DiBiQuadro

TauruS CLASSIC

Bass   Mid   Frequency   Treble   Master

Inputs   Gain   Ultra Lo/Hi

0dB   -15dB   Ultra Lo   Ultra Hi

Masterfully engineered for superior results

1   2   3   4   LOAD
5   6   7   8   SET

PWR/CAB

TauruS
CLASSIC

LOAD   SAVE   Input   INPUT LEVEL   Output   SET   PREAMP

-24   -12   -6   -3   0 dB

PREV   NEXT   OUTPUT LEVEL   HEAD   POST

TauruS
CLASSIC

USER MANUAL

INDEX

Thanks for purchasing DiBiQuadro TaurusClassic. This is the result of a meticulous engineering design, obsession for perfection and unforgiving comparisons with analog counterparts.

Please take your time to read carefully the content of this manual before using the Plugin and the Renderer.

The Bass Universe at your Command

TaurusClassic is an accurate plugin designed to emulate the warm and powerful tube-driven sound of one of the most iconic bass amplifier heads ever crafted. Boasting wattage often exceeding 300 watts with the original amp sampled in all its glory, this virtual emulation delivers ample power within a digital environment. The plugin features comprehensive tone controls, including bass, midrange/frequency, treble, and presence knobs, enabling users to finely sculpt their virtual bass sound. When paired with a virtual 8x10 bass speaker cabinet, accurately sampled with DiBiQuadro exclusive Non-Linear sampling tecnique, TaurusClassic is poised to deliver the legendary full-bodied and powerful bass tones associated with a classic rig. Tailored for virtual portability,

TaurusClassic is anticipated to become a favored choice for bassists across diverse musical genres.

TaurusClassic provides all the well known features present in all the other DiBiQuadro amp simulations: being able to shape your tone by giving total access to the circuit components. Managing each gain stage level, shaping the equalization or modifying the tubes characteristics: be ready to shape your very own bass tone with TaurusClassic!

Non-Plus-Ultra Preamp

Non-Plus-Ultra Preamp represents the perfect approach to circuit modeling. TaurusClassic preamp 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, TaurusClassic 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 TaurusClassic!

Pwr/Cabs: Non-Linear Convolution

Before describing our solution, let's talk about what everyone else does: the commonly spread approach of the "single IR" to reproduce a cabinet is nothing more than a digital clean equalizer. Which means: non-linearities are not reproduced at all. Competitors generally model power amps to introduce harmonic distortion, but they totally omit the non-linearities coming from the speaker, the microphone and the mic preamp. While these can be considered somehow negligible for some types of high wattage speakers when dealing high gain sounds, it is essential when the speaker breaks up. Furthermore, sometimes solid state power amps are used to sample cabinet, speakers and mikes, but these power amps, despite being considered "neutral", have their own "footprints" due to the different impedance, so the interaction with the speaker is noticeably different when compared to a classic tube power-amp.

Another limit of many well-known amp simulations is the complete absence of power amp clipping.

As DiBiQuadro we implemented our own version of Non-Linear Convolution

(NLC) to reproduce all the final stages of a miked amplifier. We use to call Pwr/Cab a chain made of:

- a tube power amp,
- a cabinet/speaker,
- a microphone,
- and a high-end studio preamp.

This chain is sampled as a unique block to preserve the correct interaction between the specific power amp and the speakers. Our 64-bit (double precision) NLC engine allows up to 40 kernels (harmonics). In addition, a complete set of parameters allows the full control over the power amp headroom, the type of clipping and the interaction of the negative feedback with the Depth and Presence knobs.

DNC+

The proprietary solutions described in the previous paragraphs are grouped under a common acronym: DNC+ (Double-Precision Non-Linear Computing and Convolution).

Double-Precision Non-Linear Computing and Convolution

About (db)²

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 nice user-friendly graphic interfaces.

DiBiQuadro full logo

DiBiQuadro compact logo

Input processing

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

GUI: tooltips and Edit Mode

The graphic engine conception took place with a purpose in mind: keeping a clear indication of the status of the elements without altering their 3D rendering on the scene. Tooltips serve this purpose perfectly especially when dealing with knobs status. A typical approach 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

EDIT mode

When using a state-of-the-art system – see minimum requirements on DiBiQuadro website – TaurusClassic 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.

