# PRS SuperModels

User Guide

# PRS SuperModels

Precision Guitar Amps

Contents

# Introduction

Thanks for choosing Waves! In order to get the most out of your PRS SuperModels amplifier plugin, please take a few minutes to read this user guide. We suggest that you visit Waves Support, where you'll find an extensive answer base, system and host requirements, troubleshooting guides, and much more.

To register and activate your new products, check for upgrades, and manage your account, log into your Waves account and click My Account. If you don't have a Waves account, click Create Account.

We hope that PRS SuperModels brings you just the guitar sound and feel you've been waiting for.

# Proper Input Signal

The performance of a guitar amp is affected by the impedance of its input signal. Waves SuperModels is no different. If the impedance is not correct, you may not experience the true sound of the original PRS amps. We recommend that you play through a high-z instrument input (1M ohm or higher) and a buffered output (10k ohm)—any ordinary tuner pedal, for example—between the guitar and your audio interface input.

The first time you instantiate PRS SuperModels, you'll see a window that tells you how to properly set up your amp input. This window will appear only once.

# Product Overview

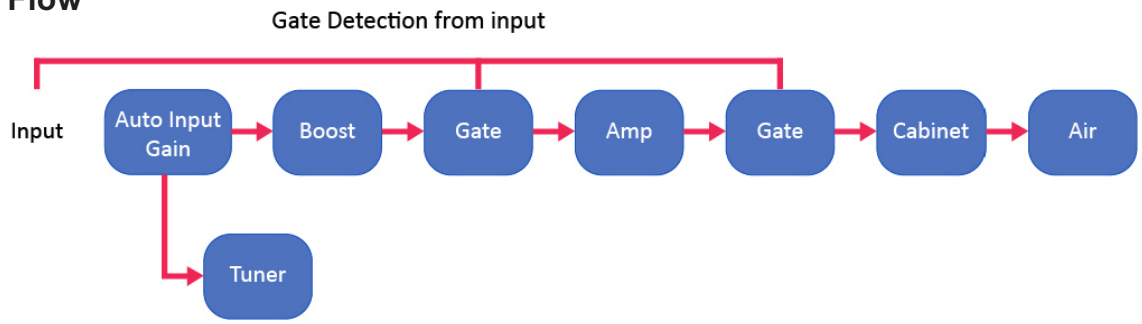
Waves PRS SuperModels is a highly flexible guitar amplifier plugin. It was methodically modeled after three amplifiers made by distinguished guitar and amp maker Paul Reed Smith. Each amp captures the sound and attitude of the hardware original. Controls are the same as on the originals; on some amps we added a knob or switch for greater flexibility.

You can choose the speaker cabinets in which the amplifier output sound is created: Swapping the cabinet can greatly alter the overall sound. The shape, size, and reflections inside the cabinet are captured using impulse responses (IRs), which are very detailed descriptions of a space. Load one cabinet to accurately place the amp into a specific cabinet—or combine cabinets to create a new cabinet sound.

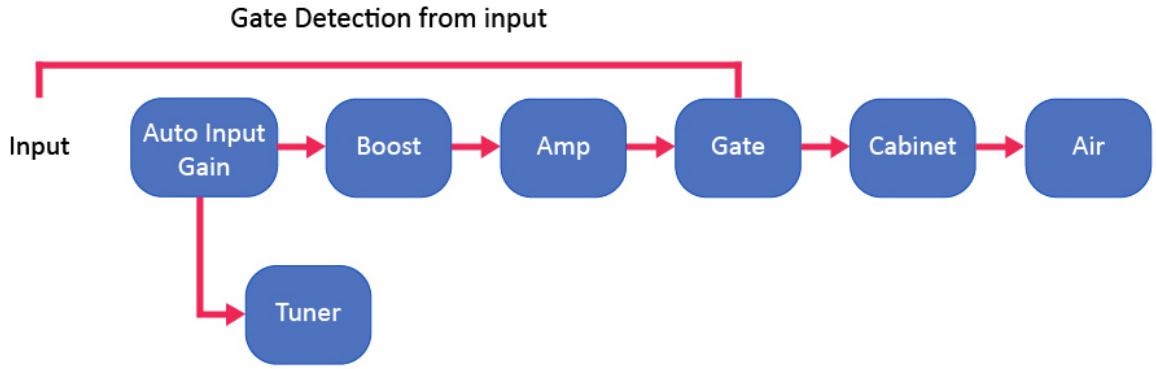
You also have control of tube and power amp transformer behavior. This influences the amp's harmonics and dynamics.

