its AUTO LISTEN MODES make finding the right settings for your EQ easy like never before - while literally **saving you hundreds (!) of mouse-clicks**, controller moves and adjustments per session.

Please don´t get us wrong:

bx_hybrid will not SET the filters automatically, but it will enable you to always **LISTEN** to what you need to hear at every stage of the editing process automatically – so **YOU** can find the best setting for your signals.

Internal M/S processing: (Mod 2.0 only!)

bx_hybrid Mod 2.0 has a built-in M/S processor to adjust the overall STEREO WIDTH of your signals. In addition it comes with our **innovative MONO MAKER** tool which will "cut" your low–end **mono from 0 Hz up to any desired frequency** (user adjustable up to 26 kHz!). While making your mix mono in the low end **it automatically compensates** for any potential loss of overall bass amount in your mix / stereo signal.
The result is a more defined, dryer and **much tighter low end.**

Sweepable SHIFTER EQs – surround-joystick controllable!

Taken from bx_digital we have implemented **SHIFTER EQs** in bx_hybrid, and we have even **improved their functionality!** The SHIFTER EQs are **fully sweepable** now within certain frequency ranges, and they have well balanced algorithms to filter out the maxxx out of any stereo mix or single signals (bass drums(!), bass, voices, guitars, etc.).

If you own a modern DAW controller (like a DIGIDESIGN ICON controller) with surround panner joysticks **you may map the SHIFTER EQs** to these joysticks! This way you can actually **control BASS SHIFT and PRES SHIFT simultaneously** (if your controller offers 2 joysticks), allowing for intuitive EQ tweaking like never before – **up to 4 EQ bands at a time!**

SOLO BUTTONS L & R: (Mod 2.0 only!)

Ever ran into noise sounds in a stereo mix / **signal that you couldn´t track down**? Or wanted to **EQ left and right channels individually**, finding it hard to really HEAR what you were EQ-ing? Use our SOLO BUTTONS and bx_hybrid Mod 2.0 will play you only the left or the right channel of a mix, but **centered on BOTH speakers.**

Hearing the individual channels 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 when appearing only on one channel of your mix.

EXTENSIVE METERING & CONTROL TOOLS: (Mod 2.0 only!)

bx_hybrid enables you to VISUALLY control the **BALANCE** between left and right speakers, making it easier to place stereo signals of a complex mix right in the "sweet spot" and to make sure that whole mixes are evenly balanced on both speakers. L/R and **M/S meters** for total control!

The on-board **PHASE CORRELATION** meter allows you to not only control the phases of a mix but to **check the phases of any stereo signal** in your mix individually, which is very important when using the **M/S STEREO WIDTH control on multiple channels!**

5. Features of the bx_hybrid EQ system:

- **11 band** mono & stereo EQs for mixing and mastering purposes
- new BRAINWORX **Hi-Resolution filters** for unrivaled sound quality
    - 20 Hz – 26(!) kHz, even in 44.1 k sessions.
- Low Shelving & High Shelving filters
- Bell filters, Low-Pass and High-Pass filters, Notch filters.
- Handling **ALL of the ICON´s** center section EQ features PLUS:
    - **Sweepable Bass- and Presence-Shifter EQs**
    - Shifters can be **controlled by JOYSTICKS** (i.e. DIGIDESIGN ICON surround panners!)
- NEW and innovative **AUTO LISTEN MODES**
- **M/S inside!** M/S STEREO WIDTH control and M/S MONO MAKER (Mod 2.0 only)
- **Dual Mono layout** for LINKED & UNLINKED control of each idividual feature (Mod 2.0 only)
- **Individual BYPASS** switches for every (!) feature
- Extensive individual metering for L/R & M/S levels (Mod 2.0 only)
- **BALANCE & PHASE CORRELATION** meters (Mod 2.0 only)
- **SOLO L & R Buttons** – listen to only the L(eft) or R(ight) channel of a stereo mix / signal on BOTH speakers (Mod 2.0 only)
- **Switchable EQ panel** with multi-mode EQ display (actual EQ-curves, bypassed curves, L&R channels and AUTO LISTEN MODES).
- Phase reverse switch (Mod 1.0 only)
- Fully automatable

6. How do I get started with bx_hybrid in a typical mixing or mastering-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.

