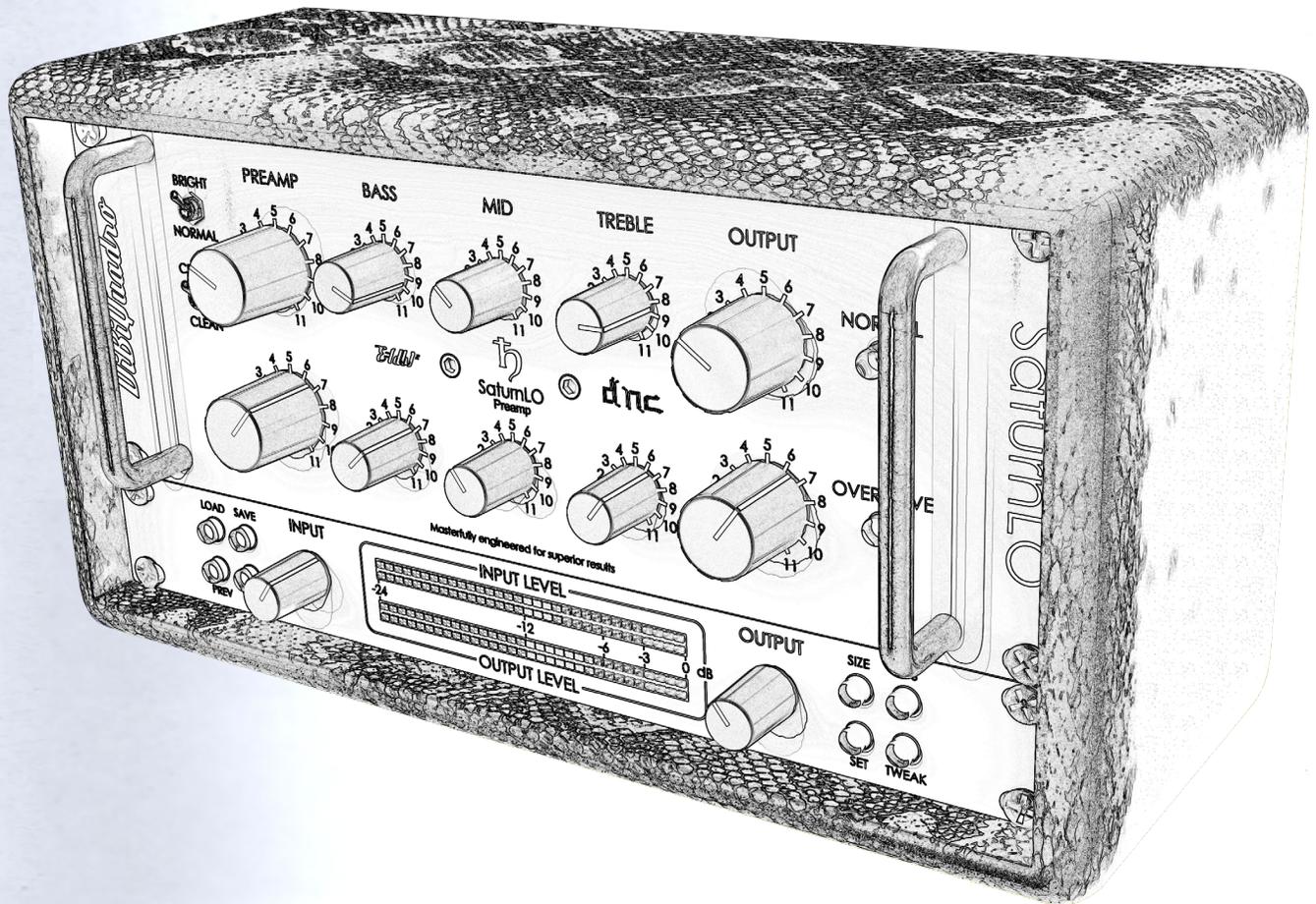


# DiBiQuadro



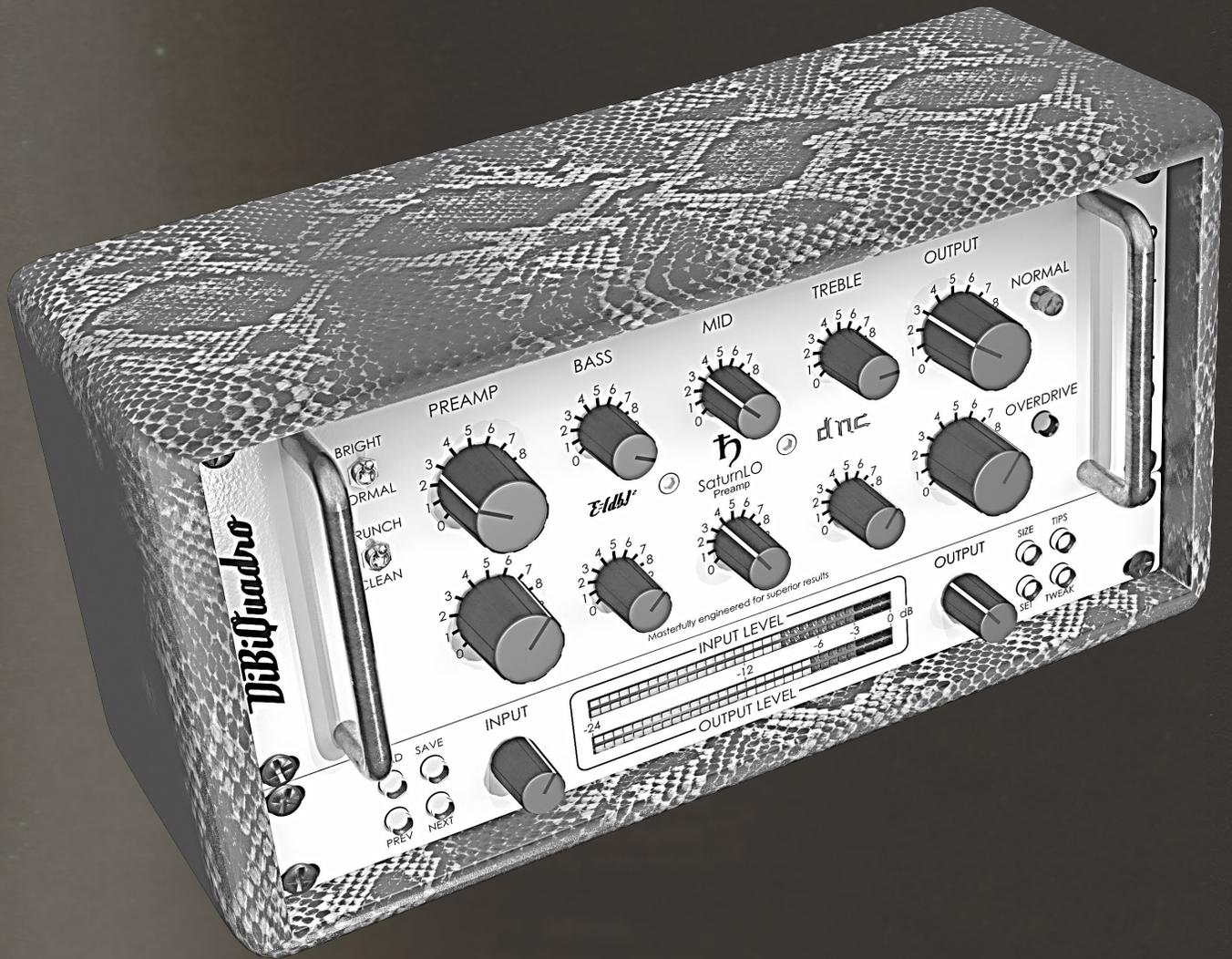
SaturnLO  
Preamp

**USER MANUAL**



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Thanks for purchasing DiBiQuadro SaturnLO. Please take your time to read carefully the content of this manual before using the plugin and the renderer.