Controls

Bass. It adjusts the low frequency level of the amplifier, providing up to 12 dB of boost, or 12 dB of cut at 40 Hz. The low frequency output is flat at the center position.

Mid. It adjusts the midrange frequency level of the amplifier. This provides up to 10 dB of boost, or 20 dB of cut at the selected frequency. The midrange frequency output is flat at the center position. Rotate this control counter-clockwise for a "contoured" sound (more distant, less midrange output) or clockwise for a sound which really cuts through.

Frequency. It allows to select the center frequency for the Mid control, giving you a choice of five "voices" for the midrange. The numbers correspond to the following center frequencies: 1=200 Hz, 2=400 Hz, 3=800 Hz, 4=1.6 kHz, 5=3 kHz.

Treble. It adjusts the high frequency level of the amplifier, providing up to 15 dB of boost, or 20 dB of cut at 4 kHz. The high frequency output is flat at the center position.

Master. It controls the the preamp output.

Inputs. Choose 0dB for passive instruments or -15dB for active instruments.

Gain. it adjusts the basic level of signal in the preamp, and it can be used to control the amount of preamp distortion.

UltraLo. When engaged, it enhances the amount of low-end output by 3 dB at 60 Hz and -10 dB cut at 500 Hz.

UltraHi. When engaged, it enhances the amount of high frequency output by 9 dB at 8 kHz.

Depth/Presence. These controls are not present in the TaurusClassic Pwr/Cabs (as they are not in the hardware counterpart). However, depending on the selected Pwr/Cab these controls may be present in order to tweak

respectively the bottom-end and the top-end of the power amp section.

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. It can be used as a clean boost before the preamp and safely pushed beyond the 0dB because there is no clipping between the INPUT knob and the preamp circuit. 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 TaurusClassic. 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 (only on Windows), SET, PREAMP, HEAD, POST and PWR/CAB settings –. The SAVE button allows to save a file containing the current settings of the plugin.
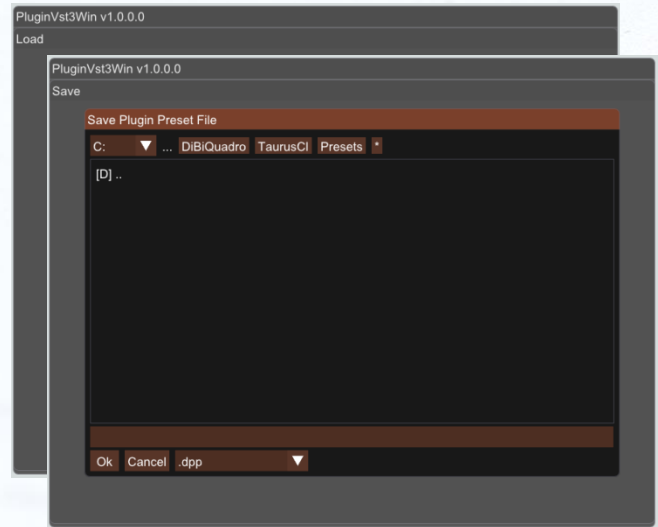
LOAD and SAVE windows

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

SET/PREAMP/HEAD/POST. 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 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 to commit or ESC to roll-back to the latest value before entering the Edit Mode.

Resize GUI

The GUI is resizable on Windows OS by right clicking on the GUI itself and selecting one of the two available options:
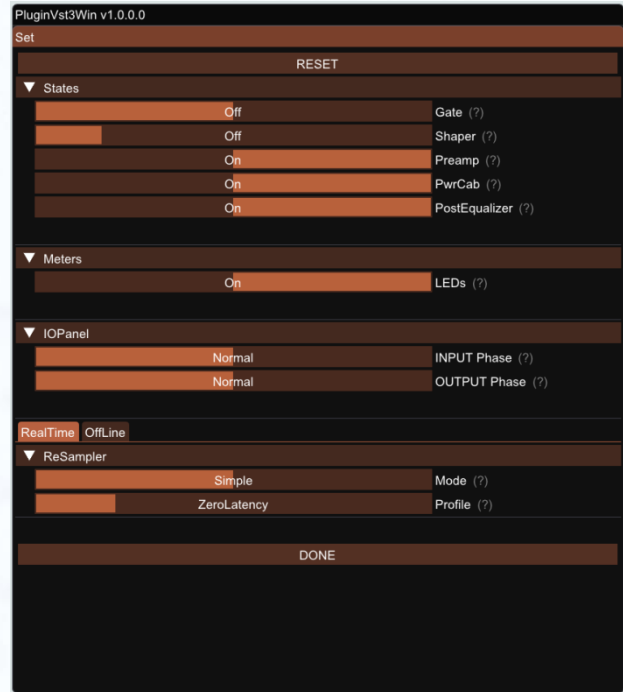
- Normal
- Full

