



Renaissance Channel

User Guide



Contents

Introduction.....	3
Overview.....	4
<i>Interface</i>	5
<i>Quick Start</i>	5
Controls.....	7
<i>Renaissance Channel EQ</i>	7
EQ Graphic Display.....	9
Selecting a Filter.....	10
Filter Types.....	11
Filter Controls.....	13
<i>Real-time Analyzer</i>	14
<i>Renaissance Channel Dynamics</i>	15
Gate/Expander.....	16
Compressor.....	19
<i>Output and Signal Flow Section</i>	21
Working with Presets.....	23



Introduction

Thank you for choosing Waves! In order to get the most out of your new Waves plugin, please take a moment to read this user guide. To install software and manage your licenses, you need to have a free Waves account. Sign up at www.waves.com. With a Waves account you can keep track of your products, renew your Waves Update Plan, participate in bonus programs, and keep up to date with important information.

We suggest that you become familiar with the Waves Support pages: www.waves.com/support. There are technical articles about installation, troubleshooting, specifications, and more. Plus, you'll find company contact information and Waves Support news.

Waves Renaissance Channel is a complete audio mixing chain, including EQ, gate, compressor, and output sections—all in a single plugin. Plugin processing is based on the acclaimed Renaissance EQ, Renaissance Compressor, and Renaissance VOX plugins. Features include:

- double-precision internal audio path and processing throughout the chain
- separate sidechains for the Gate and Comp, with independent filters and source selectors
- a flexible signal path and In/Out selectors for each processor section

The entire internal audio path is double-precision 64-bit floating point. This eliminates the possibility of internal clipping in the EQ or Compressor, without loss of resolution in the 24-bit audio output. Renaissance Channel's internal double-precision path offers complete audio channel processing, all the way to the channel's output level and image rotation.

COMPONENTS

There are three Renaissance Channel components:

- Renaissance Channel mono-to-mono
- Renaissance Channel mono-to-stereo
- Renaissance Channel stereo

The mono-to-mono component does not have a Rotate control. Otherwise, the components are identical except for the number of channels.



Overview

The Waves Renaissance Channel plugin consists of these sections:



- 1 Graphic display
(used for EQ, real-time analyzer, and sidechain filters)
- 2 Gate/Expander section
- 3 Compressor section
(orange compressor sidechain filter is exposed)
- 4 Total attenuation meter
- 5 Output section



Interface

You can view the Renaissance Channel interface in any of three styles.



Select a style with the **Skins** drop-down menu, on the left side of the WaveSystem Toolbar at the top of the interface.



Light View



Dark View



Legacy View

- All three skins have the same controls. When you change skins, the values don't change.
- The skin of the current instance sets the default view, so new instances will open with that skin.



Quick Start

We suggest that you begin by loading a preset whose name suggests what you are setting out to do, and then experimenting with the settings. For a new user this is easier than building a processing chain from the ground up, and it helps you understand how the controls are used to create a sound or solve a problem.

Whether you begin with a preset or work from scratch, use the following steps to set up your processing chain.

1. Set the EQ. The high band is set to a high shelf by default. Click on a band's Filter Type button or Cmd+click (Mac) or Win+click (PC) on a band marker to change a band's filter type. Grab a graph marker and drag it up or down to adjust gain and left or right to adjust frequency. Fine tune your settings using the text box controls and the arrow keys.
2. Raise the Gate threshold (blue) to eliminate unwanted low-level sound. Set the gate threshold arrow just below the point where the track has the lowest significant signal that needs to pass through the gate. You can also look for a section that's generally low in level and judge the noise floor from there. Set the Gate threshold just slightly above that point. As always, let your ears judge.
3. Choose the Gate sidechain source (interior, post-EQ; interior, pre-EQ; exterior) and select a sidechain filter type. Use the SC F knob to adjust sidechain frequency. Click the SC Listen button to solo the SC and accurately locate the ideal SC frequency.
4. Set the Compressor Threshold (orange) to just below the average peak level. Begin with a Ratio of 2:1. Gain attenuation will be introduced whenever the energy approaches the threshold or passes it. Lowering the threshold causes a decrease in loudness, which is compensated by makeup gain in the output gain control. Set the attack time shorter for better peak control or longer for more punch. Set release time shorter for more loudness or longer for more smoothness.
5. Choose the Comp sidechain source (interior, post-EQ; interior, pre-EQ; exterior) and select a sidechain filter type. Use the SC F knob to adjust The Comp sidechain frequency. As with Gate SC, click the SC Listen button to solo the SC and accurately locate the ideal SC frequency.
6. Use the Gain control to make up for lost level caused by gain reduction.