Let´s assume we have an average signal (e.g. a guitar recording or drum loop) with some problems that we want to correct... It´s just... how can you correct problems you can´t even hear exactly???

Start playing some signal through a mono or stereo version of bx_hybrid and try to make up your mind about which part of the signal does sound displaced or disturbing. Not an easy job without boosting single EQ gains, setting the Q pretty narrow before doing so, then going back to an "easier" gain setting, re-correcting the Q, fine-tuning the gain, etc.

THAT´S OVER NOW!
bx_hybrid will enable you to listen to everything you need to hear to find PERFECT EQ settings – **without ever going crazy** with your EQ knobs again!

While playing some signal through your new EQ **click on some** of the EQ knobs (Gain, Frequency or Q), and just **check out with your ears and your eyes** (follow the EQ graphics while clicking around...) how **bx_hybrid can assist you** to find the ideal setting for any signal.

Please see chapter 7 (pt. 12) 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 loosing 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!

Use bx_hybrid (Mod 2.0) 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.

The built-in MONO MAKER will at the same time **take care about the phase problems in your lowest bass frequencies**. You will be surprised **how wiiiiiiiiide** you can actually spread certain sounds without screwing up your overall mix´ phases - **with MONO MAKER activated!**

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

7. Overview and details

bx_hybrid MONO version (Mod 1.0)
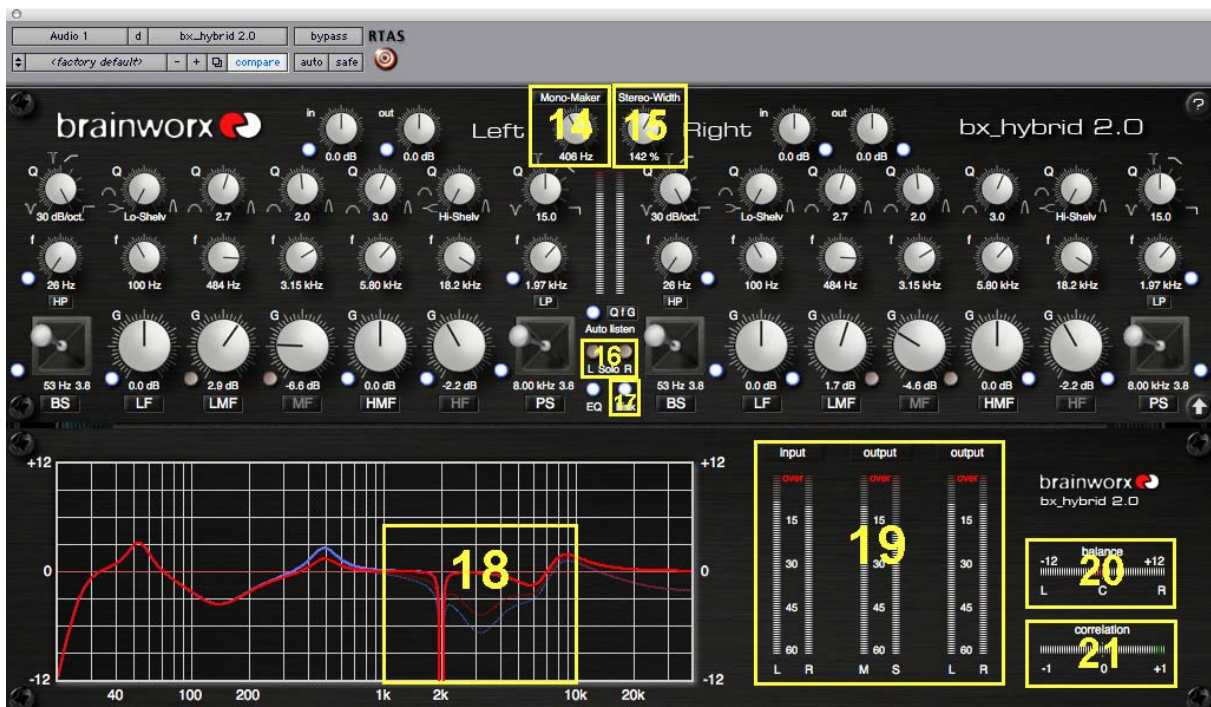
bx_hybrid STEREO version (Mod 2.0)

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

- **SHIFT / MOUSE CLICK** on any knob will change the bx_control´s knob behaviour (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.
- **Individual BYPASS**: click on **ANY FEATURE LABELING** to switch it ON (WHITE letters!) or OFF (GREY letters!). Very handsome

feature to COMPARE your settings with the unprocessed signal, e.g. to monitor the METER TOOLS while adjusting / comparing your settings.
- Also, any bypassed feature of bx_hybrid will not use any CPU power.