## Up to Eleven!

SaturnLO is a highly-accurate in the box reproduction of the preamp section of a classic boutique Lead Overdrive

guitar amplifier which defined the standard for modern high-gain amplification, with its unparalleled sound, beautiful design and high quality components.

Its Normal channel delivers unique crystalline cleans that can cut like a knife with the channel's Bright switch on or pushed to pure raw with its Crunch mode, while the Overdrive channel gives you a super-thick tone as a result of a masterly conceived multiple gain stage path. With Bass, Middle, Treble, and Output controls for each channel,

it provides loads of tone-shaping in a handy straightforward way.

No matter what kind of tone you are trying to achieve – pop, blues, rock, metal – SaturnLO will get you there. If you want to get that rich, dynamic, fully saturated yet pristine gain, then you are definitely looking at the right place!

## The perfect approach to circuit modeling

SaturnLO features a built-from-scratch 64-bit engine which is based on general purpose hi-quality algorithms and the most recent non-linear models. Particular attention has been put on the definition of the Non Linear Solver to get the maximum quality and realism, without losing details in favor of performances (Double-Precision Non-Linear Computing).

Also, SaturnLO brings a completely new philosophy to the table: being able to shape your tone by giving total access to the circuit components. Managing each gain stage level, shaping the tone-stacks or modifying the tubes characteristics: there is virtually no limit to what you can achieve with SaturnLO!



Double-Precision Non-Linear Computing

## About (db)<sup>2</sup>

DiBiQuadro is the result of the joint forces of two Italian Software Engineers with more than 15 years of experience in several industries including Biomedical, Military, Insurance, Travel, Telecommunications and Pro Audio.

Our purpose is to deliver superior results in the Audio market with ground breaking technology and exquisite user-friendly graphic interfaces.

The full logo for DiBiQuadro is written in a large, white, bold, italicized serif font.

DiBiQuadro full logo

The compact logo for DiBiQuadro is written in a white, bold, italicized serif font, similar to the full logo but smaller.

DiBiQuadro compact logo

## Input processing

SaturnLO – Plugin or Renderer – has been designed to process exclusively mono sources. Therefore, a dedicated instance of SaturnLO has to be applied to each guitar signal.

## GUI: tooltips and Edit Mode

The graphic engine has been designed with a purpose in mind: keeping a clear indication of the status of the graphic elements without altering their 3D rendering on the scene. Tooltips serve this purpose perfectly especially when dealing with knobs status. A typical approach to this problem would be to compress the height of the knobs trying to prevent the user to commit parallax errors. As a side effect the graphic designer would be forced to take into account this constraint by limiting the 3D depth of the scene.

Another good reason to use a tooltip-based approach is to allow the update of the knobs status by using an Edit Mode.



The tooltip approach



EDIT mode

When using a state-of-the-art system – see minimum requirements in the Installation Guide – SaturnLO GUI is able to deliver more than 60 FPS at a reasonably low CPU usage for a super fluid knob tweaking and a hyper realistic meter response.

## The Views

Two 3-dimensional views are available with this release: a more standard “2D like” and a “full 3D style”. These views can be swapped by double-clicking on “SwitchGui” script, which is located in your plugin/renderer installation folder, and then by restarting your sequencer. This operation affects all the instances of the plugin.

Note: “SwitchGui” script requires write permissions on your SaturnLO VST3 folder.



## Controls

**NORMAL.** It engages the clean/crunch tones. Two switches are linked to the Normal channel: the bright/normal switch gives you a boost on the high end part of the spectrum; instead the crunch/clean introduces distortion from barely audible to full raw depending on the PREAMP setting.

**OVERDRIVE.** It selects the hi-gain channel. This is the sound the original hardware is known for, from light crunch to full blown madness.

