

serato™



Graphic EQ

User Manual

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RANE
SERIES

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Introduction

Thank you for purchasing the Rane Series Graphic EQ. The Graphic EQ is one of the plug-ins that make up Serato's Rane Series, which also includes a parametric EQ, a compressor, and a gate. The Rane Series plug-ins are based on Rane's award-winning live sound hardware. They have been designed to provide both unique functionality and fantastic sound, we hope you enjoy them.

We trust you will find this manual useful in setting up and getting the best from your Serato product. If you require any assistance beyond the scope of this manual, including up-to-date information on troubleshooting, frequently asked questions, and tips & tricks for the Rane Series Graphic EQ, please visit our website at serato.com.

Many thanks - the team at Serato Audio Research.

What's Inside?

Your Rane Series Graphic EQ box should contain the following items. If anything is missing please contact your dealer immediately.

- 1x Serato plug-ins Installation CD
- 1x Graphic EQ User Manual
- 1x Installation Guide + Serial Number

System Requirements

The following are the minimum system requirements for all of the Rane Series plug-ins.

- Digidesign Pro Tools HD or Digidesign VENUE
- Mac OSX or Windows 2000 or better
- iLok key required for authorization

What is the Rane Series Graphic EQ?

The Rane Series Graphic EQ is a TDM plug-in for the Digidesign Pro Tools HD or VENUE platforms. It combines the pristine sound quality and excellent features of Rane's top-of-the-line hardware, the DEQ 60/60L, with the ease of a functional graphical user interface.

The Graphic EQ features 31 bands of equalization using Rane's patent-pending Perfect-Q™ technology. It also has 3 simple overall tone controls and a low- and high-cut filter pair to help shape your sound. The overall gain and phase change are graphically displayed on a color coded curve so you can see at a glance the overall effect your settings are having on the audio.

The Graphic EQ can be used in mono, stereo, and multi-mono modes.

The installer also includes presets to get you started in many common situations. By creating your own presets for commonly used microphones, instruments and other sound sources you will achieve a level of efficiency that is not possible with hardware systems.

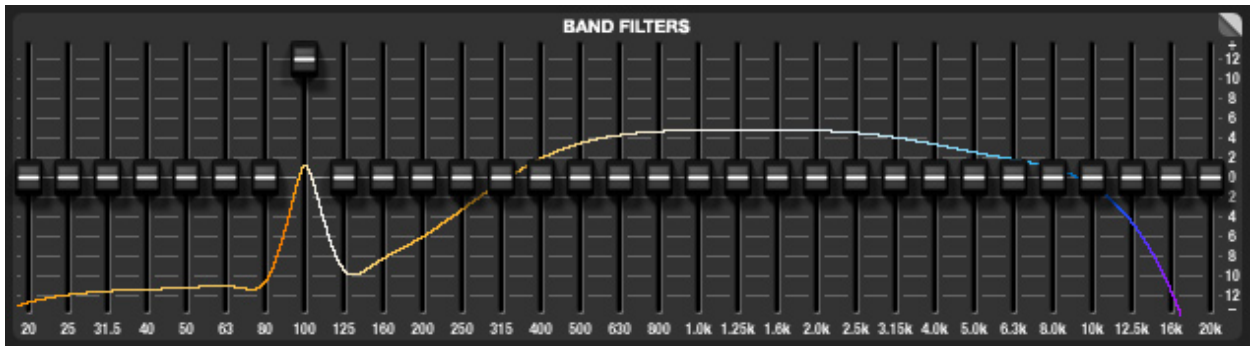
The Graphic EQ Interface



- 1 Band Filters** Contains the 31 EQ band sliders and a response curve that represents the overall effect the plug-in is having on your signal path.
- 2 Band Filter Options** Allow you to alter the range of the EQ sliders, bypass the EQ sliders altogether, and change the EQ mode from Rane's patent-pending Perfect-Q to the more traditional Proportional-Q mode.
- 3 Tone Controls** Offer a 3 band EQ for on-the-fly tuning of the overall sound.
- 4 Cut Filters** Remove unwanted high or low frequencies from your mix with easy sweepable filters.
- 5 I/O Gains** Allow you to adjust the levels of the signals going in to and out of the plug-in.
- 6 I/O Levels** Display the peak and RMS levels going in to and coming out of the plug-in.
- 7 Scale** Switches the I/O Level scale between dBFS and dBVU.
- 8 Control Value Editors** Allow you to read and edit the value of any control.