- **TYPING IN VALUES** into your plug-ins will save you some time:

    o **GENERALLY TYPING:**

       10.000 Hz can be typed in as "10k", 12.000 Hz would be "12k", etc.

    o **MONO MAKER & STEREO WIDTH:**
       - 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**".

1. INPUT & OUTPUT GAIN (L&R adjustable individually in Mod 2.0)

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

2. MAIN EQ SECTION (5 bands)

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

- LF: switchable (SHELVING or PEAK) via Q-pot
- LMF: PEAK only
- MF: PEAK only
- HMF: PEAK only
- HF: switchable (SHELVING or PEAK) via Q-pot

## 3. HIGH PASS FILTER or NOTCH FILTER (switchable via Q knob)

- **HIGH PASS FILTER** (initial setting)
  - sweepable from 21 Hz to 26.000 Hz (26 kHz)
  - switchable 6, 12 (initial setting), 18, 24 or 30 dB / octave

- **NOTCH FILTER** (selectable via the Q knob, turn to the left!)
  - sweepable from 21 Hz to 26.000 Hz (26 kHz)
  - Q adjustable from 15 to 0.3

4. LOW PASS FILTER or NOTCH FILTER (switchable via Q knob)

- **LOW PASS FILTER** (initial setting)
  - sweepable from 21 Hz to 26.000 Hz (26 kHz)
  - switchable 6, 12 (initial setting), 18, 24 or 30 dB / octave

- **NOTCH FILTER** (selectable via the Q knob, turn to the left!)
  - sweepable from 21 Hz to 26.000 Hz (26 kHz)
  - Q adjustable from 15 to 0.3

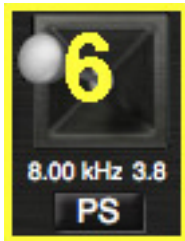## 5. sweepable BASS SHIFT filters (=individual 2 band EQ)
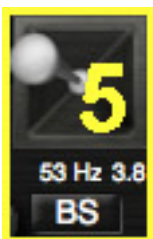

a true **BRAINWORX invention**...
- simply **move the joystick** on the screen which will result in 2 EQ bands being "shifted" against each other.
  - sweepable from 40 Hz to 200 Hz (referring to the lower EQ band)
  - "auto Q sweep" algorithm

This is probably the **most effective kick-drum EQ** out there. Try moving it to the left and upwards slowly while listening to a kick-drum. Very cool for accoustic and rock / metal guitars as well, low male voices, etc.

➔ **Please check your DAW controller´s manual to find out how to "map" the Bass-Shift to your surround-joystick! (if available)**

6. sweepable PRESENCE SHIFT filters (=individual 2 band EQ)

A true **BRAINWORX invention**...
- simply **move the joystick** on the screen which will result in 2 EQ bands being "shifted" against each other.
    - sweepable from 8 kHz to 20 kHz (referring to the higher EQ band)
    - "auto Q sweep" algorithm

A great hi-end EQ for vocals. Try moving it to the right and upwards slowly while listening to a female voice.
Very cool for accoustic guitars and strings as well.

→ **Please check your DAW controller´s manual to find out how to "map" the Presence-Shift to your surround-joystick! (if available)**

7. individual BYPASS SWITCHES (for EVERY feature)
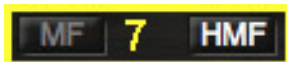
You can **BYPASS each and every single feature** of the bx_hybrid EQ system by **simply clicking** on **the labeled names** of each repsective feature.

In the example above the MF band would be set to OFF (inactive, bypassed) and the HMF band would be ON (active, not bypassed).

8. PHASE REVERSE switch (Mod 1.0 only)

You can phase reverse any mono signal with this switch, which might be necessary when mixing together multiple drum mics, bass-signals, or simply correcting / changing phase settings intentionally.

> → Be **CAREFUL** with this feature. You may cancel out certain signals of your mix if you set wrong phase settings on individual channels!

> → Please check any decent book about audio technology basics if you want to learn more about phases.

