

# BIAS Amp (iOS) Manual

## What is BIAS Amp?



### **BIAS Amp is all about guitar tone.**

Instead of providing a fixed number of amp models, BIAS Amp represents an entire new concept: you can virtually design your own amps, match any tube amplifiers, and share or download thousands of amp models from ToneCloud. It's designed for studio recording or home recording setup, and you can sync with BIAS Amp desktop (Mac/PC).



With BIAS Amp, you can easily build the amp of your dreams. It gives you the ability to customize your amp component by component. From preamp, tone stack, transformer, cabinet, all the way to the outer design of the amp – your options are limitless. To add to an already impressive list of features, Amp Match (desktop only) enables you to accurately match your own custom amp to the sound of any amplifier and cabinet that you wish.

## Getting Started

### Welcome to BIAS Amp! A whole new level of tone!

To get started, connect your iOS audio interface to your iPad/iPhone and plug in your guitar and line output to your headphone or PA system. Launch the BIAS Amp app, pick an amp model from the global presets area, and you are ready to go!



The amp control panel will display once you select an amp model, after which you can adjust the amp's basic controls. If you would like to dive deeper, tap on the gear icon to go into edit mode and the amp's internal signal path, where you can be creative and customize your amp.



## Saving Presets



After you edit an amp, save it as a custom preset by tapping the save icon in the upper bar. This opens a menu with two choices. Tap '**Overwrite**' to overwrite the current preset. Tap '**Save as new**' to save your new preset in the custom amp category.

You can also use the **Quick Snap** feature at the bottom panel to instantly save your current settings to one of 8 memory slots. **Quick Snap** is helpful for doing A/B comparisons during your sound development.

## Global Parameters



The global parameters on the bottom panel include those for the noise gate and room control processors. Any changes to parameter values here affect BIAS Amp overall.

You can control the overall input and output volumes using their respective sliders in the control bar. Adjust the input volume slider to optimize the input level for your particular guitar pickup. To get the best signal-to-noise ratio, drag the input slider so that when you play your guitar the very loudest, the LEDs in the input level meter hit 0 dB. The lock switch for the input-volume slider prevents you from changing the input volume accidentally.

BIAS Amp provides a **Noise Gate** and **Room Control** for a better listening environment, making it easier to get your sound right.

### **Noise Gate**

The Noise Gate reduces noise from an input such as a microphone or electric instrument. It is particularly useful for reducing hum or other background electrical noise.

**THRESHOLD** - Turn the threshold knob until the noise stops or decreases to an acceptable level.

**DECAY** - Decay sets the rate at which the Noise Gate will attenuate the signal once it drops below the threshold. Higher values will make the signal fade faster once it drops below the threshold.

### **Room Control**

Room control simulates a nice room, small to large in size. This gives a better listening experience and simulates a real world-like environment, so you can develop your sound easier.

**SIZE** - Size controls the virtual size of a room simulation. Increase the Size value to add increased room ambience to the sound.

**DAMPING** - Damping controls the decay rate of the room reflections.

**COLOR** - Color adjusts the amount of high-frequency absorption, for a darker or brighter reverb tail.

**MIX** - Mix sets the ratio of wet (room) and dry (guitar) sound.

## Global Settings



**Global settings** affect BIAS Amp's overall configuration.

### Input Channels

Choose whether BIAS Amp receives input from the **left channel**, **right channel** or **stereo input**.

### Knob Gesture

BIAS Amp provides three knob gestures:

**Linear (Vertical)** - The knob will respond when you drag up or down.

**Rotary** - The knob will respond when you drag in a rotating manner.

**Auto Detect** - The knob will automatically switch to Linear or Rotary mode by detecting your most recent gesture.

## Run in Background

Enabling the **Run in Background** option allows BIAS Amp (iOS) to continue processing audio when the app is in the background. Disable this option to stop processing when BIAS Amp enters the background.

