

The AmpSim Effect

The following is a list of the AmpSim controls.

AmpSim Controls

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Note: The AmpSim effect is not intended for use at the 11 kHz sampling rate.

For more information on how the controls work see [Parameter Controls](#). For more information on how the effects work, see [Simulating Analog Equipment](#).

See Also:

[Using the AmpSim Plug-in](#)

[Using AmpSim in a Cakewalk Application](#)

[Using AmpSim in a DirectX Application](#)

Drive

This parameter controls how much 'amplification' the signal receives prior to the distortion circuit and hence it controls, roughly, the amount of distortion that will be applied.

Presence

This is a filter, similar to a high-pass in nature, with a cutoff frequency around 750 Hz. Presence reveals more of the high-frequency portion of the post-amplification signal. This is a post-distortion effect.

EQ

These three controls provide gain adjustments for Bass (60 Hz), Mid (600 kHz) and Treble (6000 kHz). Each of these filters allow you to alter the timbre of the processed signal by adding or subtracting gain from those frequency bands.

Output Level

This control allows you to control the overall output volume of the plug-in, after the amplifier and speaker processing.

Amplifier Model selection

This pop-up list provides access to the eight amplifier models that can be used to alter the timbre of the signal. These include:

- British Overdrive
- American Lead

Each of these models will cause different interaction between the Drive, Presence and EQ controls – corresponding to the differences in the actual amplifiers that they represent. Also, each amplifier model will have different overdrive/distortion characteristics.

Cabinet Type

This pop-up list allows you to simulate the effects of a speaker enclosure on the processed audio, choosing from one of the following cabinet types:

- No Speaker (Direct Out)
- 4 x 12"

Open Back

This control allows you alter the speaker cabinet simulation so that the back of the 'virtual' speaker enclosure is open or closed, thereby altering the frequency response of the processed audio in the same manner as it would in the real world. Closing the back of a cabinet will increase the bass response, especially on frequencies below 150 Hz.

Off-axis

Adding to the accuracy of the simulation, we have provided a 'virtual' microphone placement option. When selected, this option simulates the way amplified sound is colored by the position of a microphone relative to the sound source (a loudspeaker in this case). This effect is generally enhancement of mid-high frequencies (above 1 kHz), but varies depending on the amp model and speaker cabinet selected. When this option is not selected, no coloration will occur.

Bright

Choose this option to add a high frequency boost to the processed audio beginning at 500 Hz. This is analogous to the Brightness switch found on many guitar amplifiers, and provides a method of altering the timbre of the distortion produced by the amplifier model. The Bright switch is a pre-distortion highpass.

Simulating Analog Equipment

In order to simulate analog signal processing, as with tube amplifiers and analog tape machines, you must measure the characteristics of the actual devices and develop algorithms that process the digital signal to achieve similar results.

Especially in the case of older gear, these devices will have serious idiosyncrasies that require measurement of more than one device of that type. This helps eliminate quirks that are found in an individual piece and confirms features that are actually part of its species/brand/model.

Each device modeled for this product was treated like a ‘black box’ – we suspended what we thought we knew about the unit for a moment and took a step back, probing and surveying its features electronically. Through a long battery of measurements over the electrical features of each device, we develop a clear picture of what exists inside that ‘black box’. The features we tested and measured include:

- Output amplitude vs. input amplitude
- Frequency response, or how the output amplitude changed with frequency
- Saturation behavior, i.e., what happens when we overload the input?
- Impulse response i.e., the sonic signature gathered by measuring the system’s response to a sharp transient.

From this data, we learned a great deal about the way a piece of audio gear controlled, shaped and colored the audio it was processing. Furthermore, although many different devices perform the same basic functions, such as amplifying a signal, certain gear will do so in ways that create a distinctive ‘tone’ and ‘character’. The measurement process, often referred to as ‘modeling’, attempts to quantify the distinctive features which are elusive (yet distinctly audible) and provide the data necessary to recreate them via another process.

Once we coupled our objective measurements with the knowledge of the devices’ internal electronics, the behavioral factors of the device become apparent. From there, we put on our mathematics caps and applied creativity, a knowledge of DSP and a great deal of careful listening to make our models of analog gear a reality in the digital world.

Parameter Controls

To customize the effects plug-ins, you will need to adjust the parameter controls. There are four types of parameter controls you will find in these plug-ins:

- **Sliders** - using the mouse, click on the slider knob and drag it in the desired direction. You can use the keyboard to adjust these controls by clicking on the slider and using the + or - keys to change the values incrementally or PgUp and PgDn keys to change the values in larger increments.
- **Numeric fields** – click in the field and type a value.
- **Check-boxes** – click in the box to enable or disable the function, indicated by the presence of a check mark. You can also select/deselect these options by pressing the keyboard key underlined in their displayed names.
- **Drop-down lists** – click on the arrow button (found to the right of the display field) and hold to view the list. Move the cursor over the desired item and release the mouse button to select it.

Presets

Most DirectX host applications will provide access to Presets for each plug-in, which allow you to save and recall parameter settings for each effect. Each plug-in comes with several preset examples that can be selected from the Preset list found in each plug-in window.

- To recall presets for use, simply choose one from the **Presets** pop-up list.
- To save a custom preset that you create, name the preset in the **Preset Name** field and press the save button.
- Presets are stored in the Windows registry. To remove presets from a plug-in, recall the preset from the list and press the delete.

Bypass

Each of the plug-ins can be temporarily removed from the audio path by using the **Bypass** button. When this button is selected, you hear the audio signal without the processing of the plug-in.

Using the AmpSim Plug-in

The AmpSim plug-in allows you to simulate processing your audio through a guitar amplifier and/or speaker cabinet, providing authentic distortion and speaker modeling characteristics.

[Using AmpSim in a Cakewalk Application](#)

[Using AmpSim from a DirectX Application](#)

Using AmpSim in a Cakewalk Application

From the Console in Pro Audio, Professional, and Home Studio, you can invoke any of the FX plug-ins you have installed, including the AmpSim plug-in. Additionally, you can edit a track offline.

Real-time Processing

Follow this procedure to add a plug-in to an audio track:

1. Open a project.
2. Select View>Console from the menu.
3. Right-click in the Effects box, located under the track title.
A right click menu appears.
3. Select Cakewalk for a sub-menu of all effects currently installed.
4. Select the effect you want.

A grey button, representing the effect, appears in the effects box.

Double click on the effect to invoke its interface. Right-click on the effect and select Delete to remove the effect from the audio track.

You can have multiple effects per track, and you can set the same effect on multiple tracks.

Off-line processing

You can use the Amp and Tape Simulators off-line. Off-line processing edits the audio track without playback. The change to the track, should you choose to overwrite it, is permanent. Cakewalk incorporates the simulated effects into the audio track. To add the Amp or Tape Simulator to an audio track, follow this procedure:

1. Select the audio track to which you want to add the effect.
2. Select the effect you want from the Edit>Audio Effects>Cakewalk menu.
An FX 2 dialog box appears.
3. In the Settings tab, select levels and options from the appropriate sliders, drop-down lists and check-boxes.
4. In the Mixing tab, select the output you want. You can specify mono to mono or stereo Process-in-place, which overwrites the current audio file; or you can create a submix and specify the destination track.

Using AmpSim from a DirectX Application

1. Use the host application's DirectX menu to display the AmpSim property page.
2. Choose a preset, or use the controls to adjust any of the parameters listed below.
3. If you want to temporarily disable the effect and compare the modified signal with the original, click **Bypass** button.
4. Use the host application's Audition, OK or Cancel buttons (or other similar controls) to listen, apply or exit the effect.

