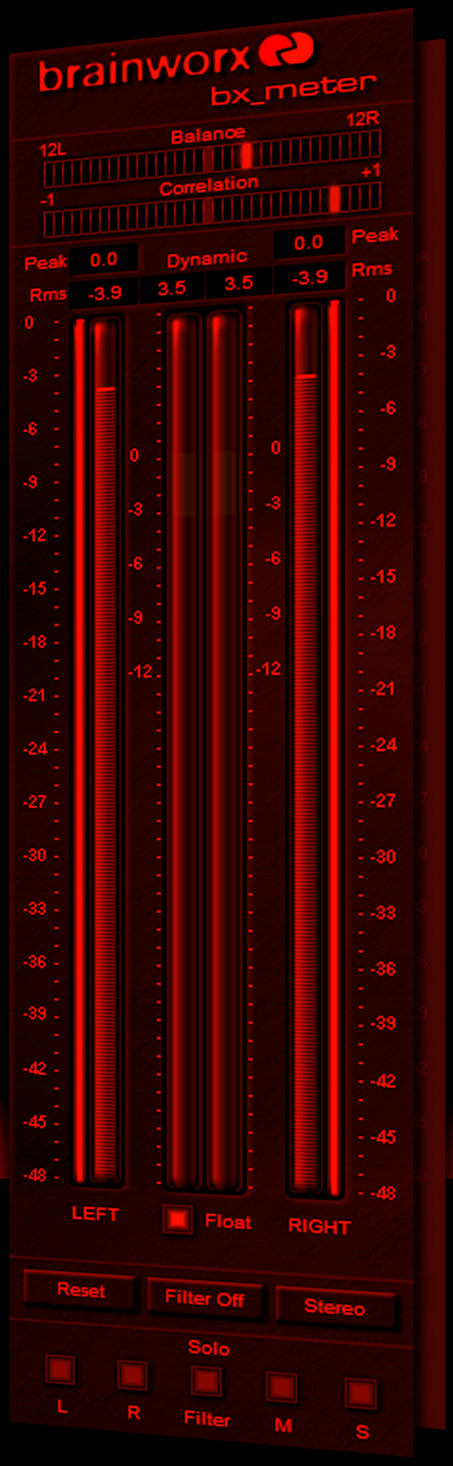
brainworx

bx_meter manual

Peak, RMS and Dynamic Range Metering with L/R and M/S modes



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Install and activate your new plugin.

Check the Activation Manual PDF for details,
or visit www.plugin-alliance.com/activation.

The Activation Manual has been installed into the same folder as this Plugin Manual.
Alternatively, please check the online version, see link above.

PLUGIN ALLIANCE

Index

1.0 What is the bx_meter?

The bx_meter is a sophisticated metering and measurement tool that allows you to visually analyze your audio signal in many useful ways.

We believe your mixes will benefit from proper dynamics, especially from a certain range of dynamics your music has. Too loud mixes often sound squashed, and in long mixing sessions your ears often get used to the squashed sound so you´re losing objectivity.

bx_meter will show you Peak and RMS values of your mixes, and in addition to that it will show you the relation between both with the centered DYNAMIC LEDs.

bx_meter has a Mid / Side mode (Sum and Difference) in addition to the standard L/R mode, and it offers 3 different weightings to be used to display the dynamics. Just like all the other Brainworx tools you will find several solo switches and nice extra features like the floating dynamic LED mode.

The vertical layout will make it easy for you to place bx_meter on the right side of your screen without burying other plugins or important sequencer data, and the size of the meter is big enough to show you even the slightest details.

2.0 What is the M/S technology?

Most engineers who are recording music know about the M/S microphone technique (2 different microphones for stereo recordings – they have to be 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 listen and control your music in M/S you have to extract the M- and S- signals from your stereo mix with an M/S matrix (we offer bx_control as a plugin M/S matrix), then control your M- and S- mono sums with 2 mono processors and bounce back to L/R stereo with a second M/S matrix.

Sounds quite confusing?

Well, bx_meter does all that work for you internally, just feed it with a stereo mix (insert it on your master bus..) and you´ll be able to individually meter (and listen to!) your M and S-signals. The input and output signals of the bx_meter are always regular L/R stereo. 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.

Also, several Brainworx plugins like bx_digital V2, bx_XL, bx_control and bx_dynEQ V2 make use of the M/S technique, so you might check the demo videos we have released about these plugins for more info about the M/S technique.

2.1 What is M/S good for in mastering?

Well, it may sound simple, but the bx_meter has a built-in M/S matrix that can separate any stereo signal into its mono sum and the stereo difference signals. Thus you are able to separately and visually control these 2 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 get a mix loud enough to compete with professional productions but not squash the mix with a limiter? Control the M/S levels and you´re halfway down that road.

With bx_meter and its built-in M/S technology you can do exactly that. Its extra features (which you will learn about in a second) will help you get the best results for your mixing and mastering works!