## Signal Flow

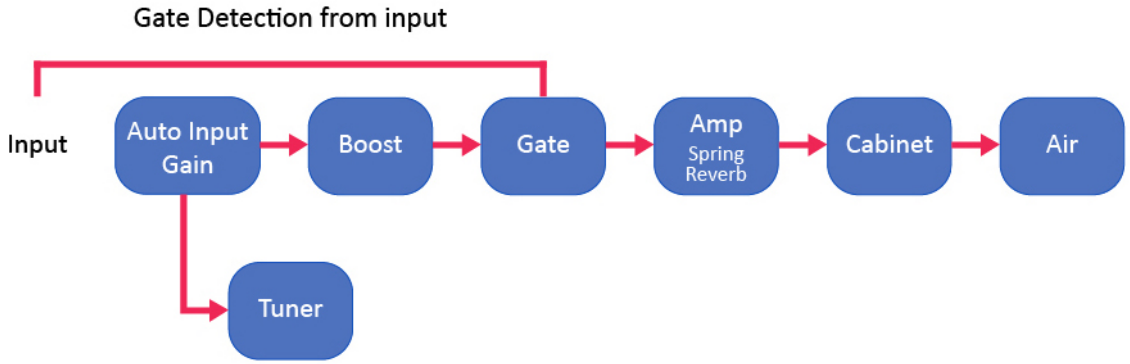
### Archon Signal Flow




### V9 Signal Flow




### Dallas Signal Flow



## Interface

The interface is divided into three modules: Input/Output, Cabinets, and Amplifier. The Input/Output and Amplifier modules vary slightly, depending on the selected amp. The Cabinets module is the same for all amps.


**Amplifier module**

Modeled after the three original PRS tube amplifiers.

**Cabinets module**

Use this module to preview, select, and control cabinet IRs. Cabinets can be mixed together and exported.

**Input and Output module**

Used primarily to select cabinet IRs. It also manages input and output levels and the “air” (space) within the cabinet.

## Components

There are six PRS SuperModels components: two for each amp.

| | |
|---|---|
| mono-to-mono | mono input/mono output |
| mono-to-stereo | mono input with a stereo output |

# Quick Start

Start by inserting PRS amplifier on a mono track. Choose a mono or mono-to-stereo component. Each amplifier loads with its own default preset: a suggestion from Paul Reed Smith about how to get *his* sound from *that* amp. You can use the default preset as is, or as a starting point for building your own sound. You can also choose from the many presets in the Load menu, which affect all plugin parameters.

If you want to set up your amp from scratch, follow these steps.

**WaveSystem Toolbar** (top of plugin)
To completely reset the plugin to its default settings, click on the Load button on the Toolbar. Select “Full Reset.”

**Input/Output module** (bottom panel)

1. Use the Auto Input function to set gain to a level that best suits the amp and the gate. Choose an interval for automatically setting the input level: 2.5, 5, or 10 seconds. Click the On button and then play your guitar as you normally do. Auto Input switches off at the end of the interval. Input level is now set appropriately. If you load a different amplifier, you should recalibrate the input level.
2. Use the Cabinet Loader knobs to select a factory IR for each cabinet. These factory IRs are sorted by cabinet power, from the most aggressive to the least. Each cabinet can be bypassed independently.
3. Adjust the noise gate to reduce noise from pickups, amp gain, and digital processing, as well as noises that result from playing, such as ringing strings.
4. Use the Air control to add “space” within the cabinets. Lower settings yield a tighter cabinet sound, while higher settings create a bigger sense of air and space.

**Amplifier module** (top panel)
The Amplifier modules are just that: amplifiers. If you’re comfortable making an amp do what you want, this will be easy.

5. Adjust Amp Gain and EQ to taste. Boost adds gain to the input of the amplifier. It typically increases midrange and reduces lows, so you can use it to pull a guitar to the front.
6. The Archon amp lets you select between the Lead and Clean channels. These are markedly different sounds.

**Go back to the Input/Output module**

7. Adjust the Output level. This sets the output of the plugin itself.

You can use the **Cabinets** module (middle panel) to fine-tune cabinets and mix them to create new IRs. This panel lets you audition all of your cabinets automatically, whether factory IRs or others. Click the Gear button on the Cabinet Loader to access the Cabinets module.

Play and enjoy! Each amp has its own look and a few different controls, but once you've played through one of them, you'll have no trouble using the others. Modules, controls, and workflows are described throughout this user guide. Use it as a refence as you get to know the plugin.