If you change a factory preset, you can save your settings as a user preset.



Controls

Renaissance Channel EQ



The Renaissance Channel EQ section is a four-band parametric equalizer. All band values can be controlled with the Band Markers on the graph or with the Parametric Controls below.

1 EQ Graphic Display and Controls

- 1a EQ curve
- 1b Band marker
- 1c Real-time equalizer display
- 1d EQ section on/off
- 1e Parametric view mode (single band or four bands)
- 1f RTA on/off

2 Parametric Controls

- 2a Band on/off
- 2b Filter type menu
- 2c Gain adjust
- 2d Band select tabs
- 2e Frequency adjust
- 2f Q adjust



Using the EQ

The EQ section is a parametric equalizer, which means that you can adjust it with its parametric controls or with its graphic display. Use the EQ button at the top of the graph to turn the EQ section on or off.

SECTION ON/OFF

Turns the entire EQ section On or Off, so that you can hear the compression with or without EQ. Turning on any band will engage the entire EQ section.

Parametric Views

The controls in the parametric section can be viewed with more or less detail. Choose a view with the View button at the top of the EQ graph. The controls are the same in both views.



For a cleaner view, choose the Selected Band view. In this view, the parametric controls of only the selected band are shown. When you select a band—either by clicking on a band marker or one of the band tabs at the bottom—that band's parametric controls appear.



The All Bands view displays the controls of all four bands.



PARAMETRIC CONTROLS

- **Band Select:** click on a band tab to select the band.
- **Band on or off:** click on the band number button.
- **Filter type:** click on the filter to toggle through type or use the drop-down menu.
- **Q, Frequency, and Gain:** click on the parametric control and move the mouse.

To set precise values for Q, Freq, and Gain, double-click on a value box, enter a value, and click *Enter*. You can also use the keyboard arrows to increase or decrease a value.

EQ Graphic Display



The EQ curve is shown as a yellow line. When the sidechain filters are activated, their curves are also shown in the graph. The compressor sidechain is displayed with an orange line and shaded area. The gate sidechain is displayed with a blue line and shading.

The EQ graph displays ± 18 dB gain on the Y axis and 16 Hz to 21,000 Hz in a logarithmic frequency scale on the X axis.

GRAPH CONTROLS

- **Band Select:** click once on a band marker to select its band.
- **Band on or off:** double-click a band marker.
- **Filter type:** Cmd+click (Mac) or Win+click (PC) on a band marker to toggle through the filter types.
- **Q:** hold Alt while dragging left or right.
- **Frequency:** drag a marker left or right.
- **Gain:** drag a marker up or down.

To restrict marker movement to one axis (i.e., only up or down, or only left or right), hold Ctrl and then drag vertically or horizontally. This enables you, for example, to locate accurately a frequency using a very high, narrow boost, and then turn the boost into a cut without altering the frequency setting. This is by far the easiest way to locate a noise you wish to attenuate and then create a cut.



Selecting a Filter

There are three ways to set the filter type of a band:

- Use a band's filter drop-down menu to select a filter type directly
- Click repeatedly on the filter icon to toggle through the filter type options.
- Cmd+click (Mac) or Win+click (PC) on a band marker to toggle through the filter types.