## Setting Up

### Headphone

First, connect your guitar interface to your iPad/iPhone. If you're connecting your interface to the iPad/iPhone's headphone jack, connect your guitar cable and headphones to the interface prior to activating BIAS Amp. Make sure your volume is not set too high at first. If you are using an interface for 30-pin dock or Apple's Lightning connector, plug it in and connect your guitar. Plug your headphones into the headphone output of your iPad/iPhone. Launch BIAS Amp, and you are ready to go.

### Recording

You can record your sound in a number of ways. On your iOS device, you can load BIAS Amp's amp model into JamUp, and then record and overdub your riffs using JamUp's Sampler. You can also record using any other app that is compatible with Inter-App Audio or Audiobus. For those of you who would like to record BIAS Amp's sounds straight to your computer's DAW, simply connect a 1/8" cable to the output of your iOS device or a connected external interface and plug the other end of the cable into your computer interface (a 1/4" adapter may be needed for this).

### Live

For playing live, connect the audio output of your iOS device or external interface to:

A) An amplifier

or

B) The PA system or mixing board.

You can open BIAS Amp's amp models in **JamUp** and use JamUp's **Live View**, preset and MIDI capabilities for flexible live use. There are a number of pedals available on the market that are compatible with JamUp, and of course it's fully compatible with our own **BT-2** and **BT-4** Bluetooth pedals!

### Useful Tips

Be sure to put your iOS device in airplane mode to prevent incoming messages from interrupting your playing... or blasting an email notification to your audience! It is usually a good



practice to keep your iOS device's volume set to about 8/10 of it's full range, while keeping the app's volume slider set to just over halfway.

If you're playing through an amplifier, connect your iOS device to the amp's Effect Return or Power Amp input, or try starting out with your amp on a clean channel and have your EQ set to 12 o'clock. This will give you a good starting point from which you can adjust your overall tone in BIAS Amp.

## Basic Operations

BIAS Amp organizes its global amp presets into several categories. The factory categories include **Clean**, **Glassy**, **Blues**, **Crunch**, **Hi Gain**, **Metal**, **Insane**, **Acoustic**, and **Bass**. Each of them contains four amp models that belong to the style of music they are most typically used for. The **Custom** category contains user-created amp models downloaded from ToneCloud or from your own creation.

Tap on any of the categories, and the display will list all the amp models in that category. Then scroll sideways and tap to select the amp model you want. Once the amp model is selected, the control panel area will automatically update to match the selected model.

### Custom User Presets



All presets can be edited and saved at any time (including the factory presets). Tap the **save icon** in the upper bar and then tap **Overwrite** to overwrite the current preset and save your

edited amp. Tap “**Save as new**” and you can choose to save your edited preset in the **Custom** category.

## Editing Sound



Each amp preset is a complete amp model with **preamp**, **tone stack**, **power amp**, **power supply**, **transformer**, **EQ**, **cab** and **mic**, developed in detail and fine-tuned by artists and sound engineers.

## Module Local Presets



Before editing a preamp, tone stack, power amp, transformer or EQ, you might want to quickly load a preset for that module as a starting point for your edits. You can find the '**Preset**' button on the left side of each module. Just tap it to load or save a module preset.



## Exporting to JamUp



BIAS and JamUp were developed together and seamlessly integrated. Each amp model can be imported into (opened in) JamUp. To do so, tap and hold down the **gear icon** to bring up the integration menu and select JamUp. Once imported, the amp model will be saved as one of the amp models listed inside JamUp, so you won't need to reopen BIAS Amp to run that same amp model with JamUp again, allowing you to freely use all JamUp features such as **8-Track Recorder**, **Phrase Sampler**, **Jam Player**, **Preset**, **Live View**, and so on with BIAS Amp.

## Control Panel



### Gain

Gain sets the overall amount of input level to the preamp. It's the master gain and distortion control for the preamp section. See the **Preamp** section for more information.

### Presence

Presence boosts or cuts the upper frequencies in the power amp module. See the Power Amp section for more information.

