brainworx

PLUGIN MANUAL | bx_subsynth

Install and Authorize your New Plugin:

— If you do not have an account, register for free on the Plugin Alliance website

— Double-click the .mpkg (Mac) or .exe (Win) file

— Follow the installation instructions

— Open the plugin in your DAW of choice and click on the interface to activate

— If your computer is connected to the Internet, click the "I'm Online" button and enter your Plugin Alliance credentials on the following page

For offline activation instructions and additional information, please refer to the Activation Manual included in the installation folder of this plugin

You may also follow this link to the online version of the manual

For more information, please visit: www.plugin-alliance.com

System Requirements and supported Platforms

For latest System requirements & Supported Platforms, please click the link above, and visit the product list page on the Plugin Alliance website to see particular details for your product.

PLUGIN ALLIANCE

brainworx bx_subsynth | Earthshaking Low-end Synthesis

C o n t e n t s

INTRODUCTION:

Inspired by the dbx 120XP's superiority in subharmonic synthesis, Brainworx began with a meticulous component model of the hardware, but it quickly grew to become much more than what the original hardware had to offer. The result was an entirely new beast that offered an unprecedented level of power in synthesizing bass from even the most meager of sounds.

The bx_subsynth plugin expands on the dbx 120XP concept in several ways. It offers a third frequency range 56-80Hz for higher source signals. Input Trim screws will boost fundamental levels at each band to assist in bass synthesis when more signal is needed. The innovative Synthesis Input will help if the source signal has too much bass in the side signal to analyze it. Other new additions include Brainworx's patented "Mono Maker," and internal mid/side processing.

With bx_subsynth, you can use powerful waveform synthesis to turn thin D.I. tracks into booty-shaking basslines, add warmth and body to an otherwise wimpy acoustic guitar recording, or blow your local club venue's PA system during your next DJ gig. This thing kicks, and with the added features only available in the Brainworx plug-in version, you have limitless flexibility in shaping the tone, character, and even stereo field of the added subharmonics in your sound.

KEY FEATURES:

- Three-band subharmonic synthesis with individual additive parameter adjustment, metering and solo, allowing total control over added subharmonic content

- Dual-mode "Edge" section with filtering and Drive controls

- Mid/Stereo Synthesis Input control allows subharmonics to be generated on either mono or stereo information

- M/S section with Mono Maker and Stereo Width allow precise control over the stereo field

- Separate Low Frequency Boost Circuit

- LEDs that show crossover status and synthesis activity

- Input Trim for the three ranges of subharmonic frequencies

ABOUT THE ORIGINAL HARDWARE

The dbx 120XP was the secret weapon of many DJs, audio post professionals, and mixing engineers, adding clean and powerful low-end to their sounds while shaking speaker cones silly. It's known for creating an ultra-smooth and even response when it comes to synthetic subharmonics, leaving the midrange untouched and preserving power in the low end. This is because it actually creates a new Waveform Modeled™ note one octave below the lower range content in the source sound. Where other subharmonic processors trick the brain into perceiving sub through the use of psychoacoustic principles, Waveform Modeled synthesis will produce the subharmonic power needed to make the listeners *feel* the bass.

Legal Disclaimer: dbx120XP, and Waveform Modeled Synthesis are registered trademarks of Harman International. The bx_subsynth was developed by Brainworx based on its own modeling techniques. Harman has not endorsed nor sponsored the bx_subsynth in any manner, nor licensed any intellectual property for use in this product.

GLOBAL PARAMETERS:

SYNTHESIS INPUT:
Discrete two step switch. Selects the part of the original signal to be fed into the synthesis sidechain. In "Mid" mode, the signal is transformed to mid/side processing and only the mid signal is used to generate subharmonics. This can yield a much cleaner synthesis because the input bass signal will often be panned to the center.

Setting this to "Stereo" mode means that left and right channel will be fed into a separate synthesis chain.

GAIN IN:
Continuous from (-20) - (+20 dB). Change gain of the input signal. This also indirectly controls the signal level for the signal synthesis.

GAIN OUT:
Continuous from (-20) - (+20 dB). Drives the amount of output signal.

MIX:
Continuous from 0% - 100%. Adjusts the mix between unprocessed and processed signal.

MONO MAKER:
Continuous from 20 Hz to 22 kHz. This parameter folds the processed sound to mono at and below the frequency set. The most common setting is between 100-200 Hz, below which bass frequencies reside, where common practice deems that most sound should be mono. Other uses include folding an entire mix in order to check mono compatibility and avoid phase incoherency.

STEREO WIDTH:
Continuous from 0% - 400%. Increases or decreases the perceived width of the signal by manipulating the relative volume of the S signal.