Type	Description	Bands available
Bell	±18 dB boost/cut with variable Q	Bands 1, 2, 3, 4
LS analog	Analog low shelves with variable slope	Band 1
LS resonant	Resonant shelves with variable slope	Band 1
HP	3rd order, 18 dB/octave filters with variable slope	Band 1
LP	3rd order, 18 dB/octave filters with variable slope	Band 4
HS analog	Analog low shelves with variable slope	Band 4
HS resonant	Resonant shelves with variable slope	Band 4

Defaults

Band 1: High Pass; Bands 2 and 3: Bell; Band 4: High Shelf



Filter Types

CUT/PASS FILTERS

- A high-pass filter cuts all the frequencies below the cutoff point. A low-pass filter does just the opposite: it cuts all frequencies above the cutoff frequency. The slope of the graph changes as Q is adjusted.
- In Renaissance Channel, bands 1 and 4 are third-order filters (equal to 18 dB/octave). When $Q=1.0$, the slopes are indeed 18 dB/octave, as seen below.

SHELF FILTERS



A Shelf filter boosts or cuts above or below a specified frequency. Rather than rolling off to infinity—as with pass filters—the shelf will roll off, or up to, the designated gain indicated in the shelf and not go beyond this gain. The shelf filter’s cutoff frequency is located in the middle of the slope.

Note a small dip (or bump, depending on the gain) just outside the shelf. This creates a smoother transition to the shelf and provides some of the warmth associated with quality analog EQs.

RESONANT SHELF FILTERS



A resonant shelf uses cuts and boosts simultaneously to increase resonance at the cutoff point. This behavior is found on certain sought-after analog filters (most notably, Pultec). There are two main differences between resonant shelves and traditional shelves, such as those of the Q10:

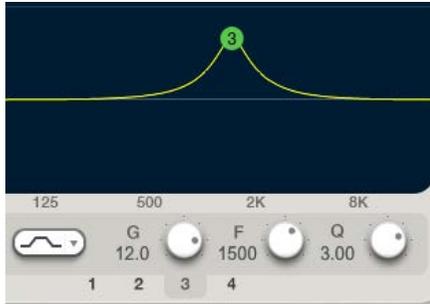
- visibly obvious curves of the shelf
- adjustable Q of the shelf that shifts the steepness of the slope

Changing Q adjusts the angle of the slope going to the shelf. This yields the characteristic “bump” in the graph. The overshoot/undershoot on the angle of the slope is quite important to the sound of these shelves.

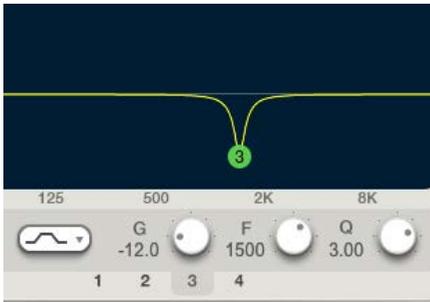


BELL FILTERS (PARAMETRIC)

Bell filters are used to boost or cut at specified frequencies, and the Q value sets the bandwidth. Usually, bell filters have symmetrical response characteristics: effective gain is the same when boosting or cutting a band. But this behavior doesn't always reflect the way that people use filters.



When we use an equalizer to boost (top image), it's usually for tonal correction or "shaping." When cutting (bottom), it's usually for removing bothersome noises or artifacts.



A bell filter with negative gain sounds sharper than the same bell filter with a positive gain. This is equivalent to a higher Q on a symmetrical bell equalizer, roughly double the Q of its value.



Filter Controls

BAND ON/OFF

Turns the band on or off.

FILTER TYPE

Selects the filter type for the band. Use the drop-down menu to choose a type, or click on the type button to toggle through the choices.

Range: Bell (all bands); Lo-Shelf (bands 1 and 2); Low-Rshelf (bands 1 and 2); Hi-Pass (band 1); Hi-Rshelf (bands 3 and 4); Hi Res shelf (bands 3 and 4); Lo-Pass (band 4)

GAIN

Sets the amount of boost or cut introduced to a band bell or shelf filter. For bell filters, gain corresponds with center frequency. In shelf filters, gain defines the overall boost and the gain at the shelf's cutoff frequency is in the middle of the shelf slope. When the selected type is Pass/Cut filter, the gain has no significance.

