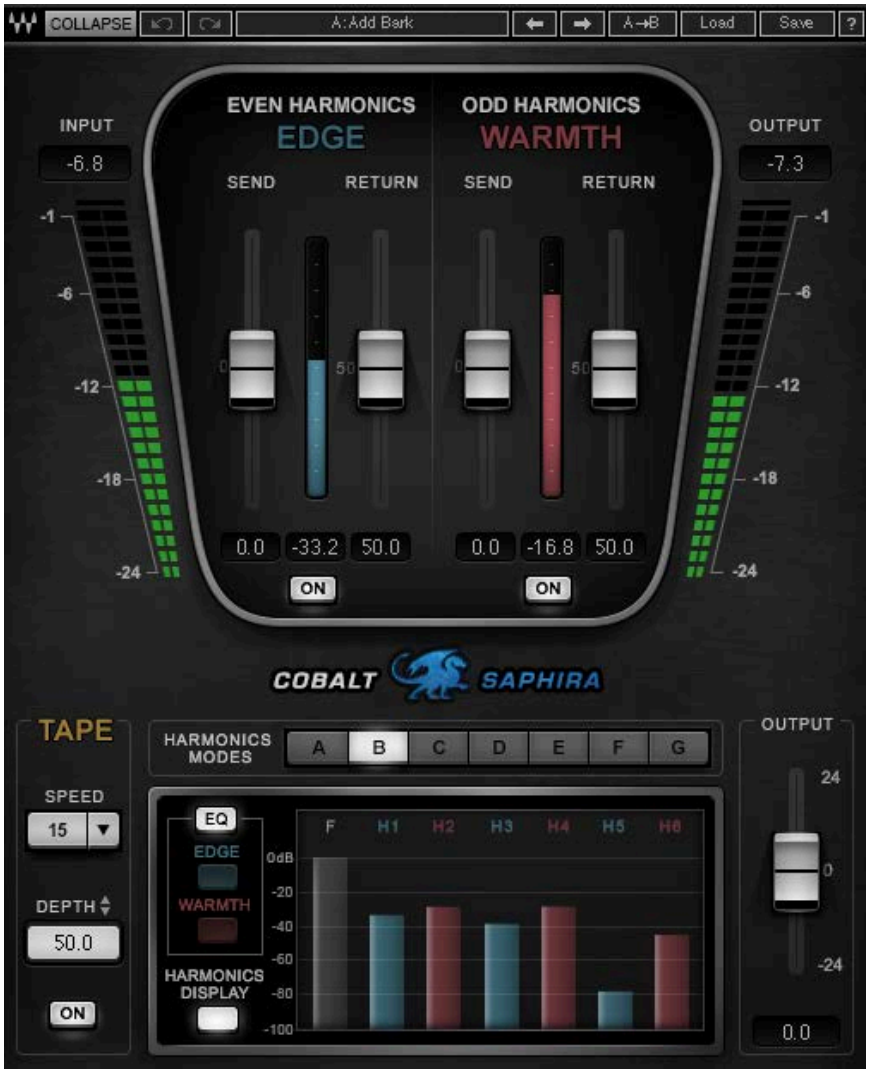
WAVES

Cobalt Saphira

User Guide



WAVES

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Chapter 1 – Introduction

1.1 Welcome

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.

1.2 Product Overview

Cobalt Saphira is the first plugin in the new Cobalt line of groundbreaking products from Waves. With analog characteristics that only digital can achieve, Cobalt Saphira takes everything we know about harmonic enhancement and puts you in the driver's seat with a digital dashboard. Cobalt Saphira provides instant harmonic depth, richness and added dimension to the source material, with minimal impact on the other characteristics of your sound.

Added warmth, "glue," and depth are but some of the benefits that Cobalt Saphira contributes to your overall mix:

Warmth: No one can accurately define the word "warm" in a musical setting, but we all know it when we hear it, and virtually every pair of ears is pleased by the warmth we hear when a signal is passed through analog circuitry.