The Graphic EQ Interface

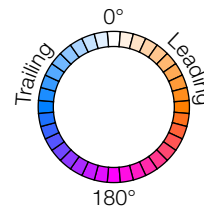
Band Filters



The Graphic EQ has 31 **Band Filters** that are in 1/3 octave steps between 20 Hz and 20 kHz.

The filter gain sliders can be moved individually, or by holding down the shift key and dragging the mouse across the sliders you can 'draw' an EQ curve. This is a great way to get a basic curve together ready for fine-tuning.

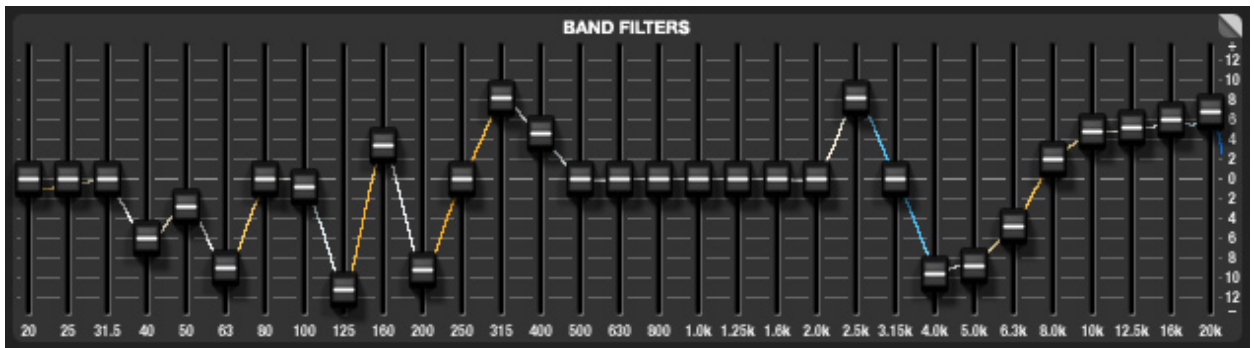
Behind the sliders is a **Response Curve** showing the effect of the 31 EQ bands, the tone controls and cut filters. It displays both the gain and phase change at all frequencies; the gain is represented by the height of the graph, and the phase is displayed as the color of the curve. The color gradually changes from white (no phase change) to red (the output leads the input by 90°) to purple (a 180° phase shift) to blue (the output lags behind by 90°) and back to white.



In the example above the output phase leads the input at frequencies below 100 Hz, and again above 125 Hz, steadily changing to no phase shift at about 1 kHz. Above 3 kHz the output phase steadily lags behind the input more and more until it is almost 180° behind the input phase at 16 kHz. This example also clearly shows the effect of the tone controls and the cut filters on the response curve, since only one of the EQ sliders has moved but some global changes have been made using the other controls, as shown below.