# Modules

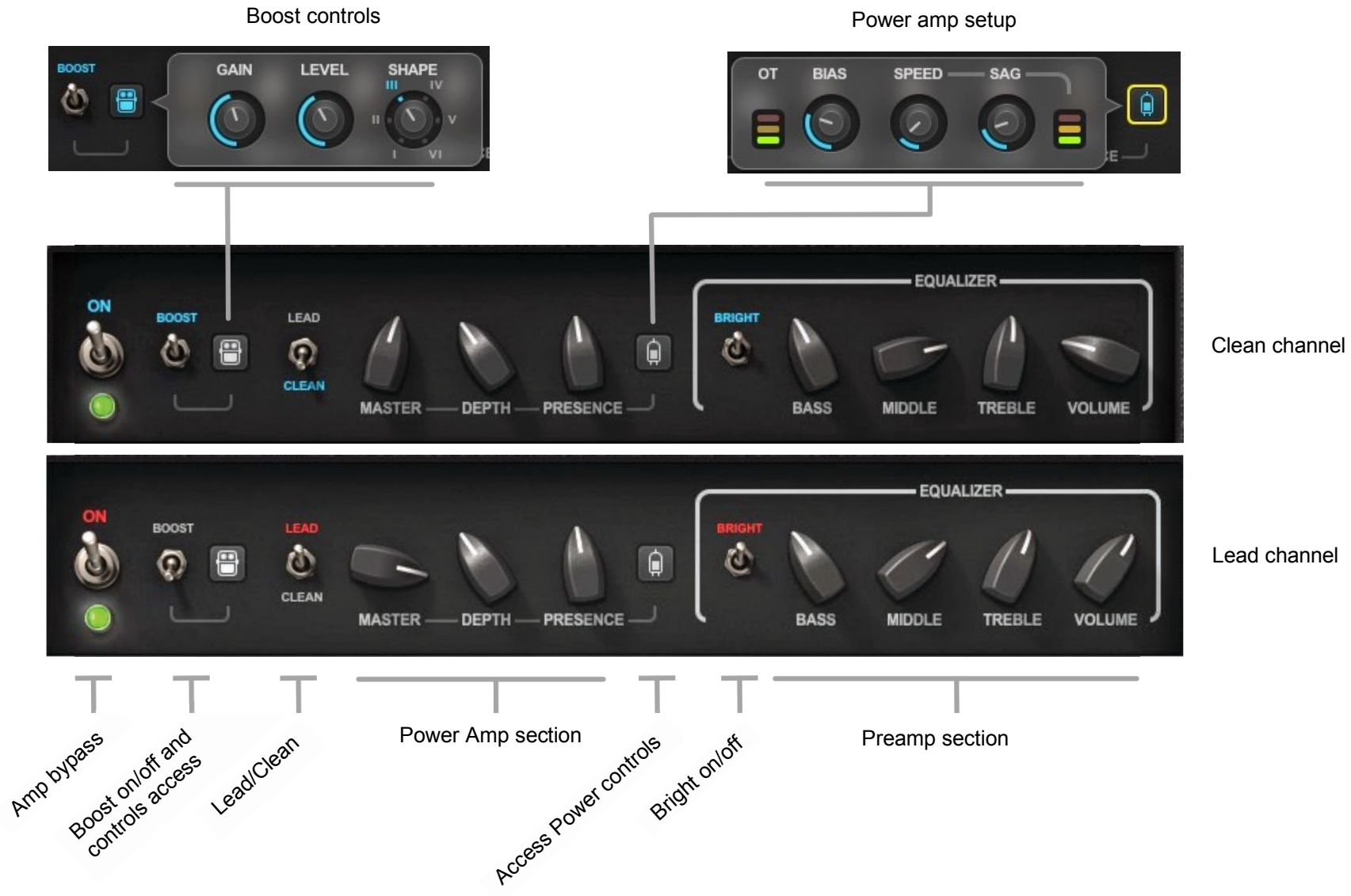
## Amps

PRS SuperModels gives you a choice between three Paul Reed Smith amplifiers:

| | |
|---|---|
| **PRS Archon** | A very aggressive sounding amp that's designed for heavier music, yet with surprisingly pristine, clean sound. It can also deliver a warmer, quieter sound. Two-channel design: Lead and Clean. |
| **PRS Dallas** | An amp whose sound ranges from very clean to a mild overdrive, with a classic sound that's very spacious. Excellent at producing sparkling, clean tones, but you can push it into a classic overdrive. This is a single-channel design. |
| **PRS Blue Sierra V9** | This overdrive amp is warm, fat, and raw, with a sweet-sounding distortion. It has a huge bottom end, and it's focused and controllable. The V9 amp was never released, so you get to play on a PRS prototype. |

## PRS Archon 50

The Archon 50 is very aggressive. It has a huge low end, yet it's focused and controllable. Separate clean and lead channels deliver two very different amp sounds.



| | |
|---|---|
| **On/Off** | Bypasses the amp. When switched off, only the Input/Output and Cabinet modules are heard. A green lamp indicates that the unit is on. Bypass the Amp module when you use a third-party amp. |
| **Boost** | Increases gain in the input of the amp. It typically increases midrange frequencies and reduces lows, so it can be used to focus a guitar. |

Click the pedal icon to access button to access the Boost control panel.

| | |
|---|---|
| **Gain** | The amount of overdrive added to the sound |
| **Level** | The output level of the boost module that's pushing the front end of the amp |
| **Shape** | A six-way rotary switch for tone shaping. Settings range from boosting low frequencies and reducing highs (full counterclockwise) to boosting the high frequencies and attenuating the lows (full clockwise). |

Choose between two separate Amp Channels.

| | |
|---|---|
| **Clean** | Provides a clear sound without a lot of drive. |
| **Lead** | Provides a heavy music sound with modern high-gain distortion. |

The EQ (Preamp) section is immediately before the amp in the signal flow.

| | |
|---|---|
| **Bright** | This high shelf sits at the beginning of the EQ section. |
| **Bass** | Clean/Lead channels low frequency control |
| **Middle** | Clean/Lead channels mid frequency control |
| **Treble** | Clean/Lead channels high frequency control |
| **Volume** | Preamp gain |



## Power Amp section

| | |
|---|---|
| **Master** | Master volume control for clean/lead channels<br>The adjacent LED indicates that the amp output volume is too loud. The over-level may be from the master output or elsewhere in the chain (most likely the EQ section), so check to see where it originates. |
| **Depth** | Power amp low-frequency control |
| **Presence** | Power amp high-frequency control |

Depth and Presence are global controls that affect both channels.