## 9. HIGH RESOLUTION PEAK LEDs (located in the EQ section)

These 2 meters will display
PEAK levels of the **INPUT & OUTPUT (Mod 1.0)** or
PEAK levels of the **L&R OUTPUT (Mod 2.0).**

Mod 2.0 has ADDITIONAL meters in the lower graphic panel, these meters will show individual
INPUT & OUTPUT meters for both,
LEFT and RIGHT channels.

OVER means "**too much**"... clipping.. turn it down... ☺

10. EQ graphic panel

This display will **SHOW** you up to **11 bands of your EQ settings** for up to 2 individual channels **(=L&R - Mod 2.0 only)**
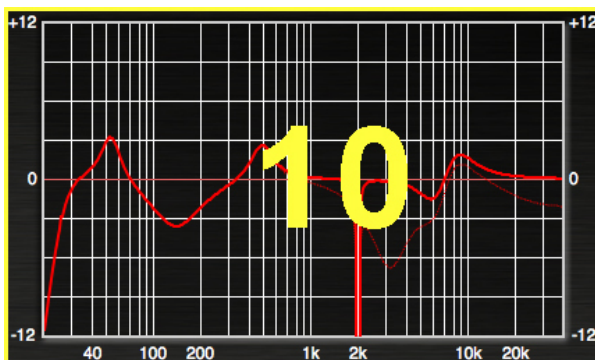

5 band main EQ
BASS SHIFT (= **2** EQ bands)
PRESENCE SHIFT (= **2** EQ bands)
HIGH PASS or
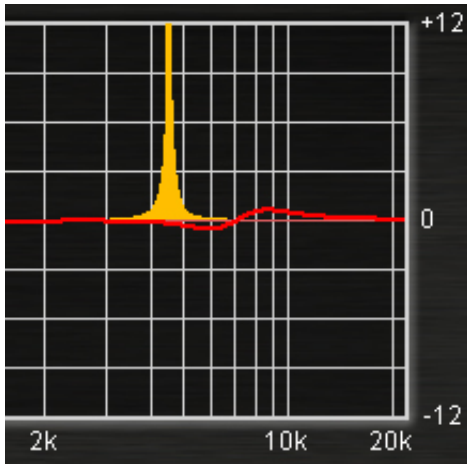NOTCH FILTER A (**1**)
LOW PASS or NOTCH FILTER B (**1**)

= **11 bands...**

When certain bands are **UNLINKED** (Mod 2.0 only) the display will show **BLUE** and **RED** EQ curves for the **LEFT** and **RIGHT** channel.

BYPASSED EQ bands will still be displayed, but with **DASHED lines.** (see graphics)

2 individual EQ settings and some inactive bands:
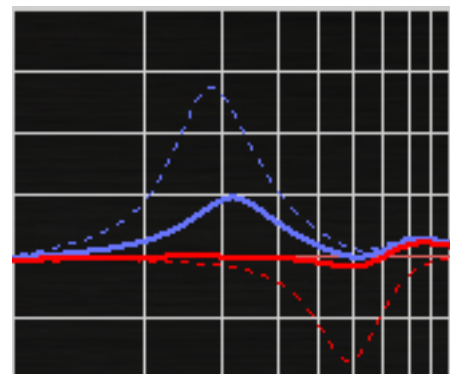
(AUTO listen EQ curve "f")

The display will also show you several **TEMPORARY EQ** settings in **ORANGE** (right channel / Mod 1.0) and **LIGHT BLUE** (left channel) colour to visualize the **AUTO LISTEN MODE EQ curves**.
Check pt. 12 for the details!
These temporary curves will appear whenever you click on **press active** AUTO LISTEN EQ knobs with your mouse or activate touch-sensitive controller.
One or several of the following knob types can be preset in the menu:

Q, F & G - and they will **disappear as soon as you release** your mouse click or controller knob.
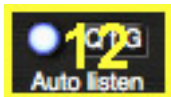
→ It is **INTENDED** that this display is **NOT enabled to SET the EQ** curves. You can **ONLY** set the bx_hybrid EQ bands **via the EQ knobs.**

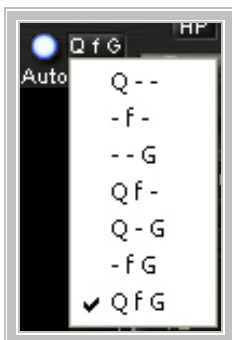## 11. EQ PANEL SWITCH (EQ graphics ON / OFF)

With this switch you may adjust the bx_hybrid size on your computer screen by **switching the EQ graphic panel ON and OFF** (alternating).