**PREAMP.** This knob adjusts the amount of gain of the selected channel.

**TONE-STACK.** Simply Bass, Mid, Treble as you would expect on a great amp. There is one tone-stack for each channel.

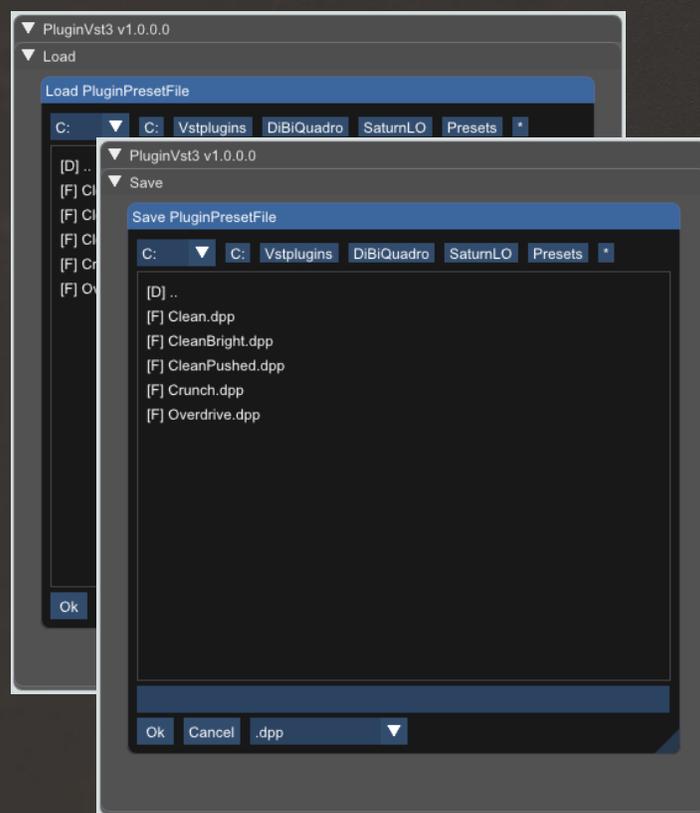
**CHANNEL OUTPUT.** Here is where the magic comes in. Not only the OUTPUT can be used to tweak the general volume but also serves as a tone shaper of the general frequency response: higher OUTPUT settings enhance the character of the distortion on the top end. Keep it low to get silky tones, raise it to get presence and thickness.

**INPUT [dB].** This knob adjusts the amount of signal entering the plugin and it can be used as a clean boost before the preamp. The INPUT LEVEL meter displays

the amount of signal in input and it is directly affected by this knob.

**OUTPUT [dB].** This is a clean volume knob on the general output of the plugin. Use this control to properly feed the next plugin in the chain without affecting the tone of SaturnLO. The general output level is displayed by the OUTPUT LEVEL meter.

**LOAD/SAVE.** The LOAD button opens a window to select a previously saved preset – this includes knobs, buttons, switches, SIZE, TWEAK and SET settings –. The SAVE button allows to save a file containing the current settings of the plugin.



LOAD and SAVE windows

**PREV/NEXT.** Use these buttons to browse back and forth through the preset files.

**SIZE.** Press this button to load the double sized graphic interface.

**TIPS.** When activated, it displays the tooltip for each graphic object. Please note that the GUI interaction is blocked when TIPS are turned on. Press again to restart the normal interaction. The purpose of this button is to give an easy way to share (i.e. via screenshot) information of all the current GUI settings.

**SET/TWEAK.** Please refer to the dedicated sections.

Here some **useful tricks** to interact with the GUI:

- use "CTRL + click" on a knob to reset the value to its default;
- use the mouse wheel on a knob for fine adjustments;
- press SHIFT while moving (dragging) a knob to fine adjust.