### Master

Master determines the input level, the overall distortion and dynamic characteristics of the power amp module. See the **Power Amp** section for more information.

### Bass, Middle, Treble

The tone stack controls replicate exactly the gain and frequency response of the selected tone stack topology, including classic passive tone stack and analog parametric tone stack. They match the knob settings exactly to the original amp tone stack topology.

Depending on the tone stack circuit topology, some of the original tone stacks do not have all of the tone controls, while some have more tone controls. For the sake of consistency, we always show three-knob tone controls. You can go into the tone stack module in BIAS mpmode to fine-tune the original tone stack parameters.

## Custom Control Panel



BIAS Amp provides an interesting and easy-to-use custom panels feature: Create your own signature amp by changing the name, tolex, grill cloth, panel and knobs. You can even upload your own pic to use as the background graphic for the amp. To access the customization menu, click the edit icon on the right side of the amp panel.

## Preamp



### 3-Band Pre Filters

These are custom-designed filters positioned before the distortion tube stages. They can boost or cut the bass, mid and high frequencies before the guitar signal goes into the tube-simulation stages.

For a clean and glassy tone, you can slightly cut the LOW SHELF control and boost the HIGH SHELF control. For a metal tone, cut the LOW SHELF control quite a lot to prevent too much bass signal from going into overdrive (which might cause too much saturation or a boomy bass response), and cut the HIGH SHELF control to prevent distortion from sounding too fuzzy.

### Tube Type

Ah, tubes. We love 'em, don't we? A quick and easy tube change can make a more interesting and dramatic tonal change—achievable from a single component swap within our amplifiers—than any other besides perhaps a speaker change. It plays the most important role in shaping the distortion characteristics, it influences the interaction between the tube and the circuit built around it, and it generates so many interesting dynamic circuit interactions that are pleasing to our ears.

Based on our MESH MODELING technology, we carefully considered the many aspects of the vacuum tube, including its transconductance curve, bias circuit topology, input and output impedance, internal effect, and much more. You can experiment with using a different combination of tube types to create your ultimate, warm distortion.

### Bright/Normal Switch

Many amps contain a simple bright cap circuit with a switch that kicks up the upper frequencies. The effect may be subtle or pronounced depending on the overall amp design.



## Gain Knob

The gain sets the amount of preamp input gain and thus controls the overall preamp distortion. You can use the gain knob with the master knob (see below) to tweak the sound to be clean, slightly broken up, moderately overdriven, or completely distorted.

We also implemented the widely used gain-knob shelving circuit, which gradually increases the bass response when the gain is turned up.

## Distortion

The **Distortion Knob** is an extra control that adjusts the amount of distortion in the selected tube stages. It provides greater resolution to fine-tune the distortion—the break-up point—to match various amp designs.

## Tube Stage

Some modern high-gain amps are designed specifically to create extreme yet controllable preamp tube distortion by cascading multiple gain stages, with gain and master volume controls between each stage to control their individual drive levels. Used in this way, preamp tubes can produce a scorching, harmonically saturated lead tone that sustains all day—what we usually hear as a classic shred or contemporary rock tone—in an amp that relies on its output tubes to amplify the sound rather than add further distortion to it. When driven into distortion in a simpler, more basic amp with fewer gain stages (a category that might nevertheless include some very high-end, “boutique” tube amps), preamp tube distortion becomes just a part of the amp’s overall distortion character and is blended with clipping at the phase inverter and output stages (and often at the speaker, too).

The number of tube stages provides a straightforward yet effective way to instantly manage the overall gain amount. The more tube stages, the more cascading gain stages and the more gain.

## High Cut Frequency (Miller Effect)

In electronics, the **Miller effect** accounts for the increase in the equivalent input capacitance of an inverting voltage amplifier due to amplification of the effect of capacitance between the input and output terminals.