## Power Amp Setup Section


The power amp is where the character of an amplifier is ultimately defined. What gives a power amp its personality is how it handles harmonics, which are largely influenced by the vacuum tubes and the power transformer. The power Amp Setup section controls these. This affects the color of the amp as it approaches saturation. In a hardware amp, these controls are rarely changed: you usually need to open the cabinet to get to them. They're easier to access in SuperModels amps, but still think of them as setup controls rather than while-you-play controls.

Click the tube icon to access the Power control panel.

### SAG

When the power transformer being pushed very hard there can be a dip in the power supply voltage. This affects the amp's dynamics, articulation, and color. Two controls influence how tube sagging is replicated:

| | |
|---|---|
| **SAG** | The amount of the tube sag effect added to the signal. Increasing sag can make playing easier, and notes may punch out more. |
| **Speed** | The speed of the sag effect. It can influence the feel of attacks and releases. |
| **SAG Meter** | Indicates the effect of the sag process. As sag increases, the meter level lowers. |

### Tube Bias

In a tube amp, biasing means adjusting the vacuum tube current to an ideal value. This affects the life of the tubes in a hardware amplifier, but it also influences the overtone harmonic structure of tube distortion. This control has a subtle effect on the overall sound, but once you learn what to listen for, you'll hear how it can change the overall feel.

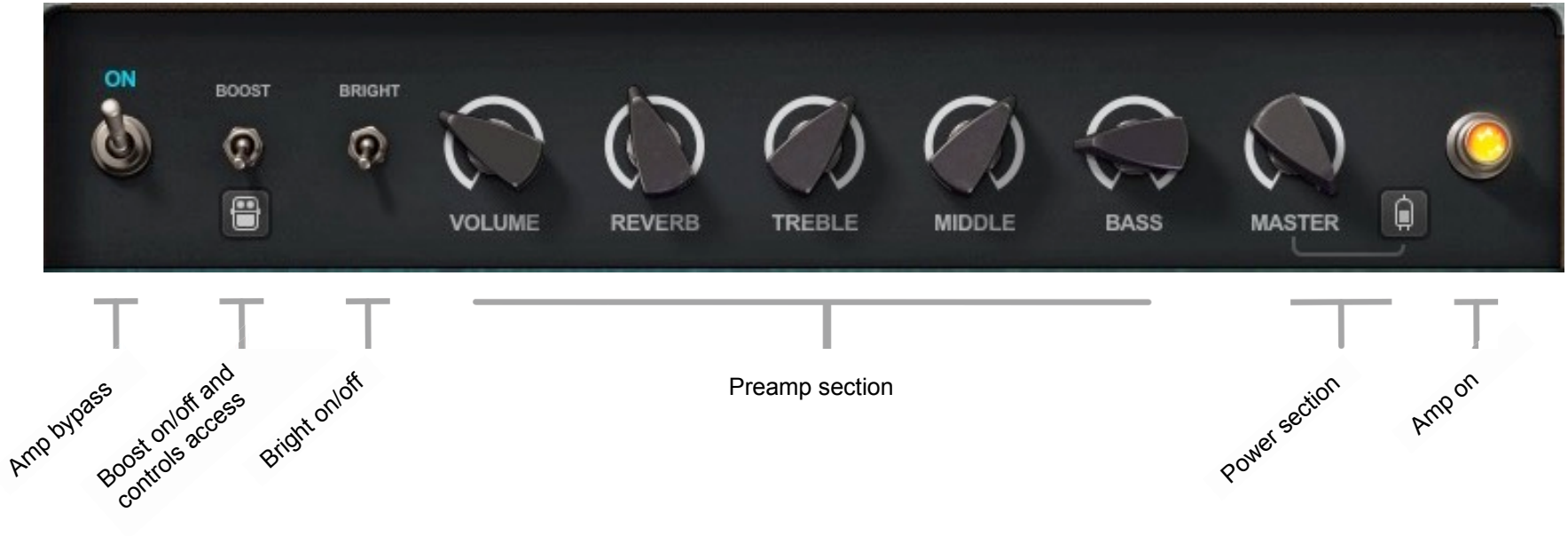
The **Bias** knob adjusts how the amp bias is set: *hot* (more harmonics, more sag, louder) to *cold* (less harmonics, etc.)

The **OT** (Output Transformer) indicator shows the extent to which the output transformer is being stressed. As the power transformer approaches saturation, its output is less linear.