## Edit Mode

The Edit Mode is accessible by double clicking on a knob. Once done, you can edit the value by using arrows, digits and ".", "+", "-" keys. INSERT key is supported too: INSERT status is recognizable by checking the cursor inside the tooltip ("|" means INSERT

disabled, "\_" means INSERT enabled). After modifying the value press ENTER<sup>1</sup> to commit or ESC<sup>2</sup> to roll-back to the latest value before accessing the Edit Mode.

## SET

You can open the SET window to access the configuration settings for meters and ReSampler.

**RESET.** It restores the default values for all configurations in the SET window.

**LEDs.** It activates / deactivates the meter LEDs.

**RealTime and OffLine tabs.** These tabs allow the user to specify different configurations for the ReSampler, which are taken into account depending on the current processing mode.

**RealTime tab.** The settings specified here are applied when you are using a plugin for monitoring, or when you are playbacking tracks. Two modes are available:

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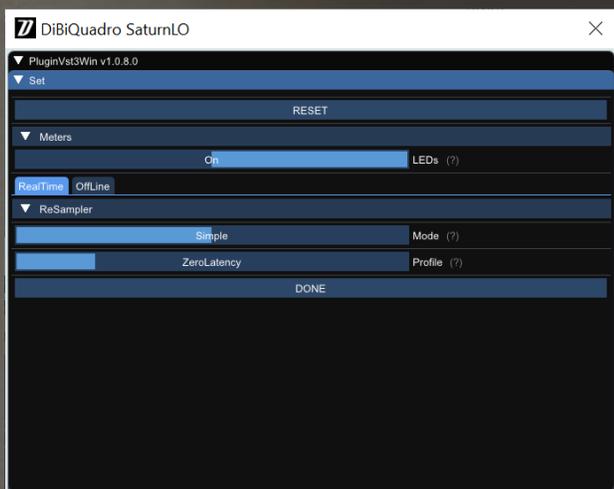
<sup>1</sup> In some sequencers - like Reaper on MacOS - Fn+ENTER could be required.

<sup>2</sup> Depending on the sequencer, the ESC button could hide the plugin window. In this case simply click outside of the button area to undo the modification in progress.

- **Simple:** it gives you a quick way to setup audio quality and latency, as it does not require any knowledge of the parameters described later;

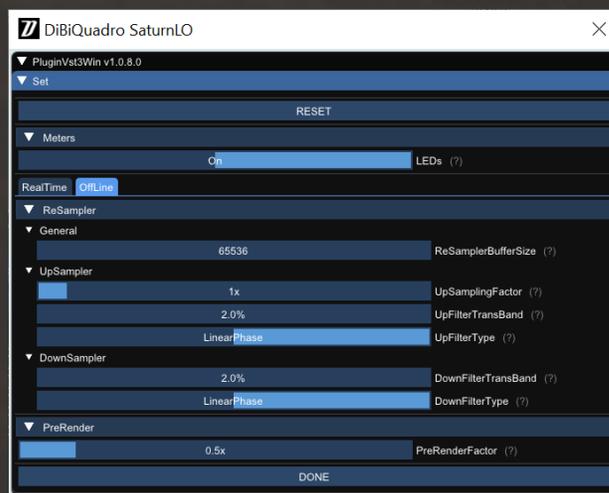
- LowLatencyMediumQuality;
- MediumLatencyHighQuality;
- HighLatencyVeryHighQuality.

Simply choose the one that suits the best for you. If you need more refined settings you can always select one of these profiles as a starting point and then switch to the Advanced mode to check the profile details and to fine tune them.