Range: +/- 18 dB, Default: 0

FREQUENCY

Determines the frequency reference for the band. With a bell filter, the frequency is the center of the bell. When the filter type is shelf, the frequency is the middle of the shelf slope. When the type is Pass/Cut filter, the frequency is the -3 dB point of the roll off.

Range (same for all bands): 16 Hz to 21,357 Hz

Defaults: Band 1, 60 Hz; Band 2, 250 Hz; Band 3, 1325 Hz; Band 4, 8000 Hz

Q

Q is the ratio of center frequency to bandwidth. Bandwidth is inversely proportional to Q so that as you raise the Q, you narrow the bandwidth. Q behaves differently, depending on the filter type: bells are narrower, cut and shelf filters are more sharply sloped. Additionally, it controls the "bump" in the slope.

- **Bell** Q corresponds to the width of the frequency range for that band.
- **Shelf** Q controls the slope of the "side" of the shelf and the resonant dips and peaks.
- **Cut** (bands 1 and 4 only), Q controls the slope of the cut filter from about 10 dB/oct to 18 dB/oct.



Real-time Analyzer



The graphic display includes a real-time equalizer (RTA). This displays live updates of gain and frequency, which can help you understand the track's behavior. The RTA is post-EQ, so you will see how your EQ choices affect the signal. The Analyzer is calibrated to a pink curve.



Turn the RTA display on or off with the button on the top right. To save host computer DSP, turn off the RTA when you don't need it.

When you hover over the graph, the frequency of the cursor position is displayed. This can help you locate specific frequencies based on the RTA display.



Renaissance Channel Dynamics

The Renaissance Channel Dynamics section consists of a Compressor, Gate and a "hidden" Clip Guard Limiter. Compressor-related controls and meters are orange. Gate controls are blue.



- 1 Gate/Expander
- 2 Compressor
(compressor SC expanded)
- 3 Total Gain Reduction Meter
- 4 Output Section/Limiter



Gate/Expander

The Gate/Expander attenuates the signal whenever its energy falls beneath the gate threshold.



With moderate settings, the gate will attenuate certain low-level sounds. More aggressive settings result in a particular “gated” effect.

Controls and displays that relate to the Gate section are blue.

Gate/Expander section On/Off

Turns the Gate/Expander section on or off

Default: On

Gate/Expander Selector

Toggle between Gate mode and Expander Mode.

Default: Expander

Input Meter

Displays the input to the plugin. This serves as a reference for setting the Gate threshold.

Gate Threshold

Sets the level at which the gate will start attenuating, based on the settings of the other controls. When input signal is significantly above the threshold, there will be no gain reduction. Gain reduction begins when input signal falls below the threshold and increases until all peaks fall under the Threshold setting. The Gate threshold value is shown on the fader button.

Range: -Infinity to +18.0 dB

Default: -Infinity



Floor

Defines the greatest amount of attenuation that the gate will apply when closing. When the floor is set to anything above infinity, the gate will not attenuate completely, but only to the defined level. This prevents the gate from closing completely, which would result in complete silence.

Range: -Infinity to 0.0 dB

Default: -Infinity

Gate Release

Sets the time it takes for the gain to return to zero once energy falls beneath the threshold.

Range: 10 ms to 5000 ms

Default: 250 ms

Gate Sidechain Section

Use the gate sidechain to define the energy that triggers gain reduction: control the source, filter type, frequency, and bandwidth of the sidechain. You can also solo the sideband to help locate the correct sidechain frequency.



To access sidechain controls, click on the SC tab at the bottom of the section.

The section is fed with a mono sidechain, which is either a mono signal or the sum of the two channels in a stereo plugin. Consequently, the same attenuation will be applied to all channels. This preserves the integrity of stereo image.

Filter: On/Off

Turns the gate sidechain EQ filters on or off.