- Green indicates an acceptable level.
- Yellow means you're pushing it, but you'll probably be okay.
- If the indicator is red, back off: your gain at this stage is too high.

## PRS Dallas

The PRS Dallas is an exceptionally clean and balanced single-channel amp. It offers very organic overdrive.




**On/Off**
(bypass)

Turns the amp head on and off (bypass).

**Boost**

Provides additional input gain, which pushes the front end of the amp. Boost can affect overdrive and the shape of the amp.

Click on the pedal icon to open the Boost control panel. There are three controls.


**Gain** The amount of overdrive added to the sound

**Level** Output level of the boost module that's pushing the amp's front end

**Shape** A six-way rotary switch for tone shaping. Settings range from boosting low frequencies and reducing highs (full clockwise) to boosting the high frequencies and attenuating the lows (full counterclockwise).

**Bright** This high shelf sits at the beginning of the EQ section. As gain increases, the Bright effect becomes less evident.

## Preamp section

**Volume** Preamp gain

**Reverb** Spring reverb mix

**Treble** Treble frequency control

**Middle** Middle frequency control

**Bass** Bass frequency control

## Power Amp section

**Master** Power amp volume

**Power light** Lights when amp is engaged (not bypassed).

## Power Amp Setup Section

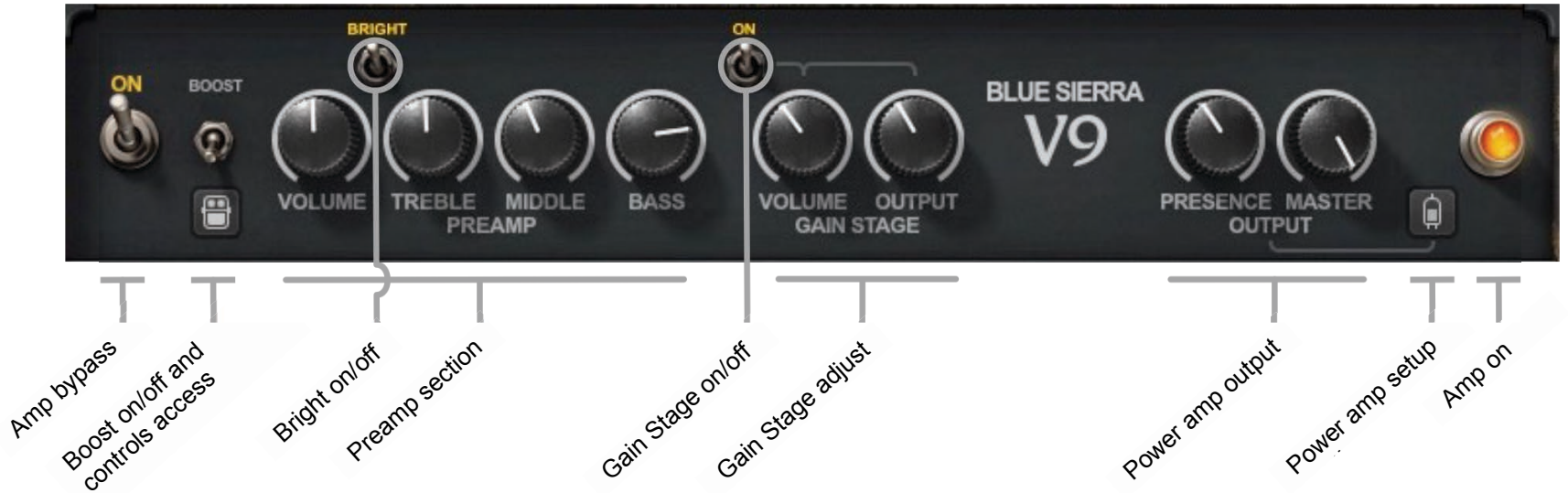

Use this pop-up window to set up the power transformer and tubes. These are fundamental power amp alignments that you'll probably not need to adjust often. Click on the tube icon to access the Power Amp Setup section.

| | |
|---|---|
| **SAG** | The amount of the tube sag effect added to the signal. Increasing sag can make playing easier, and notes may punch out more. |
| **Speed** | The speed of the sag effect. It can influence the feel of attacks and releases. |
| **Bias** | The Bias knob adjusts how *hot* (more harmonics, more sag, louder) or *cold* (less harmonics, etc.) the amp bias is set. |
| **SAG Meter** | As sag increases, the meter level lowers. |
| **OT** indicator | The **OT** (Output Transformer) indicator shows the extent to which the output transformer is being stressed. |

Power Amp Setup is described thoroughly in the Archon 50 section earlier in this user guide.

## PRS Blue Sierra V9

This amp is tight, focused and controllable and it has a very deep low end. It's a rock guitar amp that sounds great for a variety of classic/vintage tones. V9 is a single-channel amp.




**On/Off** Turns the amp head on and off (bypass). When the amp is off, the output of the Input/Output and Tweak modules are heard. Turn off the amp to use an external amp.

**Boost**

Provides additional input gain, which pushes the front end of the amp. Boost can affect overdrive and the shape of the amp.