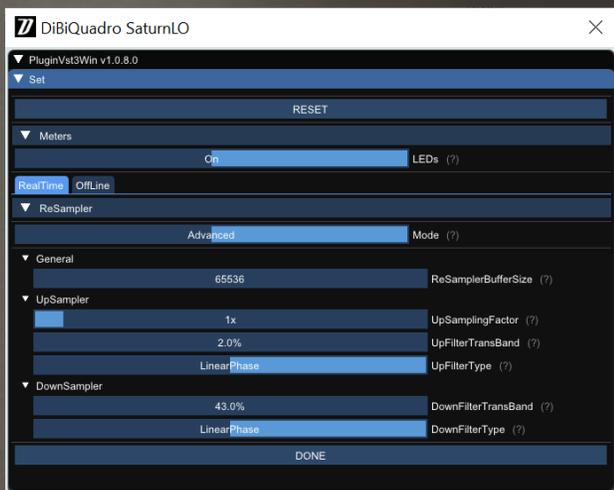


SET window – RealTime Simple Mode

- **Advanced:** it gives you full access to all parameters of the ReSampler.



SET window - OffLine tab



SET window – RealTime Advacend Mode

In Simple Mode, 5 Profiles are available:

- ZeroLatency;
- LowLatencyLowQuality;

**OffLine tab.** The OffLine mode is set by your sequencer when you are bouncing a track or the complete mix. If the elaboration time is not a constraint for you and you need to render hi-gain guitars with the Overdrive Channel, we suggest to set the UpSamplingFactor to at least 128x @ 44100/48000Hz, 64x @ 88200/96000Hz in order to minimize the aliasing artifacts and get super high-quality distortion. Try also to set a very high PreRenderFactor (32x) to stabilize the model in advance. **For very long renders, we strongly suggest to use**

**SaturnLO Renderer in command line mode.**

**ReSamplerBufferSize.** This is the ReSampler Buffer Size in number of samples.

**UpSamplingFactor.** This is the UpSampling Factor applied to the base input SampleRate. Use it to increase the quality or your playbacks and renders, but take into account that high UpSampling factors correspond to more samples to be processed, and consequently longer processing times.

**UpFilterTransBand.** This is the UpSampling Filter Transition Band, in percent of the spectral space of the input signal between filter's -3 dB point and the Nyquist frequency.

**UpFilterType.** It defines the UpSampling filter's phase response: Minimum Phase or Linear Phase.

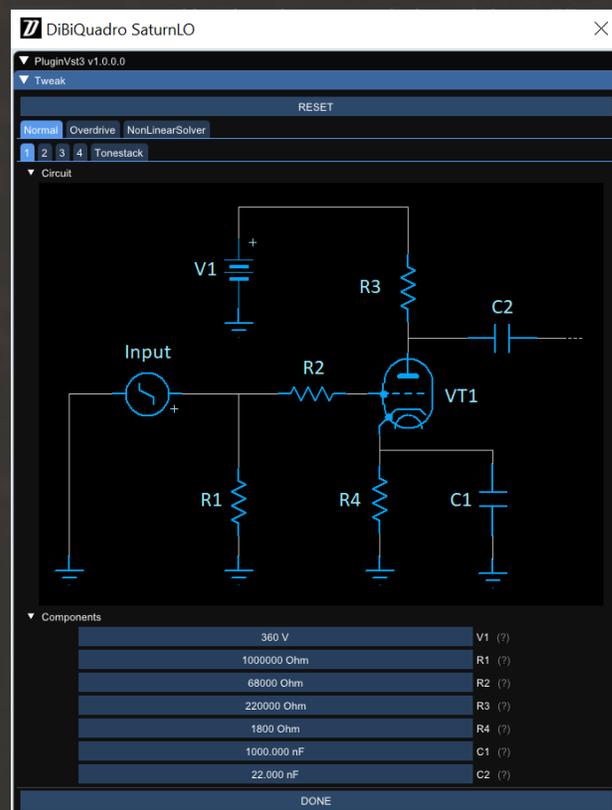
**DownFilterTransBand.** This is the DownSampling Filter Transition Band, in percent of the spectral space of the output signal between filter's -3 dB point and the Nyquist frequency. If you are working at sample rates higher than 44100/48000Hz, we suggest to increase it to 43% to have a smoother low pass filter without impacting the audible frequencies.