On MacOS the GUI size is automatically chosen depending on the screen resolution so this feature is not necessary.
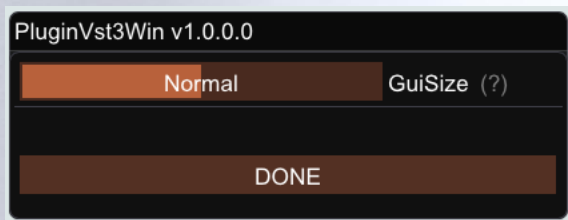
Resize GUI window (only Windows)

SET

SET window

You can open the SET window to access the configuration settings for Gate, Shaper, Preamp, Pwr/Cab, PostEqualizer, meters, ReSampler, PreRender.

RESET. It restores the default values for all configurations in the SET window.
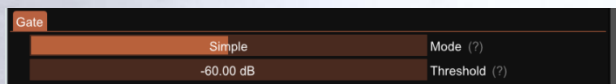
States. They enable / disable the various elements of the plugin.

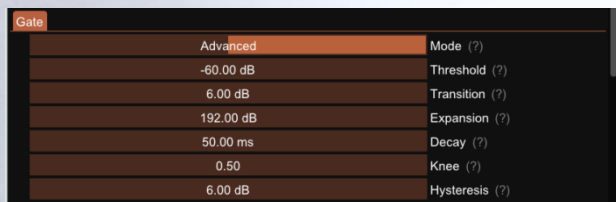**LEDs.** Activates/deactivates the meter LEDs.

IOPanel. This section allows to invert the phase of the input signal (INPUT Phase) and the output signal (OUTPUT Phase).

Gate. This tab appears when the Gate is enabled in the States section. Two

modes are available: Simple and Advanced.


Gate tab in Simple mode

Gate tab in Advanced mode

Gate in **Simple** mode. A single parameter of threshold to set the level at which the gate starts to be applied. The remaining parameters are set to default values and hidden.

Gate in **Advanced** mode. It displays all the gate parameters. **Transition** can be used to apply a gradual gain reduction when the signal is below the threshold (0 for hard gate); **Expansion** is the maximum gain reduction when the signal is below the threshold; **Decay** controls how quickly the signal fades out when it is below the threshold; **Knee** sets how hardly the gate switches from ungated to gated signal (0 for Hard Knee, 1 for Soft Knee); **Hysteresis** prevents the gate from immediately re-opening after passing below the threshold, to avoid gain flickering.

LoCut. This tab appears when the Shaper state is set to LoCut. It just contains two 12dB/oct loCut filters (Freq and Q). Particularly useful when dealing with boomy signals.
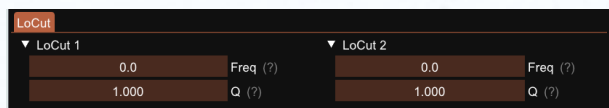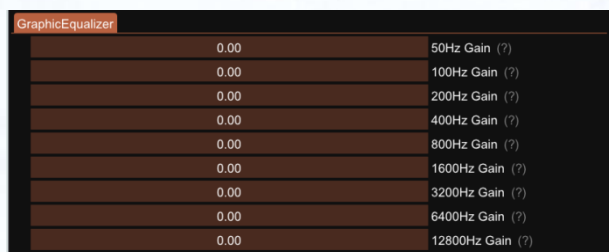

LoCut tab

MidBoost. This tab appears when the Shaper state is set to MidBoost. Use it to push the preamp on the mid frequencies.
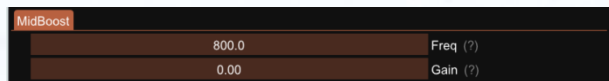

MidBoost tab

GraphicEqualizer. This tab appears when the Shaper state is set to GraphicEqualizer. Each of the nine available bands can be boosted or cut of up to 15dB.