Click on the pedal icon to open the Boost control panel.


| | |
|---|---|
| **Gain** | The amount of overdrive added to the sound |
| **Level** | Output level of the boost module that's pushing the amp's front end |
| **Shape** | A six-way rotary switch for tone shaping. Settings range from boosting low frequencies and reducing highs (full clockwise) to boosting the high frequencies and attenuating the lows (full counterclockwise). |

## Preamp controls

| | |
|---|---|
| **Bright** | A high shelf on the input to the preamp |
| **Volume** | Preamp gain |
| **Treble** | Preamp high-frequency control |
| **Middle** | Preamp mid-frequency control |
| **Bass** | Preamp low-frequency control |
| **Gain Stage Volume** | Preamp volume for gain stage |
| **Gain Stage Output** | Amount of volume from gain stage to power amp |

Use the Gain Stage controls to establish proper level between the preamp and the amp.

## Power amp controls

| | |
|---|---|
| **Output Presence** | Adjusts amplifier high-frequency. |
| **Output Master** | Power amp volume (before plugin main output in the Input/Output module) |

## Power Amp Setup Section


Use this pop-up window to set up the power transformer and tubes. These are fundamental power amp alignments that you'll probably not need to adjust often. Click on the tube icon to open the control panel.

There are three controls:

| | |
|---|---|
| **SAG** | The amount of the tube sag effect added to the signal. Increasing sag can make playing easier, and notes may punch out more. |
| **SAG Speed** | The speed of the sag effect. It can influence the feel of attacks and releases. |
| **Bias** | The Bias knob adjusts how *hot* (more harmonics, more sag, louder) or *cold* (less harmonics, etc.) the amp bias is set. |
| **SAG Meter** | As sag increases, the meter level lowers. |
| **OT** | The **OT** (Output Transformer) indicator shows the extent to which the output transformer is being stressed. |

Power Amp Setup is described thoroughly in the Archon 50 section earlier in this user guide.

## Input and Output Module

This module controls the plugin's level before and after the amplifier. It's also used to:

- control a noise gate
- select and load cabinet IRs
- adjust the amount of space in the cabinet
- help you tune your guitar


Blue Sierra V9


Dallas


Archon
(lead channel)

## Input Section


The Input section is used to establish the ideal input level for efficient processing. Set the level too high and you may encounter distortion somewhere down the line. Too low and there may be problems with noise or the gate may not work properly. In any case, incorrect input levels start you off to a bad start.

Important reminder:

> The performance of a guitar amp is affected by the impedance of its input signal. Waves SuperModels is no different. If the impedance is not correct, you will likely not get the results you expect from the amp. We recommend that you play through a high-z instrument input (1M ohm or higher) and a buffered output (10k ohm)— any ordinary tuner pedal, for example—between the guitar and your audio interface input.

You can set input gain manually or automatically. We recommend using the Auto Input function, since you will likely get better results this way. Auto-Input analyzes the input signal over a specified time and calculates the peak and RMS levels. It averages these values and adjusts the input level to approximately -17 dB. This provides ideal headroom for the processor.

Select an amplifier before you set the input level. Input level calculations are based on the dynamic characteristics of a specific amp. If you swap amps after setting the input level, you will need to reestablish correct input level.

**To set input level automatically**

1. Choose a duration for the Auto Input calculation: 2.5 seconds, 5 seconds, or 10 seconds. Press “Start.” Typically, the longer the sample time, the more accurate the input level calibration.
2. Play your guitar in a way that’s representative of what you’ll be playing. Calculation begins when you start. A small clock indicates time remaining in the calibration process.
3. If you stop playing, the timer will pause. Resume playing to continue calibrating. The process will stop automatically and the Start light will switch off. Try playing different short segments, each with different gain and dynamics. This can result in a more accurate, more representative input level. During the learning

process, Boost is switched off. When the calculation is finished, the Auto Input switch will automatically turn off.

4. Input gain will be adjusted over a period of 200 ms. This makes for a smooth transition from old to new input gain levels.

To set input gain manually, use the Input knob and the 6-LED gain display. Green generally indicates that input level is low. To achieve the ideal input level, try to light as many yellow LEDs as possible. Red means that level is too high.

**Noise Gate**


This is intended primarily to remove system noise such as pickup buzz and hiss in order to provide a clean signal for the processor. With knob settings of less than -40, hiss and other low-level noises should be eliminated without impacting the notes themselves.

The Archon amp has an additional gate at the front end. This gate chops the release of notes in a musical way and creates a musical effect when playing very short notes or chords. Since this effect is often associated with Metal music, the mode switch is labeled with the letter **M**. In the Archon gate section, a single knob controls both modes.

## Cabinet Loader

The speaker cabinet strongly influences the texture of an amp's sound. PRS SuperModels cabinets are precise acoustic reproductions of the PRS hardware originals, so they treat the amp's sound just like the hardware does.

This accuracy is achieved by creating an impulse response (IR) of the space within a specific cabinet. When the original signal passes through the IR, it is convolved (literally, "rolled together") with the IR, and it takes on the precise acoustic characteristics of the cabinet.