**DownFilterType.** It defines the DownSampling filter's phase response: Minimum Phase or Linear Phase.

**PreRenderFactor.** Together with input SampleRate and UpSamplingFactor, PreRenderFactor affects how many samples will be pre-rendered by the model before the real processing. We suggest to set it to the highest value – 32x – in Offline mode.

**DONE.** It closes the SET window.

## TWEAK



TWEAK window

The TWEAK window gives you the power to modify every single component of the circuit. Even the Triode model of the 12AX7 can be tweaked in the NonLinearSolver tab. Play with this window very carefully,

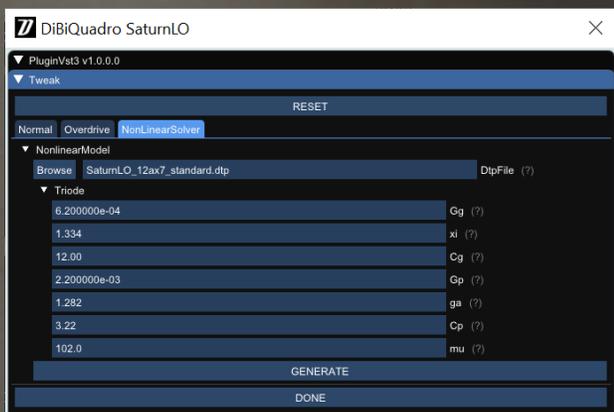
possibly in front of an analyzer, to get exactly what you are looking for. We **do not** guarantee that any possible combination of values makes sense, so it's up to you to find a configuration that works and satisfies your needs.

**RESET.** It restores the default values for all configurations in the TWEAK window.

**Primary tabs: Normal, Overdrive and NonLinearSolver.** The primary tabs provide access to the different channels of the circuit and to the 12AX7 triode model. Each channel can be tweaked independently, while there can be only one triode model for all triodes of SaturnLO.

**Normal tab.** It shows the different part of the Normal circuit, split into 4 sub-tabs, one for each gain stage, plus a Tonestack tab.

**Overdrive tab.** It reports a sub-tab for each of the 5 different gain stages, plus its related Tonestack.



TWEAK window – NonLinearSolver tab

**NonLinearSolver tab.** Use this section to change characteristics of all the triodes in the 2 channels. The easiest way to tweak the triode characteristics is to:

1. Modify the name in the DtpFile textbox.
2. Change one or more parameters of the triode model<sup>3</sup>.
3. Press **GENERATE** button.

**DONE.** It closes the SET window.

## The Renderer



Renderer window

<sup>3</sup> Have a look at [https://www.dafx.de/paper-archive/2011/Papers/76\\_e.pdf](https://www.dafx.de/paper-archive/2011/Papers/76_e.pdf) for more details.

The Renderer has been provided to process an input wave file in OffLine mode. It collects all the controls described in the previous sections, plus it gives you the possibility to specify **input and output files**.

Use the **LOAD** and **SAVE** buttons to load and save Renderer presets. The **Import** button can take a specific GUI setting from a SaturnLO plugin preset file. There is also an additional **Output** header which allows to specify the output wave file format.