As most amplifiers are inverting, the effective capacitance at their inputs is increased due to the Miller effect. This can reduce the bandwidth of the amplifier, restricting its range of operation to lower frequencies. The tiny junction and stray capacitances between the base and collector terminals of a Darlington transistor, for example, may be drastically increased by the Miller effect due to its high gain, lowering the high-frequency response of the device.

The High Cut Freq knob captures the essential Miller effect and uses one simple knob to adjust the amp’s bandwidth. The higher the High Cut Freq knob setting, the less extended the high-frequency response will be in the preamp’s tube stages.

## Low Cut Freq (Cathode Cap)

The cathode capacitance adjusts the bandwidth of lower frequencies. The higher you set the Low Cut Freq knob, the less extended the bass response will be in the preamp’s tube stages.

## BIAS Adjust

In order for a vacuum tube to operate in a safe and fairly linear region of its characteristic curve for low signal, the grid element must be maintained at a certain bias voltage. In the real world, properly setting up the bias voltage will prolong the tube's life cycle, and changing the bias point can adjust the characteristics of the tube distortion.

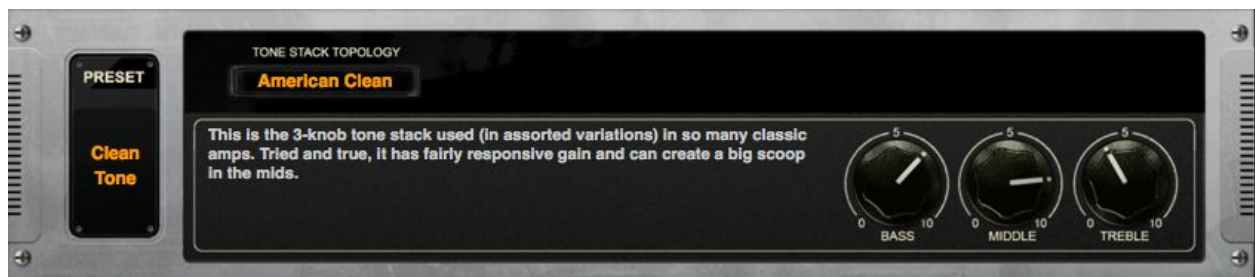
BIAS Amp provides the most accurate simulation of the actual bias circuit. It faithfully adjusts the operation point as in the real world's tube stage, but in BIAS you can experiment with extreme settings without worrying about damaging the tube. Lowering the BIAS Adjust control will provide a cleaner tone, while higher settings will provide a warmer tone.

## 3-Band Post Filters

These are custom-designed filters positioned after the distortion tube stages. They can boost or cut the bass, mid and high frequencies after the tube-simulation stages.

For a cleaner tone, you can slightly cut the Low Shelf control and boost the High Shelf control to create a glassy tone. For metal tones, boost the Low Shelf control to increase rich bass response, and cut the High Shelf control to prevent the distortion from sounding fuzzy.

## Tone Stack



The tone stack is a specialized type of audio filter incorporated into the circuit of an amplifier for altering the frequency response of the amplifier. Tone stacks are typically placed between the preamp and power amplifier. They are the most important tonal circuit in most amplifiers.

## Tone Stack Topology

Each tone stack was designed differently to shape the tone of its amplifier in order to fulfill different sonic applications. Thus, every tone stack plays an important role by shaping the sound for which that tone stack was originally designed. Pick a tone stack topology that's matched to your currently selected amp or get creative and experiment using different, unrelated tone stacks to create your own tone.

Here is the description for each tone stack:

### **American Clean**

This is the 3-knob tone stack used (in assorted variations) in so many classic amps. Tried and true, it has fairly responsive gain and can create a big scoop in the mids.

### **American Tweed**

Designed for the '50s-era Tweed guitar amps, these tone controls are highly interactive and not very linear—in a musical way! They work extremely well together, allowing you to precisely dial in your sound. Best used for country, blues and rock.

### **Tweed Bass**

Initially intended to amplify bass guitars, the '50s-era tube amp to which this tonestack was originally matched was also used by musicians playing electric guitar, harmonica, harp and pedal steel guitar—and the sound of this classic tone stack was part of the reason why!