The nine-position selector knobs are used to select cabinet IRs. The first eight positions select default IRs that correspond with the PRS cabinets. These factory IRs are sorted by the “aggressiveness” of the cabinet, from greatest to least.

Default cabinet IRs: Knob positions and corresponding cabinets:

| | | | | | |
|---|---|---|---|---|---|
| 1 | 112 V30.wav | 4 | 212 V30.wav | 7 | 412 Green 55hz.wav |
| 2 | 212 Black 1.wav | 5 | 412 G65 off-axis.wav | 8 | 412 Green 75hz.wav |
| 3 | 212 Black 2.wav | 6 | 412 G65 on-axis.wav | | |

To make IR selection easier, highlight an IR selection knob and use the up/down keyboard arrows to move through the list of cabinets.

Both cabinets can have the same IR loaded, which tends to increase loudness, or different IRs, which usually results in a richer, more complex cabinet sound.


A cabinet’s on/off switch bypasses that cabinet. You can monitor one cabinet, or two, or none. Turning off both cabinets bypasses the Cabinet Loader section altogether. If a user-created cabinet IR has been loaded in the Cabinet module (the module in the middle of the plugin), then knob position 9 will load that IR. As long as a user- or third-party IR is available for that cabinet, position 9 will be active.

**Other Panels**

**Air**

Use the Air control to adjust the effective size of the cabinet. Smaller settings yield a tighter cabinet sound, larger settings make for a more open size. Set the Air knob to zero to bypass the effect altogether.

**Tuner**

The **Tuner** section displays the pitch of the current note. This provides feedback while playing. The Tuner switch has three settings:

- Off The section is bypassed.
- On The section is engaged and pitch is indicated on the display.
- Mute Tuning is engaged and output is muted. Use this setting when you want to tune silently.

**Output** sets the output gain for the plugin. This control is post-amplifier.

## Additional cabinet control

The Cabinet Loader enables you to load one or two PRS cabinet IRs. Commonly, this is all you need to build your cabinet sound. If, however, you want more control over the cabinets or you want to automatically audition cabinets while playing, you'll need to use the Cabinets module.

The Cabinets module is described it the next section.

## Cabinets Module

The Cabinets module (middle of the plugin) is used to audition and select cabinet IRs—PRS default cabinet IRs, third-party IRs, and user-made IRs. The Cabinets module also enables you to control speaker excursion within the cabinet. Cabinets 1 and 2 are identical.

By default, the Cabinets module is covered. To open the cover, click on the Gear button in the Cabinet Loader.

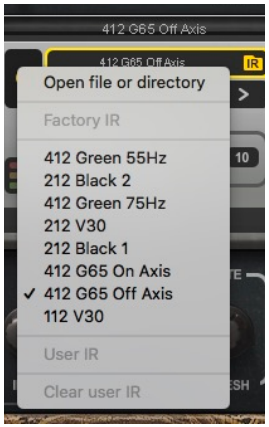


At the heart of the Cabinets module is a two-channel, zero-latency IR convolver. It enables you to align timing and phase, and adjust the level and pan of the two cabinets. If you want, you can create a new IR from this mix.

## Loading the Cabinet IRs

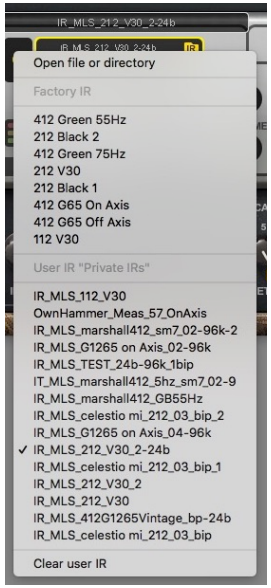

A cabinet's IR is shown in the file name window. There are three ways to load an IR.

### 1) Load an IR file directly




Click on the folder icon to open the IR Select drop-down menu. These are the eight Waves PRS cabinet IRs. Select one.

You can apply custom cabinet IRs. Files must be in the WAV format, with a duration of 50 ms or shorter. Longer files will be shortened and faded. This short IR duration is appropriate for speaker cabinets; longer IRs can waste CPU resources and impose latency.




To load a custom cabinet IR, select "Open file or directory." Browse to the IR file and select.

Once you load any custom IR, all of the IRs in its folder will appear in the menu. Use the "Clear User ID" menu item to remove all custom IRs from the list.

When a custom IR is loaded in a cabinet, it can also be loaded with the Cabinet Loader knob.

### 2) Cycle through all available IRs

Use “Forward” and “Backward” buttons to cycle through all available IRs. If a custom IR has been loaded, then all IRs in that folder will be included in the audition.

IRs are sorted and auditioned from “most aggressive” to “least aggressive” cabinets.

### 3) Timed IR auditions

You can automatically cycle though IRs for fixed periods of time. This lets you compare cabinets while playing a guitar through the amp.