Glue: The term "glue" is often used to refer to the benefits of compression. But all it really describes is when tracks sound more like a coherent mix than a cluster of individual tracks. Cobalt Saphira is an excellent tool to provide glue for groups and sub-mixes as well as in mastering situations.

Depth: Achieving balance and clarity in a mix is expected. Achieving depth in a mix is where they single out the pros. Thanks to Waves' optimized integration of analog modeling and digital innovation, Cobalt Saphira allows you to inject real depth into your mixes with unmatched simplicity.

Whether mixing or mastering, live or in the studio, Cobalt Saphira gives you rich harmonic enhancement that can be creatively tailored exactly how you like it – a full palette of analog colors for you to pour all over your tracks. With its Edge and Warmth harmonics generation engines, different tape modulations and harmonic filters, Cobalt Saphira gives you detailed control over the harmonic content of any musical material, delivering that "little extra something" that can change the entire feel of an instrument or song.

A Few Words about Harmonics

Instruments playing a note usually do not produce clean sinusoids. For example, the A string of a guitar does not produce a pure 110 Hz frequency. Due to uneven string vibration, guitar body resonance, etc. it also produces additional resonating frequencies, also known as *overtones* and *harmonics* (whole-number multipliers of the frequency: harmonics are always overtones, but not all overtones are harmonics). These phenomena add to the rich sound of guitar playing.

Electrical circuits also add harmonics to the signals that pass through them due to their imperfect, non-symmetrical components. The harmonic content produced by these imperfections creates the sense of richness and depth.

There are two types of harmonics, even and odd, depending on the multiplier of the fundamental frequency. For example, if your fundamental signal is a 1 kHz sine tone, then 2 kHz is an even harmonic, while 3 kHz is an odd harmonic. A sound's harmonic structure is determined by certain attributes:

- Amplitude: Harmonics are very level-dependent in nature. Usually, the higher the signal, the more harmonics are present.

- General relationship between even and odd harmonics.
- Specific relationships between individual harmonics.

Cobalt Saphira offers a wide variety of harmonic structures, and it's important that you experiment with them to hear the differences. Use the Send and Return sliders to control the signal's harmonics. The Send control defines what portion of the signal's amplitude will receive the selected harmonics. Higher settings mean that more generated harmonics are added to the signal. The Return control manages the level of the odd and even harmonics.

Send value is akin to the level of audio entering a compressor. It determines much of the behavior of the processor, while the amount of Return controls the output level of the section.

Adding harmonics will slightly change the tonality of the sound. It takes some practice to hear these nuances, but the more you play with Cobalt Saphira, the easier it will become to hear the effect. Once you understand what harmonics can do for you and how to manipulate them, you will discover a whole new world of options for shaping your sound.

1.3 Components

WaveShell technology enables us to split Waves processors into smaller plugins, which we call **components**. Having a choice of components for a particular processor gives you the flexibility to choose the configuration best suited to your material.

The Cobalt Saphira plugin has two components:

- Cobalt Saphira Mono – mono in to mono out
- Cobalt Saphira Stereo – stereo in to stereo out

1.4 WaveSystem Toolbar

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.

Chapter 2 – Quick Start Guide

1. Always work in context. If you use Saphira on soloed tracks you may miss its impact on the whole mix.

2. Saphira works best on complex, loud signals, so master groups and the master buss are good places to start.

3. Experiment with the different harmonics modes to find the best match for the material.

4. A good way to start is to go over the presets supplied, find something you like, and then fine-tune the settings, if needed.

5. Adjust the Send control of each harmonic type. When you hear that the signal is getting compressed, back off a bit until you hear it breathing again.

6. Adjust the Harmonics Return to set the amount of overall harmonics.

7. Add some Tape Depth. As you increase this setting, you will likely sense an “aliveness” and added depth to the image. The setting is too high if the sound becomes “wobbly” and unstable. The perfect setting lies somewhere in the middle.