### **British Top Boost**

This classic British tone stack was designed for the seminal “Top Boost” amps in 1959 and was universally adopted in the British invasion by the The Beatles, The Rolling Stones, The Kinks and The Yardbirds. Later, Brian May and The Edge used it to craft their signature sounds. Never strident and always warm-sounding, this is the perfect tone stack for guitarists in '60s cover bands and anyone wanting a beautifully dark, analog sound.

### **British Crunch**

Harking back to the amp stacks used by 1980s-era hard rock and heavy metal bands, these tone stacks pull the midrange band forward with respect to lows and highs, putting a brilliant spotlight on your playing. Used by Anthrax, Judas Priest, Iron Maiden, AC/DC, Bad Company and practically every other hard-driving group of the decade, this is the tone stack of choice for soaring leads and blazing power chords.

### **British Modern**

This modern tone stack has a thoroughly British flavor. Three bands of warm and silky tone. Never glassy-sounding, it's the perfect tone stack for clean and crunchy patches. A Classic Rock favorite!

### **German Fireball**

Precision German engineering meets raucous heavy metal in this tone stack designed for high-performance guitar amps. Think aggressive tone.

### **American Treadplate**

Distinctly American, this custom 3-knob tone stack is tailor-made for rock and metal. Dial in your tone settings and crank your amp's gain to play massively heavy chords!

### **American 5153**

These tone stacks are the perfect match when you're dishing out insane preamp distortion for harmonically rich leads and overdriven rock chords. Their matching amps are identical to those Eddie Van Halen uses both when recording and on tour.

### **Bass GK**

A solid-state classic from the early '80s, this West Coast tone stack produces a dry growl that sounds fantastic on bass guitar.

### **Bass American**

Passive filters are sought after for their round, pure, musical tone. The lack of amplification in their circuits prevents phasiness from polluting their pristine sound. True to its passive origin, this vintage American tone stack delivers the full, warm sound of a classic late-'60s/early-'70s "blackface" rig.

### **Bass British**

This classic 3-band beauty produces the round, musical tone of passive filters. Voiced specifically for bass, its design was a big step forward from previous passive tone stacks, which were typically copied from standard guitar-amp designs and not particularly suited for bass.

### **Bass Blueline**

Widely praised for its fat, clear and punchy sound, this vintage tone stack from 1969 is a leading choice for rock bass players.

### **Acoustic Equalizer**

Three bands of filters that won't impose a strong personality on your sound. The perfect filter set for sculpting clean, natural, woody tones.

### **Studio Equalizer**

Studio-grade filters offering precision control over three bands. When you need to dial in the exact frequency for each band, this is your ticket! Each filter is designed to emulate the response of a classic analog filter. The result is both surgical precision and ultra-smooth sound, useful in applications from mixing to mastering.

### **Tone Stack Controls**

The tone stack control knobs will appear differently depending on the tone stack topology you select.



## Power Amp



### Topology

The power amp topology plays an important role in shaping the dynamic characteristics of the power amp's tone. It defines at what point the power amp will start to break up, and how it will break up. It might sound subtle, depending on different parameter settings, but you will certainly find the sonic differences to be just like those for the real power amps' responses.

### Single Ended

Models the Class A single-ended amplifier. A single-ended-triode vacuum tube amplifier uses a single triode to produce an output, in contrast to a push-pull amplifier which uses a pair of devices with antiphase inputs to generate an output. When going into distortion, it generates a uniquely abrupt distortion.

### Split-Load

Models the Class A/B push-pull amplifier with a split-load (also known as "concertina") phase splitter. Its special topology creates the most smooth and rich power amp distortion.

### Push-Pull

Models the Class A/B push pull amplifier with a long-tail pair phase splitter. The long-tail pair phase inverter is generally the best choice for a push-pull guitar amplifier. It provides balanced and warm power amp gain structure and very workable headroom.