> **NOTES:**
> - Synthesis Input, Gain In, Gain Out, Mix, Mono Maker, and Stereo Width are not available in the hardware.
> - Synthesis Input, Mono Maker, and Stereo Width are not available in a mono instance.

5

SUB PARAMETERS:

SUBHARMONICS:
Continuous knob, 0% to 100%. Synthesis Master Level. Sets the master output level for the synthesis sidechain. The sidechain is a multi-band synthesis, so each band can be configured individually without affecting the other two.

24HZ - 36HZ:
Continuous knob, 0% to 100%. Amount of the synthesized signal in the 24 Hz - 36 Hz band frequency range. The processor searches for the dominant frequency in the range of approx. 52Hz - 72Hz and synthesizes a suboctave from it. The knob sets the output level for this band.

36HZ - 56HZ:
Continuous knob, 0% to 100%. Amount of the synthesized signal in the 36 Hz - 56 Hz band frequency range. The processor searches for the dominant frequency in the range of approx. 72Hz - 112Hz and synthesizes a suboctave from it. The knob sets the output level for this band.

56HZ - 80HZ:
Continuous knob, 0% to 100%. Amount of the synthesized signal in the 56 Hz - 80 Hz band frequency range. The processor searches for the dominant frequency in the range of approx. 112Hz - 160Hz and synthesizes a suboctave from it. The knob sets the output level for this band.

SOLO LISTEN BUTTONS 1, 2, AND 3:
Discrete button, two steps. Each band's Solo button mutes the output of the other two bands. Engaging one of them will disengage any other Solo Listen buttons that may be engaged. Clicking the button again disengages it.

LEVEL TRIM SCREWS 1, 2, AND 3:
Continuous knob, 0db to +20.0dB. Each band's Level Trim screw boosts the input signal in the synthesis sidechain only for the corresponding band. This can help to generate subharmonics if the original signal in this band is rather low compared to the other bands (See "Signal Input Indicators 1, 2, and 3:" on page 9.)

> **NOTE:**
> The Solo Listen buttons, the Level Trim screws, and the third band (56Hz-80Hz) are not available in the hardware.

EDGE PARAMETERS:

This section will help you to compress or even slightly overdrive the signal. The goal is to make the Subharmonics section act more reliably, with as few low end artefacts as possible, and a very effective way is to alter or reduce the dynamics and bandwidth of the signal. The Edge section will help you to accomplish this goal.

This section is capable of manipulating the signal to make it tighter (reducing the level of reverb or room info between peaks), less dynamic (taming transients, for example), or even distorted, depending on your source signal and settings. Please be creative here and experiment; there are no rules when you're this close to the Edge. ;-)

MODE:
Here you can select between two different ways of Edge processing, Smooth or Harsh. Please check our product web page for some audio examples of both Edge modes.

- **Smooth:** This mode uses a pretty gentle form or distortion or "drive" to even out the low end of the signal, so the Subharmonics section works as predictably and evenly as possible. In aggressive settings this can introduce a very basic saturation sound as well, but its purpose is to tame the Subharmonics, not act as a full blown distortion unit.   We recommend using bx_saturator in addition to bx_subsynth to get the most spectacular and effective distortion and saturation sounds.

- **Harsh:** This mode is using a more aggressive method to even out the dynamics of the signal, in order to get predictable and even results when adding Subharmonics in the respective section. In Harsh mode the plugin will mainly clip the peaks of a signals, which can result in quite nasty peaks on bass drums, snare drums and other percussive or explosive signals. It may sound too aggressive for some applications, but it can give you some pretty dramatic sounds with other source signals.

SQUEEZE:
Continuous knob, 0% - 100%. With this knob you can determine how much you want to alter the dynamics and peaks of the signal. Higher settings will tame transients more, but in a way it actually sounds "wilder" the more you crank up the Squeeze knob.

DRIVE:
Continuous knob, 0% - 100%. Here you can set how much drive or distortion will be applied by the Edge process. Higher settings will create more drastic sounds.

LOW CUT / HIGH CUT:
Continuous knobs, 20Hz - 200Hz and 2kHz - 20kHz, respectively. These parameters can be used to set the frequency range on which the Edge effect will be applied. It activates a crossover filter at the selected frequency. Only signals above the Low Cut setting or below the High Cut setting will be affected. If both parameters are enabled, the Edge effect will be applied to the bandpassed signal. If both are disabled, the effect will be applied to the full range signal.

The Low Cut and High Cut become disabled when turned all the way down or all the way up, respectively.

> **NOTE:**
> The Edge section is not available in the hardware.