2.2 But what’s so new about the bx_meter then?

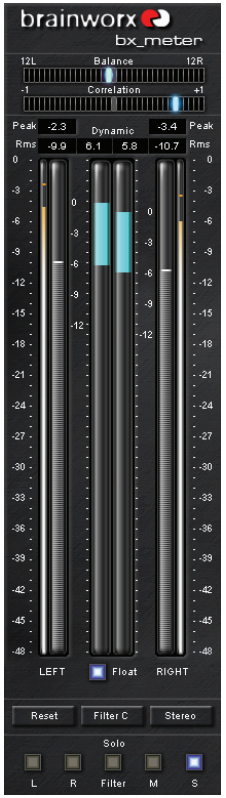
bx_meter has several unique features, like the floating dynamic LED chain, the multiple weightings with solo modes, M/S solo listen features, etc.

It´s not the tool that will automatically make your mixes sound better, of course, but it will give you some insight in what you are doing when you are mixing or mastering, and understanding the correlation of dynamics, M/S, phase and levels by listening to your music will help you mix / master better.

3.0 Features

bx_meter offers:

- sophisticated Peak, RMS and Dynamic Range metering
- numeric displays for Peak, RMS and Dynamic Range
- Peak Hold and RMS Hold function
- Stereo, Link and M/S mode
- M/S metering - see your mid and side signal separately
- Balance and Correlation meters
- Solo listen buttons for Left (L), Right (R), Mid (M) and Side (S) signals
- Weighing filters (A, C, K) including solo listening mode
- floating dynamic LEDs



4.0 Overview & Details

4.1 Peak, RMS and DR Metering

The **Peak Meter** is designed to display instantaneous sample maximums of your current signal. You can easily follow the **Peak Hold** bar to view the latest top-peak-value that has appeared within the last three seconds of audio. In addition, have a look at the **Peak numeric display** above. It shows the maximum peak that appeared in your mix. Every value above OdBFS (full-scale) is shown in red as "over". You should always try to avoid reaching levels at or above OdBFS, as it will quite surely be an indication for a digitally distorted and therefore "broken" signal. Try to lower the signal level anywhere in your signal chain, and check the bx_meter it you are still "clipping", after you have **Reset** the bx_meter (→ see Chapter 4.3 for details).

The **RMS Meter** is an indicator for the overall loudness, or the energy level, of your mix. There is also a **RMS Hold** bar that shows the highest RMS level within the last three seconds of audio. The **RMS numeric display** holds a numeric representation of your current RMS value.

The new **Dynamic Range Meter** is calculated from your peak and RMS metering. It shows you how "squashed" (aka "over compressed") a mix is. To a degree this can indicate how "loud" your mix appears as well.

There have been a lot of debates about the pros and cons of loudness, and accepting the fact that today´s music has a certain loudness level that fans and media have gotten used to we have decided to add this new metering method to the bx_meter, after a similar approach has become a good help within the bx_control V2.

Still we encourage all engineers to compress and limit the master bus with caution, nobody needs new world records in pure "volume" – especially not if that means loosing what was great about a mix before it is just being "killed" by limiters to achieve "that extra half dB"…

A loud modern mix that is "in your face" yet still "breathing" will have a Dynamic Range of about 6 to 12 dB. Note that values smaller than 6 usually result in mixes that will have negative impact on the listeners´ attention as the human ear longs for a certain dynamic range in music. Everything loud = everything quiet.

It is possible to go down to a dynamic range of 4 or even 3 dB with modern digital (multi-band) limiters, but try to be reasonable. A compressed rock or club mix sounds "heavier" than an uncompressed mix for most people, but an overcompressed mix can greatly reduce the overall enjoyment for the listeners. A mix with only 3dB of dynamic range will contain AUDIBLE distortion, which sounds cheap in the end…

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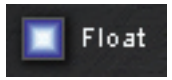
The Dynamic Range meter can be adjusted to fit your needs quite extensively. In general, the length of the meter bars show you how much dynamic you have in your signal. This is represented again with the **Dynamic Range numeric display** above the meter.



Below the meter, you can switch on and off the Float feature. This controls if the meter will "float" with your signal level, so your dynamic range will be "displayed where it happens". Or you can switch off this feature to have the Dynamic Range meter stick to the top, if you prefer to read it just in one place. In either way, the scale of the meter always sticks to the meter itself, so you will always be able to read what your dynamic value is at the moment.

→ Please see Chapter 4.4 (Modes) for more information about different display possibilities of the Dynamic Range, Peak & RMS meters.

4.2 Balance and Correlation

The **Stereo Balance Meter** will indicate if your mix is well balanced – or louder on one channel (left or right) = „not centered".

The **Correlation Meter** is 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
  - signal present on only one channel
  - phases of L&R channels are shifted exactly 90°.

A regular (and proper) stereo mix will make the correlation meters oscillate between 0 and +1, and 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 seriously! They might be treated, reduced or even cured with a sophisticated M/S EQ like bx_digital V2 for example.

4.3 Reset

All the meters can be reset at once to start a new measurement. You can either hit the Reset button in the lower section of the bx_meter, or simply click anywhere in the upper metering section to reset all meters and numeric displays to its initial state again.