## **Solid State**

Models solid-state power amplifiers, which use transistors (such as BJTs, FETs and MOSFETs). It creates the cleanest tone possible, with much less distortion than other types of amps. Your ticket for pure and clean tone.

## **MASTER KNOB**

The **MASTER KNOB** was originally designed to simply control the input signal driving the power amplifier. But since the power amplifier is a highly dynamic beast, it's no surprise there is much more to it than just loudness control.

The **MASTER KNOB** provides one way to control how much power amp distortion you would like for your amp, as it defines the breakup of the power amp distortion. By working with the preamp GAIN KNOB, you can manage the balance of preamp distortion and power amp distortion.

When the power amp section gets heavily saturated, the EQ controls, tone stack controls and presence control will have less influence on the tone and the sound will have a more “boomy” effect.

## **DISTORTION**

The **DISTORTION KNOB** is an extra control for adjusting the amount of distortion in the power amp tube stages. It provides greater resolution to allow fine-tuning the distortion—the break-up point—to match that in various amp designs.

## **SPLITTER GAIN**

The **SPLITTER GAIN** knob adjusts the distortion in the phase-splitter tube stage. Use this knob to fine-tune the distortion characteristics just for the phase splitter.

## **POWER GAIN**

The **POWER GAIN** knob adjusts the distortion in the output tube stage. Use this knob to fine-tune the distortion characteristics just for the output tube stages.

## **BIAS ADJUST**

This control sets the bias operation point of the power amp. Lower values will create less power amp harmonics, while higher values will create more dynamic harmonics.

## **PRESENCE, MODERN/VINTAGE SWITCH**

The **PRESENCE** knob boosts or cuts upper frequencies in the power amp stage by altering the negative feedback's frequency response.

**MODERN** mode creates a sound that cuts more through effects, especially with higher-gain amp types. **VINTAGE** mode delivers a more classic and balanced upper range.

## RESONATE, PUSH/NORMAL

Guitar speakers have an interesting impedance curve shape, which typically has a peak at about 100 Hz and rises gradually above 1 kHz. The speakers interact with the power amplifier through the transformer. The **RESONATE** knob controls the resulting effect in the lower and upper frequencies. The effect is different depending on the selected power amp tube types and transformer type.

The **PUSH** switch mode delivers an effect that helps the guitar tone cut through a mix, whereas **NORMAL** mode replicates a more balanced interaction between power amp and speakers.

## Transformer



This module has two sections: **Power Supply** (controls on the left side of the module) and **Transformer** (Transformer Type selector on the right side of the module).

### Power Supply

This section of the Transformer module models the power supply sag effect. Voltage or power supply sag is a major contributor to an amp's organic sound. The heart of the amp, the power supply is the foundation where the amp's soul is born.

### Rectifier Type (Solid State vs. Tube)

A tube rectifier has internal resistance. The more current that travels through a tube rectifier, the more the voltage drops. When the voltage drops, the power of the amplifier also drops. This results in an amp with less headroom, but one that provides flattering compression.

A solid-state rectifier has no internal resistance whatsoever. It has a very consistent, fixed voltage drop that occurs both at zero and full current. When an amplifier needs power at low

frequencies, there will be no limit to the current that travels through the rectifier. This results in an amp with more headroom for a punchier, more in-your-face sound.

### **Rectifier Tube Type**

Different types of rectifier tubes provide different levels of AC-to-DC conversion. The most common small-amp rectifier tube is the 5Y3, used in older amps. This tube works fine in small combos that put out 15 watts or less, but when pushed hard it can start to sag noticeably—great for certain sounds!

At the other end of the scale, the GZ34 (equivalent to the 5AR4 in the USA) has long been considered the king of the rectifier tubes. This powerful, sturdy rectifier tube makes more DC out of the AC it's fed—and does so very elegantly and with great efficiency—while inducing many of the most-loved characteristics of tube rectification in the amplifier's performance.