FILTER PARAMETERS:

TIGHT PUNCH:

Continuous knob, Off/20 Hz to 60 Hz. A sixth-order resonant butterworth highpass filter at the input to attenuate lower frequencies and emphasize punch at the cutoff frequency. This can be used with or without the subharmonics summed in, and is particularly great when shaping drums or other percussive elements. Switches off at most counter-clockwise position.

LOW END:

Continuous knob, -10.0 to +10.0. Controls total bass output (after summing in the subharmonics). This parameter has no unit. Setting it to a positive value has the same behavior as the original LF Boost knob on the hardware. It boosts the signal at around ~55 Hz. Setting it to a negative value is a plugin-specific feature and adds a cut filter feature. The low end can be used with or without the subharmonics summed in.

NOTE:
The High Cut and Tight Punch are not available in the hardware.

METER LIST:

INPUT METER (STEREO):
RMS type. Ranges -40 dBFS to 0 dBFS. Signal metering of the unprocessed input signal.

OUTPUT METER (STEREO):
RMS type. Ranges -40 dBFS to 0 dBFS. Signal metering of the processed output signal (this includes the dry and wet signals, if the Mix knob is not at 100% wet).

SIGNAL INPUT INDICATORS 1, 2, AND 3:
Modeled Waveform Synthesis requires some signal presence in order to create a physical below the fundamental of the source. The light blue-colored LED indicates signal presence in these ranges for each subharmonic band, informing your decision on which frequencies are optimized for synthesis for any given source (See "Level trim screws 1, 2, and 3:" on page 6).
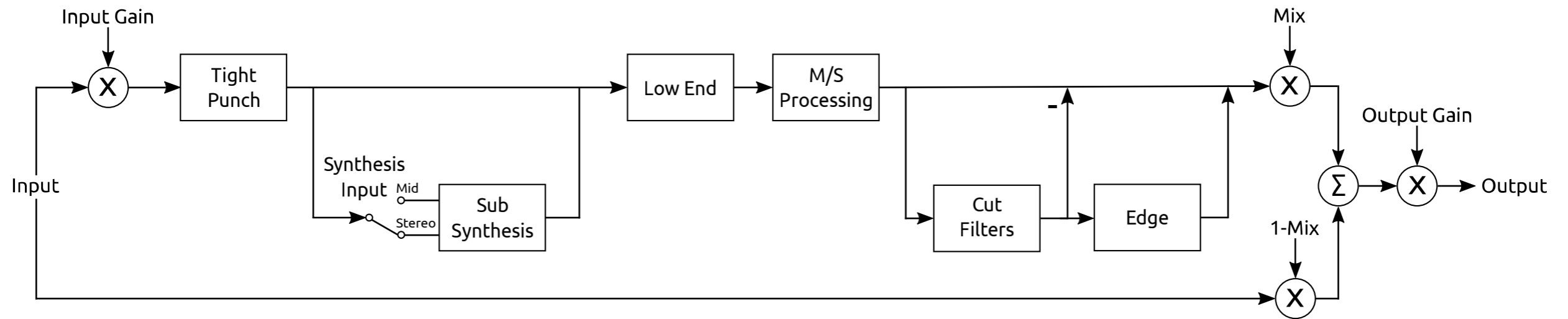
SYNTHESIS METERS 1, 2, AND 3:
Linear, ranges -∞ dBFS to 0 dBFS. Shows level of synthesized sound that is generated in the corresponding band. A given band's meter will be deactivated if another band is set to solo.

NOTES:
- The Signal Input Indicators are not available in the hardware.
- In a mono instance of the plugin, only the L Input meter will be active.

SIGNAL FLOWCHART:

Plugin Settings Toolbar

Bypass: Bypasses processing done by the bx_subsynth

Undo/Redo (arrows): Up to 32 steps of parameter history

Settings A / B / C / D: Select banks of parameter settings; use the A/B/C/D settings to copy a complex channel setting and alter it slightly for different parts of your song, for example. These settings can be automated by your DAW system, so you can jump from setting A in the verse to setting B in the chorus, for example.

Copy / Paste / Reset: Copy and Paste between setting banks, reset parameters of selected bank

Plugin Alliance Toolbar

"Key" Icon: Opens the plugin Activation Dialog

"?" Icon: Opens a dialog through which one can access the plugin's help documentation, online product page, or any available updates

"$" Icon (when applicable): If you've purchased your plugin using the Plugin Alliance Installment Payments option, the "$" icon links to your account so you can make a payment on your Financed License

Mouse / Keyboard Control

Alt or Command (Mac) / CTRL (Windows) + Mouse Click: Reset any knob to its initial value (host dependent)

Command (Mac), Shift, or CTRL (PC) + Scroll Wheel: Allows for fine tuning of any knob (host dependent)

Scroll Wheel Control: Place your mouse above any knob and turn the mouse wheel to increase/decrease values

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