8. Use the 4-band EQ supplied on each of the Harmonics sections (Edge and Warmth) to shape the harmonics.

9. Adjust the Output level to offset any gain changes caused by processing.

Chapter 3 – Interface and Controls

3.1 Interface

3.2 Controls

Edge – Even Harmonics

Send: Adjusts the level of the signal going into the Edge (Even) Harmonics generator. The signal is compensated before being summed together with the input signal, so when you increase Send, only the amount of harmonics you hear will change, not the level.
Range: -30 to 30 dB in 0.1 dB increments
Default: 0

Return: Increases the overall level of the Edge Harmonics shaped by the Send control, providing more "Edge."
Range: 0 to 100 dB in 0.1 dB increments
Default: 50

On/Off: Toggles the Edge Harmonics on or off.
Default: On

Warmth – Odd Harmonics

Send: Adjusts the level of the signal going into the Warmth (Odd) Harmonics generator. The signal is compensated before being summed together with the input signal, so when you increase Send, the amount of harmonics you hear will change, but not the level.
Note that odd harmonics add slightly to the level of the fundamental frequency, so adding lots of Odd harmonics will cause an overall level increase despite the compensation!
Range: -30 to 30 dB in 0.1-dB increments
Default: 0

Return: Increases the overall level of the Warmth Harmonics shaped by the Send control, providing more "Warmth."
Range: 0 to 100 dB in 0.1-dB increments
Default: 50

On/Off: Toggles the Edge Harmonics on or off.
Default: On

Tape Speed

This pull-down window toggles between five different tape speeds: 7½, 11¼, 15, 22½ and 30 ips (inches per second). Higher speeds result in faster and more noticeable modulation.

Default: 15 ips

Tape Depth

Increases the level of the AM/FM (Wow and Flutter) modulation, providing more depth.

Range: 0 to 100 in 0.1 dB increments

Default: 0

Tape Depth On/Off

Toggles the tape modulation effect on or off.

Harmonics Modes

These radio buttons toggle between seven different harmonic structures of odd and even harmonics.

The Harmonics modes are:

A, B, D	Natural
C	Punch
E, F, G	Dirt

Use the Harmonics Display button to see the different harmonic structures as you toggle between modes. When moving the Edge or Warmth slider, a representation of the change in harmonics structure is displayed in this window.

Note: This window is for display purposes only. It does not represent the exact harmonic level, as this may vary depending on the input signal.

Edge EQ

Clicking on this control will let you control a 4-band EQ that is applied after the Edge Harmonics are added to the signal but before it is mixed together with the direct signal.

The 4-band EQ has the following properties:

Band 1: Selectable High Pass or Low Shelf, with variable Gain and Frequency settings.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Band 2: A bell-type filter with variable controls over Gain, Frequency, and Q.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Q range: 0.26 to 6.5

Band 3: A bell-type filter with variable controls over Gain, Frequency, and Q.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Q range: 0.26 to 6.5

Band 4: Selectable Low Pass or High Shelf, with variable Gain and Frequency settings.

Frequency range: 21357 to 16 Hz

Gain range: -18 to 18 dB

Warmth EQ

Controls a 4-band EQ that is applied after the Warmth Harmonics are added to the signal but before it is mixed together with the direct signal.

The 4-band EQ has the following properties:

Band 1: Selectable High Pass or Low Shelf, with variable Gain and Frequency settings.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Band 2: A bell-type filter with variable controls over Gain, Frequency, and Q.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Q range: 0.26 to 6.5

Band 3: A bell-type filter with variable controls over Gain, Frequency, and Q.

Frequency range: 16 to 21357 Hz

Gain range: -18 to 18 dB

Q range: 0.26 to 6.5

Band 4: Selectable Low Pass or High Shelf, with variable Gain and Frequency settings.

Frequency range: 21357 to 16 Hz

Gain range: -18 to 18 dB

EQ Bypass

Bypasses both Edge and Warmth EQs.

Output

Adjusts the output level of Cobalt Saphira.

Your output level will not change when you load a preset.

Range: -24 to 24 dB in 0.1 dB increments

Default: 0

3.3 Cobalt Saphira Signal Flow