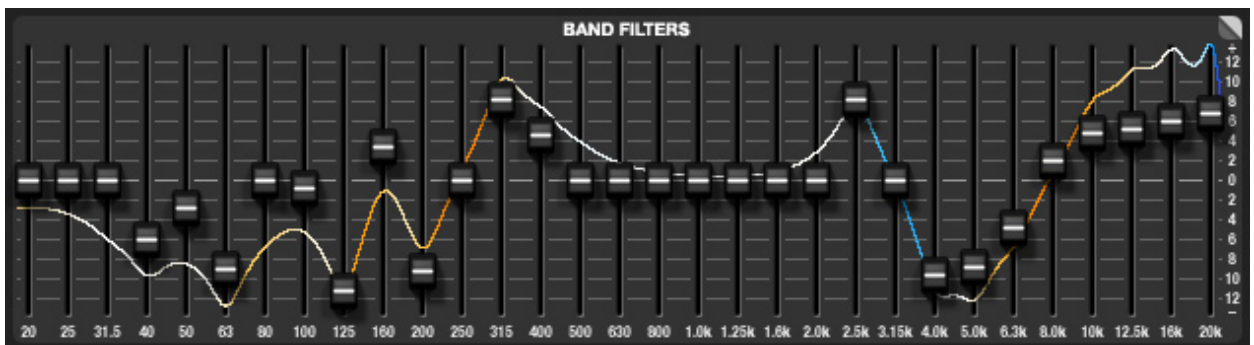


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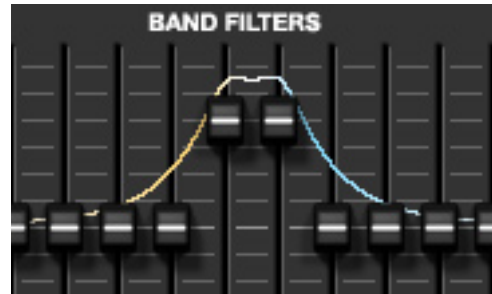


In the screenshot above the response curve closely follows the position of the sliders. This is due to Rane's patent-pending **Perfect-Q** technology. This unique technology allows for very accurate adjustment of a specific frequency without the adjustment affecting the adjacent bands. For example, you may want to put a large boost at 80 Hz to reinforce a bass drum sound but you don't want this boost to spill over either side (because too much 63 Hz or too much 100 Hz will muddy your overall bass sound). With Perfect-Q, this is simply a matter of adjusting the 80 Hz band slider, there is no spill over into the other bands. Sound system engineers also find Perfect-Q very useful; with this technology they can modify the amplitude response of virtually any sound system to within a very narrow window, typically ± 2 dB. Without Perfect-Q this is either impossible or it takes a very long time because of all the adjacent filter interaction.

For situations where a more traditional approach is required, switch to **Proportional-Q** mode (using the band filter options) for a standard EQ response. Taking the previous example, if you boost 80 Hz by 8 dB it will also boost the 63 Hz and 100 Hz bands. This is useful for less accurate sound shaping, for example you may want to add some low end or a bit of sparkle up high without being specific. The screenshot below shows the response curve for Proportional-Q mode using the same slider settings as the screenshot above. Note how the response curve wanders from the positions of the EQ sliders.



The Graphic EQ Interface

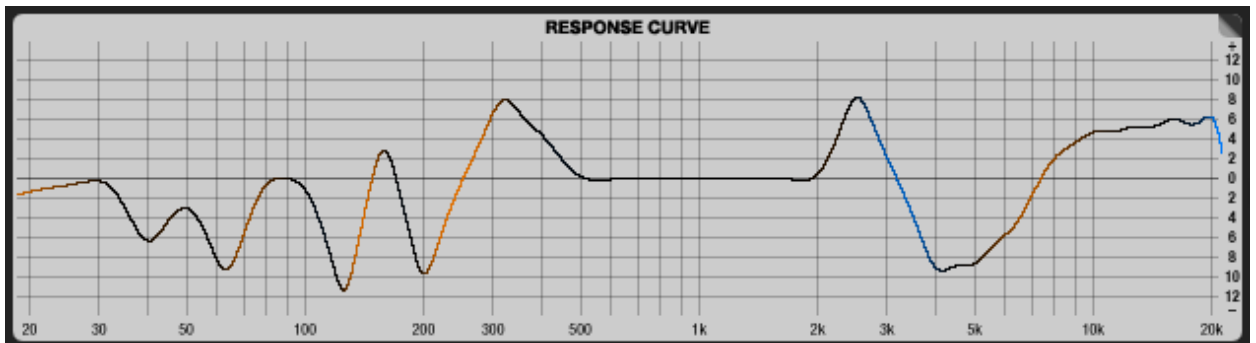


The screenshots above further illustrate the difference between the two EQ modes. Setting two adjacent bands, 630 Hz and 800 Hz, to 8 dB, we see that Perfect-Q mode (on the left) produces no interplay between the bands. Setting the bands to 8 dB has resulted in a boost of 8 dB at those frequencies and the frequencies in between. However, with Proportional-Q mode, the boost of one band spills over into adjacent bands. With two bands together, those spills end up boosting the gain beyond where it was set. In this example (on the right), the actual gain produced when setting the two adjacent sliders to 8 dB is closer to 11 dB.