### **Input Knob**

This knob adjusts the input gain within a +/- 12dB range. The INPUT knob together with the COMPRESSION knob controls when the amplifier will start to sag. Lower settings produce less compression, higher settings more.

### **Ratio**

Sets the amount of compression: the higher the setting, the greater the compression effect.

### **Attack**

Sets how quickly the power supply sag will kick in in response to the guitar signal.

### **Release**

Sets how quickly the power supply sag will return to its normal condition.

### **Compression**

This knob sets the threshold at which the power supply sag will kick in. The higher the knob setting, the greater the compression effect that will be produced.

### **Reduction Meter**

This virtual analog meter displays the current amount of compression (in dB).

### **Output**

This knob adjusts the output level within a +/- 12dB range. It provides a way to compensate for loudness increased or reduced by the power supply sag effect.

### **Transformer**

This section of the Transformer module models the response of different types of transformers. The transformer's function is to convert the high-voltage, low-current signal from the amplifier's power tubes into a low-voltage, high-current signal to power the speakers at a low impedance.

The transformer is responsible for how efficiently the audio power of an amp will transfer to the load of the speakers, and it prevents hundreds of volts (DC) from passing to the speakers. An output transformer does not change an amp's character. A different transformer will not change an amp's DNA or make a British amp sound like an American one. It takes what the amp already is, and then enhances it.

### **American Style**

This transformer produces the leanest bottom end and spotlights the upper midrange, helping your guitar cut through a dense mix with excellent presence.

### **British Style**

Producing a slightly fuller low-midrange band and enhanced highs compared to the American Style transformer, this British classic offers the perfect balance of presence and warmth.

### **Fat Style**

This custom-designed transformer has a boatload of iron in its mammoth core. It extends both the bass- and high-frequency responses and broadens the midrange band, producing terrific saturation and a full, in-your-face sound.

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## Cab/Mic



The Cab module simulates the tonal response of a guitar-amp speaker and cabinet and the microphone choice and placement on the cab. BIAS Amp's cab simulations emulate vintage, modern, bass and acoustic types of cabs.

### Cabinet Model

Select the cabinet model you want from the drop-down menu.

### Mic Model

Select the microphone model you want from the drop-down menu.

### Mic X-Y Position

X-Y position simulates the mic's position relative to the speaker. You can drag the mic left, right, up or down with respect to the speaker. The closer you move the mic to the center of the speaker, the brighter and more present it will sound. As you move the mic toward the speaker's outside edge, it will sound darker and bassier.

### Mic X-Z Position - Proximity

The X-Z position simulates the distance of the mic (depicted as a yellow circle) from the speaker. Close-miking produces the classic proximity effect, in which bass-frequency response increases as the mic moves closer.

### Level

This slider controls the output level of the Cab module. Use this control to adjust the amp's overall level.

## EQ



BIAS Amp comes with two 8-band equalizers (one in each module), which you can drag and drop to any location in the signal path. Being able to re-order the equalizers with respect to the other modules provides significantly greater flexibility in custom-designing your tone.

The **Preamp**, **Power Amp** and **Transformer** modules each provide nonlinear processing; i.e., they create harmonics that are not present in the original input signal. An EQ module will create a different tonal response depending on whether it is placed pre (before) or post (after) one of these nonlinear modules. Each EQ contains 2 shelving filters (Band 1 is low shelf and Band 8 is high shelf) and 6 peaking filters. You can alternately enable and disable each of them by clicking on their respective numbered button to the right of the frequency-response graph.

### Frequency and Gain

Simply drag the EQ point left or right to change the center frequency of the peaking filter; this will change the 6dB-down cutoff frequency on shelving filters. Drag the EQ point up to increase the gain of the filter, and down to decrease the gain.

### Q

For BIAS Amp desktop (Mac/PC), single click an EQ point and click and drag the brackets to change the Q from 0.1 to 18.0. This will change the bandwidth of the filter.

For the iOS version, tap on an EQ point and use two fingers to pinch an EQ point to expand or narrow the bandwidth.

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