Default: Off

Sidechain Sources

Internal uses the audio input of the dynamics section as the sidechain source. This is the default setting in most dynamics processors.

PreEQ places the sidechain from the audio signal *before* the EQ when the Dynamics section is Post EQ.



External assigns the external Key Input as the sidechain source (when Key Input is available). It lets you trigger the compressor from another source and is used in ducking or when you want to trigger the compressor with a signal from another instrument.

The Sidechain controls include a router to switch between sidechain sources: *Internal*, *Pre-EQ*, or *External*.
Default: Internal

Sidechain Filters

The sidechains can be filtered for **High Pass**, **Low Pass**, **Band Pass**, or **Band Reject**, so that compression or gating can be triggered solely by the energy in a certain frequency range. When a sidechain filter is engaged, its filter shape is indicated on the Frequency Response graph.

Range: HPF, LPF, BPF, BRF

Default: Comp: LPF; Gate: HPF

Frequency

Determines the cutoff frequency of the sidechain filter.

Range: 16 Hz to 21,357 Hz

Default: 733 Hz

BW

Controls the bandwidth of the band-pass or band-reject filters (in octaves) between the -3 dB points.

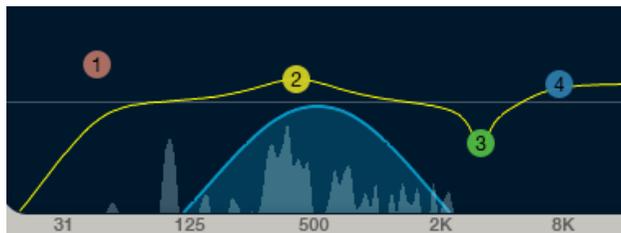
Range: 0.10 to 8.00

Default: 1.00

Sidechain Listen

To listen to the filtered (or external) sidechain, click the Listen control (horn icon). This passes the sidechain signal to the plugin output for audition. This allows you to better locate the sidechain frequency that governs gain reduction.

GATE SIDECHAIN GRAPHIC DISPLAY



When the gate sidechain is active, its curve appears in the graph as a blue line above a shaded area.



Compressor

The Compressor section offers a choice between two classic Waves compressors:



Renaissance Compressor is a warm compressor that is a go-to compressor in FOH, studio, and postproduction. It employs all the traditional controls: Threshold, Ratio, Attack, and Release.

Renaissance Vox is a simple compressor that is best suited for controlling vocals. The Ratio control is disabled: its value is calculated automatically based on the threshold value.

Controls and displays that relate to the Compressor section are orange.

Compressor Threshold

Sets the energy reference. When audio energy is significantly lower than the threshold, no gain adjustment will be introduced. Compression or expansion begins as the signal approaches or surpasses the threshold.

Range: -60.0 dBFS to +18.0 dBFS

Default 0.0 dBFS

Compressor Input Meter

Displays the input level to the compressor. The Gate and Comp energy detectors have different ballistics, so their meters respond differently, even when measuring the same source.

Ratio

Compression ratio specifies the amount of attenuation applied to the signal as the signal approaches or reaches the threshold. It covers a wide range of compression ratios (1.01:1 to 50.0:1), as well as expansion ratios (0.99:1 to 0.50:1).

Range: 0.5 to 50.0

Default: 1.0



Attack

Controls the response time of the onset of compression or expansion. Short attack times allow better peak control, while longer attacks result in a punchier sound.

Range: 0 ms to 500 ms

Default: 16 ms

Release

Sets the time it will take for the attenuation to return to 0 dB when the energy falls below the threshold. A fast release time means that much of the original dynamic is maintained, which can result in a sound that's sharper. Longer release times will sound smoother, but some "edge" may be lost, and "pumping" can occur.

Long values for both Attack and Release can work as a lever process, keeping the overall loudness bound to the threshold area.