12. AUTO LISTEN MODE(s)

One of the **MAIN HIGHLIGHTS** of the bx_hybrid EQ system!

→ The AUTO LISTEN POP-UP MENU

When you **click on the letters** next to the **blue AUTO LISTEN LED** a **POP-UP MENU** will appear. In this menu you may choose **WHICH SOLO LISTENING FEATURES** of the bx_hybrid EQ you want to be **AUTOMATED**.

- **"Q f G"** (initial setting) will make bx_hybrid AUTO SOLO **ALL EQ features** each time you click on either a **G**(ain), **f**(requency) or **Q** knob.

- **"- f -"** for example will **ONLY** automate the AUTO SOLO LISTEN features for the **f(requency)** knobs, but NOT automate G & Q, and so on...

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AUTO LISTEN MODE "Q"

This auto listen mode will boost or cut the respective EQ band´s GAIN to either (+12dB) or (-12dB) whenever the Q knob is being clicked or touched (via a touch sensitive controller), depending on the actual setting of the G(ain) knob of that band. As soon as you release the EQ band´s Q knob the gain setting will jump back to the actual G(ain) knob setting. Clipping is avoided automatically.

Notice that the temporarily EQ setting of the AUTO LISTEN MODE is always being displayed in ORANGE and LIGHT BLUE colour while the actual EQ band´s gain setting is still being displayed in RED & BLUE colour.

You **HEAR** the ORANGE / LIGHT BLUE setting when it appears in the EQ panel.

← Whenever bx_hybrid boosts AUTO bands to +12 dB temporarily the overall output volume is always being controlled and adjusted intelligently to

AVOID CLIPPINGS AUTOMATICALLY!

Auto listen "Q" with positive gain
(see the HMF band gain at (+5.8dB))

Auto listen "Q" with NEGATIVE gain
(see the HMF band gain at (-3.7dB))
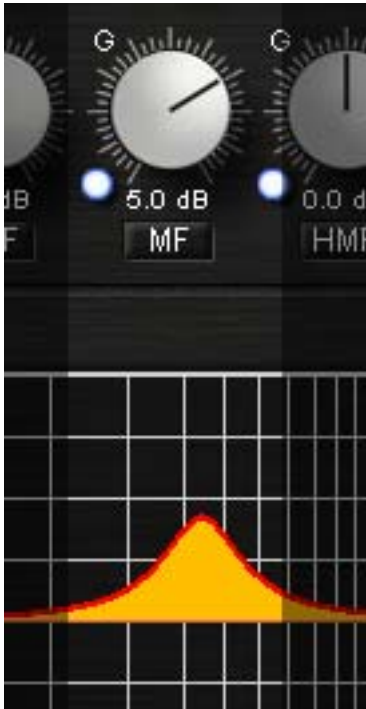

AUTO LISTEN MODE "f"

This auto listen mode will play a **very steep (narrow) and inversed notch filter sound** of the actual audio signal **as long as you click a knob** or grab a (touch sensitive) controller pot or fader.

This lets you **hear the center frequency** you are searching for **EXACTLY** – and all this **without the multiple mouse clicks** or controller moves that needed to be done before bx_hybrid.

(Gain up to the max, Q to a very narrow setting, sweep through the frequencies, re-adjust the Q, re-adjust the gain, etc... **you know what we´re talking about...** ☺)

AUTO LISTEN MODE "G"

This AUTO LISTEN MODE finally is pretty easy to explain... **as long as you click a Gain knob** (or grab a touch sensitive controller pot or fader) **all other bands of that EQ will be BYPASSED**. This way all you hear is **the TOUCHED EQ band SOLO,** without other EQ bands eventually affecting your new setting.

This **may or may not be wanted**, so remember: you have the choice to **activate or deactivate** each and every AUTO feature (Q, f or G) or **any combination of these 3 features** using the **AUTO LISTEN POP UP MENU**. (see -12- above)

The AUTO LISTEN mode can be **switched OFF completely** using the **BLUE LED** switch.