4.4 Modes

These are three Modes bx_meter can work in:

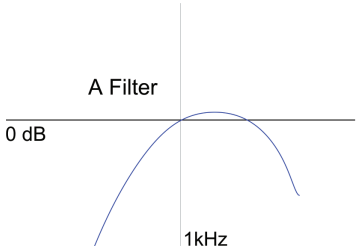
- **Stereo:** This is the default mode. The stereo (left and right) signal that is fed to the bx_meter is used for all the meters, and the Dynamic Range meter will display the dynamics of the left and right signal separately.
- **Link:** Same behavior as the "Stereo" mode, but the Dynamic Range meter is "linked" and shown as one big bar for both (left and right) channels. It references to the top peak value of either left or right channel, and to the average RMS level between left and right. This mode is easier to read if you just like to have a quick look at the dynamics of your stereo mix.
- **M/S:** Peak, RMS and Dynamic range meters show the levels of the mid (M) and side (S) signals of your stereo mix separately. You can easily judge your mid vs side ratio, while maybe even listen to M or S via Solo (→ see Chapter 4.6).

4.5 Weighting Filters

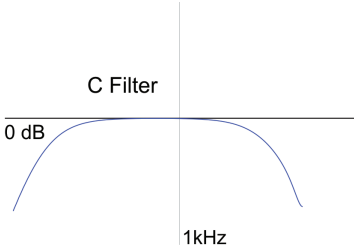
Weighting filters are used for level measurement that is adapted to the frequency weighting the human ear applies at different volumes (according to the so-called Fletcher-Munson curves). Weighted measurement is usually used to judge noise in environments where human beings live or work, but can also be a reference for musical signals. Read more about weighting filters and their meaning in corresponding literature.

The Weighting Filters will NOT affect the audio output of the bx_meter plugin unless you listen to the filters in SOLO mode!

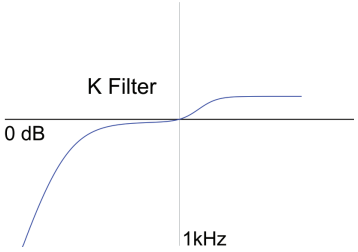
Here are the filters that are included in the bx_meter:
(On default, **Filter Off** is selected, which means that there is no weighting filter active.)



Choose **Filter A** from the dropdown list to apply A-weighting to your RMS measurements. A-weighted signals are usually indicated by the unit dB(A) or dBA. It is based on the 40-phon Fletcher–Munson curve, which means that it refers to the human ear reception on quiet sounds. It emphasizes mid frequencies between 1 and 6 kHz and attenuates low and high frequencies (see picture).



Filter C applies C-weighting to your RMS measurements. C-weighted signals are usually indicated by the unit dB(C) or dBC and are based on the 90-phon Fletcher–Munson curve, which means that it refers to the human ear reception on loud sounds. It passes through a broad mid frequency band and attenuates low and high frequencies (see picture).



Filter K applies K-weighting to your RMS measurements. This filter follows the ITU-R recommendation BS.1770-1 and emphasizes high frequencies above 1 kHz while attenuating low frequencies below 200 Hz (see picture).

! Note again that the weighting filters only affect the RMS (and therefore Dynamic Range) measurement. The Peak meters will not be affected by the filter !

You can listen to your applied filter through the **Solo Filter** button at the bottom. Please note that to avoid clipping the Filter Solo function delivers a lowered signal level of about -7dB.

4.6 Solo buttons

With the **Solo L, R, M and S buttons** you can listen to any element of your stereo mix (stereo signal), mono-ed out (for L, R, M & S), phase-corrected (for "Solo S" only), and on both speakers.

You can also "extract" certain elements of your mix with these buttons easily, for example try recording or bouncing the Solo S signal for remix purposes… which will give you a phase-corrected mono-signal of only the side signal (keyboards, stereo, guitars, FX sounds, etc.).

→ See Chapter 4.5 for the **Filter Solo** function.

5.0 General Brainworx keyboard shortcuts

- 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.
- Typing In Values into your plug-ins will save you some time:
  General Typing:
  10.000 Hz can be typed in as "10k", 12.000 Hz would be "12k", etc.
- Individual bypass: click on any feature label to switch it on (white letters) or off (grey letters). This is a very useful feature for comparing your settings with the unprocessed signal, e.g. to monitor the meter tools while adjusting/comparing your settings.

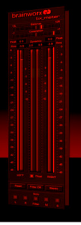
→ Also, any bypassed feature of the plugin will not use any CPU power.

6.0 Troubleshooting

? **Incomplete signals**
✓ You might have clicked on one or (or more) Solo-buttons, so you only hear parts of your signal. Make sure all Solo buttons are switched OFF to hear your stereo mix.
✓ Switch all Solo 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 panoramawise you might have panned M and / or S in the master panel.

? **NO sound**
✓ Do you feed any sound into the bx_meter at all???



ENJOY WORKING WITH THE bx_meter!

→ For more information and a video demo please visit:

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