The gain range of the band filter sliders is determined by the range and cut only switches in the band filter options panel. The maximum possible gain range is ± 12 dB. If the range is changed to say, ± 6 dB (by clicking the range switch), then any sliders that are set to values beyond this range will be semi-transparent and displayed at the nearest on screen value. With the example shown to the right, two sliders that were set to about +8 dB are shown as semi-transparent at +6 dB. The gain for each of these sliders remains at the original value when viewing with the limited range. If you move one of these sliders it will then be limited to values within the current range.



Finally, clicking on the 'page fold' in the top right corner of the band filters' panel reveals the **Response Curve Panel**, a view that removes the EQ sliders to get a better look at the response curve. The color of the response curve, representing the phase, now fades to black instead of white when there is no phase shift. This panel is also always displayed with a range of ± 12 dB; the band filter range options (explained in the following section) do not alter this view. To revert to the band filters' panel showing the EQ sliders, simply click on the page fold in the top right corner again.



The Graphic EQ Interface

Band Filter Options

The band filter options allow you to control the behavior of the band filters.

The leftmost switch controls the **Range** of the band filters. The default setting is the maximum filter range of ± 12 dB. Switching to ± 6 dB is useful when more accurate band filter adjustments are necessary.



Cut Only switches the band filters between Boost / Cut mode, where the maximum filter gain is set by the range switch, and Cut Only mode, where the maximum filter gain is 0 dB. In both modes the minimum filter gain is dictated by the range switch. This is useful in a room tuning situation where you only want to remove unwanted frequencies rather than trying to reinforce the sound in any way.

EQ mode switches between Perfect-Q and Proportional-Q modes. As discussed in the previous section, Perfect-Q allows for very accurate EQ adjustments, whereas Proportional-Q mode suits broader adjustments. The Graphic EQ gives you the best of both worlds.

The **Bypass** switch allows you to bypass the 31 EQ bands.

Note: The range and cut only switches never change the location of the filter gains, only your view of them. For example, if the 1 kHz filter is set to +2 dB, changing to cut only mode will result in the filter slider knob being shown as transparent at 0 dB. The level of the filter is still 2 dB, however moving the slider from here will change its value and result in it being shown as opaque.

Note: The range and cut only switches also have no effect when viewing the response curve panel, it always displays ± 12 dB.

The Graphic EQ Interface

Tone Controls

Those who like simplicity when tuning your sound will appreciate having all the power of a 31 band graphic EQ at your disposal combined with the option of dealing with a handy 3 knob interface.



The **Tone Controls** are great for changes on-the-fly after you've made all your accurate band filter adjustments. If you have set the EQ sliders for your mix and feel like the vocals need more shine, then rather than having to deal with 10 or so of the EQ bands you can just push the high-tone control up a little. Likewise, if a guitar sound is too muddy you can just remove a bit of low end by using the low-tone control.

The gain for each band goes from a +6 dB boost to a -60 dB cut, with the low / mid crossover point at 300 Hz and the mid / high crossover point at 4 kHz.

The **Bypass** switch enables and disables the tone controls. Remember that any changes made using the tone controls will be reflected in the response curve displayed behind the band filters.



Cut Filters

The **Cut Filters** allow you to remove unwanted portions of a sound very cleanly with minimal impact on sounds above or below the specified range. The cut filters offer a very sharp cutoff, with the low-cut filter having a range of 15 Hz to 240 Hz, and the high-cut filter having a range of 5 kHz to 22 kHz.