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13. EQ ON / OFF (EQ bypass switch)

This switch lets you **COMPARE** the original (un-EQ-ed) sound against the EQ-ed sound. Note that **single EQ bands can be bypassed individually** by **CLICKING ON THE LABEL NAME** of each individual band / feature.

EQ on / off will **NOT** bypass the whole bx_hybrid system!
→ **MONO MAKER & STEREO WIDTH will still be active.**

Use your host program features to bypass the WHOLE PLUG-IN! ☺

14. MONO MAKER (M/S tool, Mod 2.0 only)

Another true BRAINWORX invention... **simply adjust the threshold frequency** with the MONO MAKER knob and your stereo mix / stereo signal will be **MONO up to that frequency** automatically!

MONO MAKER will get rid of all the stereo information below the frequency you set it to - and **COMPENSATE** for the **potential LOSS in the overall bass** audio impression automatically!

In bx_hybrid the MONO MAKER **goes up to 26 kHz(!)**, so it is actually possible to make a mix MONO completely – from the bottom to the top…

MONO MAKER is an **ESSENTIAL TOOL** for mastering music that is supposed to be pressed on **VINYL RECORDS**, and it can greatly improve the phases of any stereo signal / mix that is being spread with the **STEREO WIDTH CONTROL**. (see pt. 15)

15. STEREO WIDTH CONTROL (M/S tool, Mod 2.0 only)
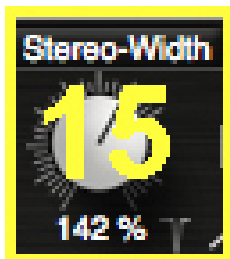
- **Adjust the stereo width** of any stereo mix or stereo signal.
- Leaving the **STEREO WIDTH at 100%** will not change the width of your stereo signal at all.
- **INCREASING** the value **(101% - 400%)** will make your mix / signal sound WIDER. Be CAREFUL: setting the STEREO WIDTH CONTROL too high can cause serious phase problems!
- DECREASING (99% - 1%) will make your mix / signal less wide.

Setting the MONO MAKER below 1% will display MONO. Now your mix / signal is **COMPLETELY MONO.**

→ **Please check the next page for some insider tipps & tricks about using the M/S STEREO WIDTH and the M/S MONO MAKER.**

Pro tips for STEREO WIDTH CONTROL & MONO MAKER use:

→ TRY increasing the STEREO WIDTH (see 6!) of a stereo signal (such as a guitar or keyboard sub-group or FX return!) until your CORRELATION METER (see 7!) indicates phase problems (goes into the RED...). NOW: turn the MONO MAKER up to about 300 or 500 Hz (even higher if needed, this will depend on the actual signal being "played") and watch the CORRELATION METER go back to GREEN, indicating that your phases are ok again!

→ This way it is actually possible to SPREAD stereo images much further than with any other stereo expansion tool (that we knew of before inventing the MONO MAKER ☺) – but WITHOUT running into the phase problems usually arising out of more or less "heavy" stereo image manipulations, or at least much less...

→ the bx_hybrid EQ is a PERFECT WEAPON to be inserted into ANY stereo sub-group of a mix session and will drastically improve your possiblilities to increase your stereo width of any stereo signal.

16. SOLO BUTTONS L & R (Mod 2.0 only)

- with these SOLO buttons you can listen to **ONLY THE LEFT or ONLY THE RIGHT channel** of your stereo mix (stereo signal), mono-ed out and centered on **BOTH SPEAKERS**. This makes it very easy and convenient to EQ stereo signals in un-linked mode!

- You can also "extract" certain elements of your mix with these knobs easily.

   → **BE CAREFUL**, **leaving a SOLO BUTTON ON** will cause your stereo signal play back in **MONO**, and you will **loose either the left or the right channel of that stereo signal in the mix...**

17. LINK BUTTON (Mod 2.0 only)
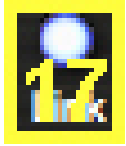
The LINK LED indicates that **AT LEAST ONE** feature / EQ band of the bx_hybrid EQ is "linked". Any linked EQ band will show the SAME parameters as its corresponding EQ band on the other channel of the stereo EQ.