Range: 5–5000

Default: 160

ARC

In addition to the manual Release control, Renaissance Channel offers Auto Release Control (ARC). This lets you dynamically choose the optimal release value for a wide-ranging input. ARC reacts to sound much the way a human ear does and can produce increased RMS level with greater clarity. There are, of course, reasons—whether technical or artistic—for manually setting a release time. We suggest however that you keep ARC engaged at all times, unless you want a very specific type of limiter behavior, such as pumping or distortion effects. ARC calculates the release time at every sample for optimum level with minimum artifacts. For most sources, ARC will outperform a fixed release time.

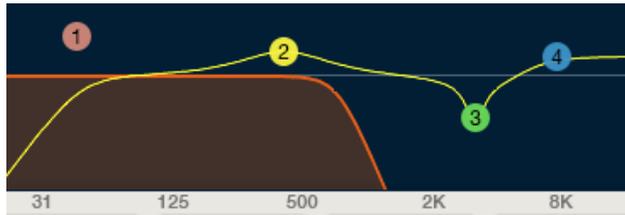


COMPRESSOR SIDECHAIN SECTION



Click the orange SC tab to access the compressor sidechain section. The controls are identical to those of the gate sidechain, which are explained earlier, in the Gate section.

COMPRESSOR SIDECHAIN GRAPHIC DISPLAY



When the compressor sidechain is active, its curve appears in the graph as an orange line above an orange shaded area.

Output and Signal Flow Section



SIGNAL PATH ROUTER

Selects the signal path direction between the EQ and Dynamics sections. By default, the EQ section is before the Dynamics section and the output of the plugin is that of the dynamics, with its clip guard limiter (before the output fader). If you swap the signal flow direction, the output of the EQ section will be the plugin output (again, before the output fader).

OVERALL ATTENUATION METER

The Overall Attenuation Meter shows how much gain reduction is applied by the entire dynamics section. It shows the total attenuation at any instance from the Compressor, Gate, and Clip Guard.

PHASE REVERSE

Reverses the phase of the plugin output.
Range: In or Out; Default: Out



CLIP GUARD LIMITER



Renaissance Channel will not clip internally. Period. Clipping can occur only at the final output, where it is visible on the output meters and can be eliminated by lowering the output fader (Gain). Any output signal above 0 dBFS should be reduced before returning to the host mixer bus, otherwise it will indeed be clipped. This is done in one of two ways, depending on the signal flow:

1. If the dynamics section is Post-EQ and it feeds the output, the built-in Clip Guard Limiter will limit the output to 0 dBFS. In such a case, the limiting light indicates the current amount of limiting.
 - Black means no limiting is taking place.
 - Yellow means a small amount of limiting is taking place, which is correct and probably inaudible.
 - Red means too much limiting is taking place and is probably audible. The Fader should be lowered.
2. If the dynamics section is Pre-EQ and the EQ is feeding the output, the output clip indicator will show how much clipping is taking place. Click the indicator to reduce the fader by exactly the displayed amount.



When the EQ section is placed after the Dynamics section in the signal flow, clipping at the final output is possible. The Clip Indicator will show the amount of clipping. Click the Clip Indicator to trim the output fader and automatically lower the gain by the indicated amount of clipping overshoot.

METERS

Full scale dBFS. Range: -infinity to 0 dBFS. Fader position is shown above the meter.

FADER

Adjusts the overall gain and can serve as your DAW channel fader. It can also function as a compression make-up gain. Range: -30 dBFS to 30 dBFS.



PAN AND ROTATE CONTROL

Moves the image left and right within the stereo image. In the mono-to-stereo component this is a classic left/right panner. In the stereo component, it's a rotator—adjusting the Rotation control moves the stereo image while preserving its integrity. This is not the same as a balance control.

Range: -45° to +45°

Default: 0°

Working with Presets

Renaissance Channel offers a large collection of presets. These are useful starting points for solving problems and creating effects: load the most relevant preset and go from there. In some cases, a factory preset will give you just the settings you need.

There are also Artist presets. These were designed by recording, mixing, FOH, and broadcast engineers, so they capture a personal point of view about sound. They provide a *head start with an attitude* when you're creating a specific sound or making a track sound better.

Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the WaveSystem Guide.