1) Select Cabinet 1 or Cabinet 2.
2) Choose the amount of time you wish to audition a cabinet before moving on to the next one (2.5 seconds, 5 seconds, or 10 seconds).
3) Press the Play button to start IR auto-play. Play the guitar in a manner that resembles the concert performance and listen to the effect of the various IRs. A small clock indicates how much time is left in the current IR preview. When the time period is finished, the next IR will be auditioned. All IRs that appear in the IR drop-down menu, factory and custom, are included in the automatic audition.
4) To load the current cabinet, click Play once again.
5) Click the Direction button on the left to reverse the order in which custom IRs are auditioned. Factory IRs are always auditioned in the same order.
6) Repeat the same process for the other cabinet.

When loading an IR to Cab 1, Cab 2 is muted.

When loading an IR to Cab 2, Cab 1 is muted.

The On/Off button bypasses a cabinet.

## Process Panel

The **Process** panel is used to align the two cabinet IRs. It can automatically align time and phase for two IRs, in order to avoid phasing or lack of articulation. This panel is active when both cabinets are active.


**Time Fix** Trims the beginning of the IR so that audio begins precisely at the beginning of the file. Applying Time Fix to two IRs forces them to start at precisely the same time.

**Phase Fix** Aligns phase between two IRs.

**Smart Mix** Aligns the perceived volume between two IRs to provide a good starting point for mixing.

**Export** Exports a new IR that's the result of the combination of the two IRs.

The convolver supports IRs of a duration of up to of 50 ms. Longer IRs will be truncated and faded.

## Other cabinet controls

The two cabinets have identical controls.

| | |
|---|---|
| **On/Off** | Enables/Bypasses the cabinet. |
| **Pan** | Pans the cabinet location in the stereo image (mono-to-stereo component only). |
| **Mix** | Adjusts the relative levels of the two IRs. |
| **Volume** | Adjusts the overall output level of the Cabinet module. |


**Excursion** is the displacement of the loudspeaker coil as sound is created in the cabinet. Low frequencies at high volume usually require large speaker excursion, since the speaker must move lots of air. This is tough on the speaker—and it can result in some interesting distortion. Use the Excursion knob to control and exaggerate speaker displacement.

Listen for a very wide, full—but pretty fuzzy—low frequency. The knob sets the level of excursion signal for the two cabinets together, which is indicated with the three-LED indicator. Red means you're overdoing the excursion.

## Using a Third-Party Amp

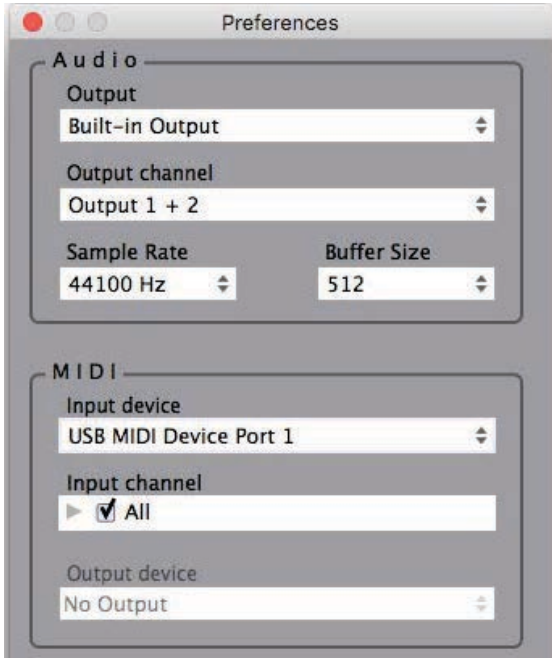

You can use the Input/Output and cabinet IR sections with third-party amps. Simply switch off the PRS amp and it will be bypassed. Insert the alternate amp *before* PRS SuperModels in your plugins chain. Since this amp sits at the beginning of the signal flow for this channel, it will behave somewhat differently than the PRS SuperModels amps.

# Standalone Application

PRS SuperModels can be used as a standalone device. It requires ASIO drivers for Windows or Core Audio for Mac OS X. The application is located in the Waves Applications folder.

### THE PREFERENCES DIALOG

The preferences dialog allows configuration of Audio, MIDI, and Tempo.




**Audio** provides control over the following parameters:

- **Device** displays the audio devices available on the system.
- **Output Channels** allows selection of audio outputs from the selected device.
- **Sample Rate** displays and sets the sample rate.*
- **Buffer Size** displays and sets the buffer size, which influences latency.*

*In Windows, sample rate and buffer size cannot be changed from this panel. To modify these settings: close the application, adjust sample rate and buffer size with your driver's control panel, and relaunch.

**MIDI** provides control over the following parameters:

- **MIDI Input device** displays a list of available MIDI input devices on the current system. Select the MIDI device for receiving MIDI data.
- **Input Channel**: PRS SuperModels standalone is ready to receive MIDI in OMNI mode from all channels. The MIDI channel control allows the selected MIDI device to receive MIDI input only from certain channels, as selected in the check boxes.

**Output Device**: Not used