You can link / unlink **ALL features** by clicking the LINK button alternating. → **BE CAREFUL: this is NOT UNDO-ABLE!**

18. STEREO EQ panel - two-coloured (Mod 2.0 only)
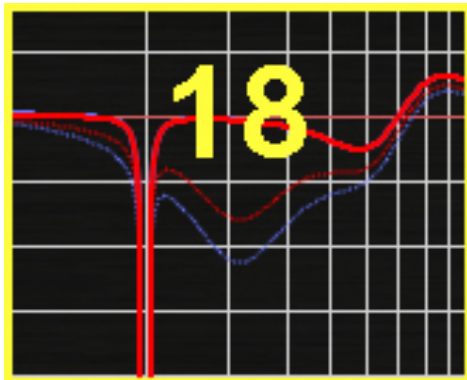
The EQ panel of the STEREO VERSION of bx_hybrid (Mod 2.0) will use DIFFERENT COLOURS to show you the settings of the **LEFT** and **RIGHT** channel in one EQ panel. This makes it easier to compare EQ settings of the LEFT and RIGHT channels.

BYPASSED EQ bands will still be displayed – **DASHED though**.

19. INDIVIDUAL in/out - L/R and M/S METERING (Mod 2.0 only)
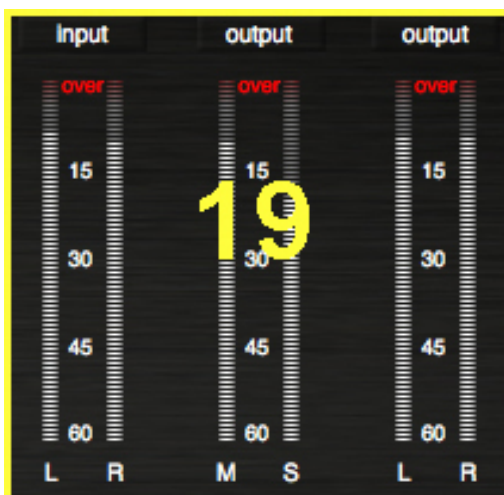
The graphic panel of Mod 2.0 (STEREO VERSION) of the bx_hybrid EQ system will give you **6 individual LEDs**. The 4 outer LEDs display the PEAK levels of the left and right input and output, while th 2 inner LEDs show you the PEAK levels of the M & S signals of the respective stereo sound / mix.

The **M-signal** will show you the level of the **MONO SUM,** while
the **S-signal** shows you the level of the **STEREO DIFFERENCE** signal.

→ **For further info about M/S processing please refer to chapters 2 & 3.**

To process M & S signals individually we recommend bx_digital.
Please check www.brainworx-music.de for details & demos.

20. STEREO BALANCE METER LEDs (Mod 2.0 only)

STEREO BALANCE METER LEDs will show you if your stereo signal / mix is **well balanced** – or out of balance (louder on either the left or the right channel).

You can **adjust the STEREO BALANCE** using the **GAIN knobs** (input or output of either the left or the right channel) until the BALANCE LEDs show you the desired result (i.e. a CENTERED STEREO sound).

21. PHASE CORRELATION METER (Mod 2.0 only)

A standard CORRELATION METER tool to **monitor the phases** (and potential phase problems!) of your stereo mix / signal.

- 1 means your mix / signal is OUT OF PHASE (180°).
+1 means your mix / signal is IN PHASE (0°).
          "0" (zero) means that there is either:
          - no signal present
          - a signal present on only ONE channel
          - phases of L&R channels which are shifted by exactly 90°.

A regular (and proper) stereo mix will make the **CORRELATIONS METERS oscillate between 0 and +1.**

- → **SHORT flashes of the RED LEDs** (negative values) can usually be ignored.

- → **PERMANENT RED LEDs** will indicate heavy phase problems in the mix / signal and should be taken serious.

- → Try the **MONO MAKER to cure any phase problems** you might find **listening** to your mix or **monitoring** the CORRELATION METER LEDs.

The higher you set the MONO MAKER FREQUENCY **the more mono** your mix will be, and the less phase problems should occur in your stereo mix / signal. Usually **correcting phase problems in the lowest frequencies** alone will **IMPROVE** your overall phase spectrum, so **setting the MONO MAKER to about 100 Hz will work great** for most mixes without audible (negative) effects to your stereo mix!

8. 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_hybrid EQ at all??? ☺

→ **ENJOY WORKING WITH THE bx_hybrid EQ SYSTEM!**

For more information and a video tutorial please visit:

www.brainworx-music.de

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

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 ANY 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).

info & demos: www.brainworx-music.de