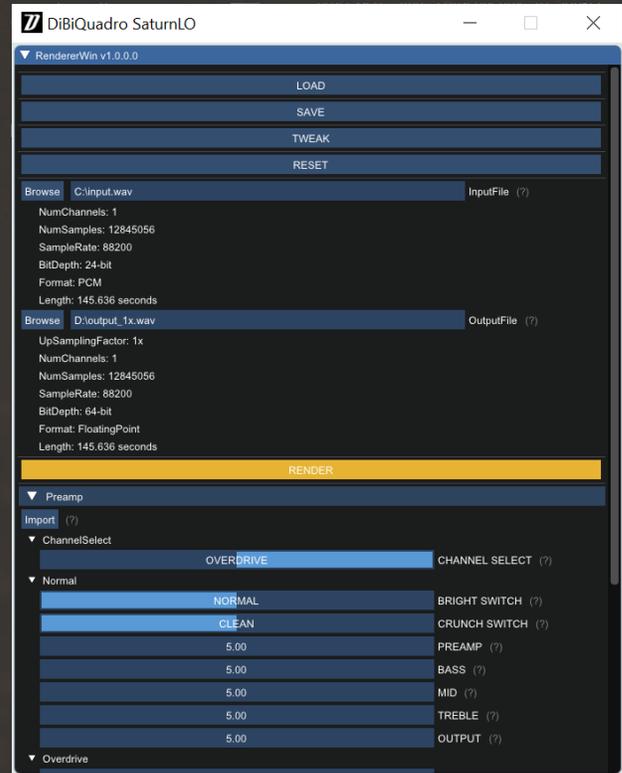


Output header

**OutputBitDepth.** This is the number of bits of information in each output sample. It can be 16, 24, 32 or 64-bit.

**OutputAudioFormat.** It represents the output encoding type: PCM (Integer) or Floating Point.

The **RENDER** button will be **visible only** when an **existing input wave file** and a **valid output wave file name** have been specified.



Renderer – RENDER button

## Command Line Mode

The Renderer can be executed in command line mode. With this functionality, multiple rendering sessions can be easily triggered in parallel by a Windows batch file.

To launch a render from the Command Prompt, first you need to create a preset for the Renderer. Then you need to execute the Renderer from the Command Prompt with “-c” option and to specify, in order:

1. the full path (absolute or relative path + name) of the Renderer preset;
2. the full path (absolute or relative path + name) of the input wave file;
3. the full path (absolute or relative path + name) of the output wave file.

DiBiQuadro Audio S.r.l.s.

P.IVA: 09771000966

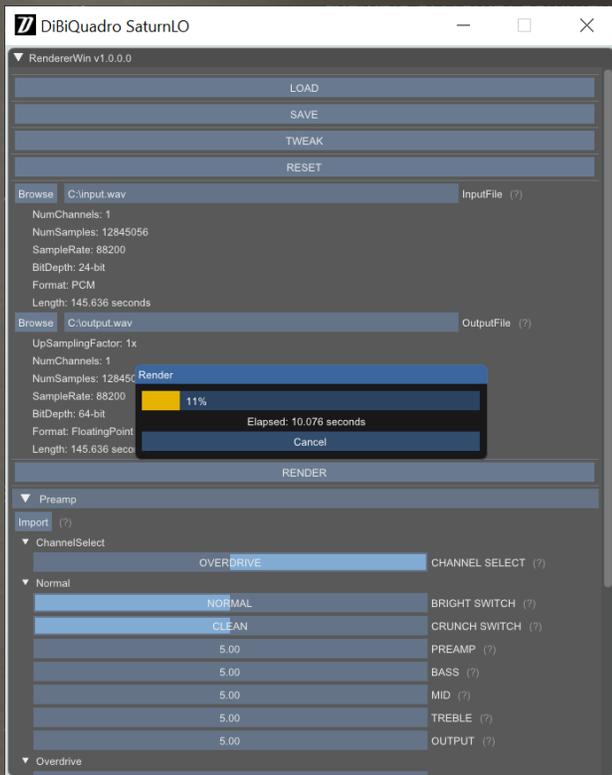
Address: Via Amendola 18, 26815  
Massalengo (LO), ITALY

### Reminder:

```
SaturnLORenderer.exe -c presetFile.drp
input.wav output.wav
```

```
C:\>"C:\Program Files\Common Files\VST3\DiBiQuadro\SaturnLO\SaturnLORenderer.exe" -c "C:\Program Files\Common Files\VST3\DiBiQuadro\SaturnLO\Presets\RendererOverdrive.drp" c:\input.wav c:\output.wav
```

Example of Prompt command



Renderer – Render in progress

*E=mc<sup>2</sup>*