The cut filters are useful in many situations, an obvious example would be for a vocal microphone in a live situation where you want to remove any frequencies below about 60 Hz to remove unnecessary rumble from the sound. If the tone controls can be thought of as a quick musical interface to the sound, the cut filters are a quick and easy way to be more scientific and surgical with your mix.

The **Bypass** switch enables and disables the cut filters. Remember that any changes made with the cut filters will be reflected in the response curve displayed behind the band filters.

The Graphic EQ Interface

I/O Gains

The **I/O Gains** are used to adjust the level of your input signal level pre-EQ, and the level of the output produced by the plug-in.

The **Input Gain** can be used to boost a weak signal, or attenuate a hot one.

The **Output Gain** can be adjusted to compensate for any signal gain or loss due to the EQ and tone control settings.

Note: When holding down the shift key and moving one of the gain sliders the plug-in will automatically adjust the other slider. This allows you to adjust the gain structure while keeping the overall gain constant.



I/O Levels

The **I/O Levels** display the peak and RMS levels of the signals going in to and out of the plug-in. They are displayed in either dBFS or dBVU, depending on the setting of the scale switch.

The I/O levels are useful for ensuring that there is no unintended gain or loss being caused by your settings. Ideally the levels should be close to full on both the input and output meters but not clipping on either. It is best to keep your levels as close to this 'normal' level all the way through your signal chain as possible; it makes global adjustments easier and it means you don't have to add unnecessary gain at any one point.

Note: The Graphic EQ also includes the standard internal clipping meter for Pro Tools and VENUE. This displays whether any of the 31 EQ bands are causing internal clipping.

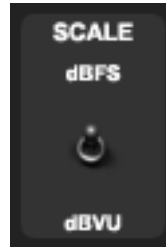


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Scale

The **Scale** switch changes the I/O Levels from displaying dBFS (full scale), traditionally used in Pro Tools, to dBVU, which is used on the VENUE system. The dBVU scale is an approximation of scale used on traditional VU meters, designed to be more familiar to live sound engineers, where 0 dBVU is the same as -20 dBFS.

This switch is a global preference for all of the Rane Series plug-ins. As soon as you set it, any new Rane Series plug-in that you instantiate will use your new scale setting.



Control Value Editors

The **Control Value Editors** are used to read and edit the value of any control. They are useful for when you know the exact value you want for your control, you can type that value directly into the control value editor, rather than having to accurately adjust the control's slider or knob.

Control values are displayed as 'pages' of up to 3 controls, for example the screenshot here shows a page consisting of the 2.5 kHz, 3.15 kHz, and 4 kHz EQ bands.

To edit a control, first select it by clicking on its value. You can type in the new value for the control and hit enter or return to send this new value through to the plug-in.

Pressing tab selects the next control value editor in the current page, and pressing shift-tab selects the previous editor.

When none of the control value editors are selected you can cycle through the pages by using the tab key, or shift-tab to cycle through the pages in reverse. The editors also change to display the page containing the last control you have touched.

Appendix A - Shortcuts

Mac Shortcut	Windows Shortcut (if different)	Action
Shift-dragging anywhere in the band filters' panel		'Paints' an EQ curve by setting the EQ sliders as the mouse is dragged across them.
Shift-dragging the input or output gain		Adjusts both gains simultaneously, allowing you to adjust the gain structure (for example to avoid internal clipping) while keeping the same overall gain.
Option-clicking a slider or knob	Alt-clicking a slider or knob	Resets the control to its default value.
Command-dragging a slider or knob	Control-dragging a slider or knob	Moves the control in 'fine' increments.
Pressing tab or shift-tab		When no control value editor is selected, tab cycles to the next 'page' of control values, and shift-tab cycles to the previous page. When a control value editor is selected, tab will advance from one text entry field to the next, and shift tab moves backwards through the text fields. If the contents of the field have been altered the new value will be accepted by the plug-in.
Pressing return in a control value editor		Enters the new value into the plug-in and deselects the editor.
Pressing enter in a control value editor		Enters the new value into the plug-in and leaves the editor active to allow continued editing from the keyboard.