GraphicEqualizer tab

ParametricEqualizer. This tab appears when the Shaper state is set to ParametricEqualizer. If the previous shaping options were not enough, this tab offers two 12 dB/oct loCut filters (Freq and Q), two 12 dB/oct hiCut filters (Freq and Q) and 6 bell bands (Freq, Gain and Q).
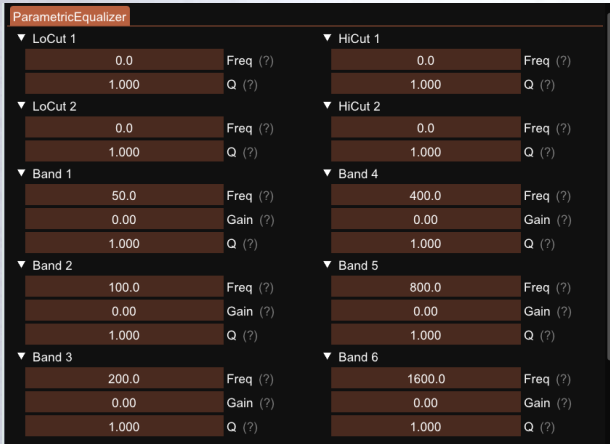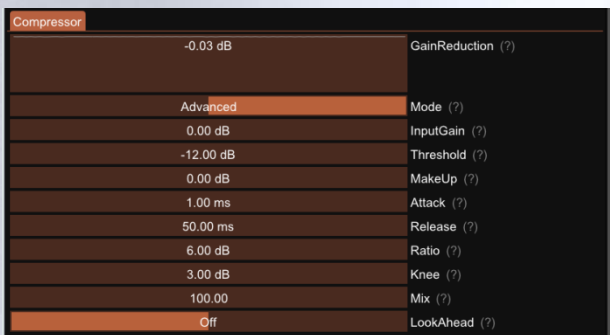
Compressor tab in Simple mode

Compressor. This tab appears when the Shaper state is set to Compressor. If you wish to add a touch of compression to your signal before hitting the preamp, this is what you are looking for. Two modes are available: Simple and Advanced. Both modes report a GainReduction indicator in dB.
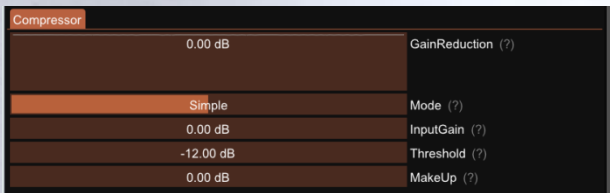
Compressor tab in Simple mode

Compressor tab in Advanced mode

Compressor in **Simple** mode. Three parameters are available: **InputGain** adjusts the level of the signal before any compression happens; **Threshold** adjusts the level above which the

compressor starts attenuating the input signal; **MakeUp** adjusts the level of the output signal after the compression has been applied. All the other parameters are set to default values and hidden.

Compressor in **Advanced** mode. In addition to the parameters available in the Simple mode, the following ones are displayed: **Attack** sets the time that determines how fast the compression will set in once the signal exceeds the threshold; **Release** sets the time that determines how fast the compressor will recover from the gain reduction once the signal falls under the threshold; **Ratio** determines how much the signal is attenuated above the chosen threshold; **Knee** gives a rounder compression curve when set higher than 0 (0dB: hard knee); **Mix** balances the mix between the dry and processed signal (100%: Wet / 0%: Dry); **LookAhead** enables the compressor LookAhead and shows the **LookAheadDelay** parameter.

RealTime and OffLine tabs. These tabs allow the user to specify different configurations for the ReSampler depending on the current processing mode.

RealTime tab. This mode is applied by your sequencer when you are using a plugin for monitoring, or when you are playbacking tracks. We suggest to keep the UpSamplingFactor at 1x in case of monitoring, 4x in case of

playback @ 44100/48000Hz, 2x in case of playback @ 88200/96000Hz.

OffLine tab. This 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, 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 TaurusClassic Renderer in command line mode**.
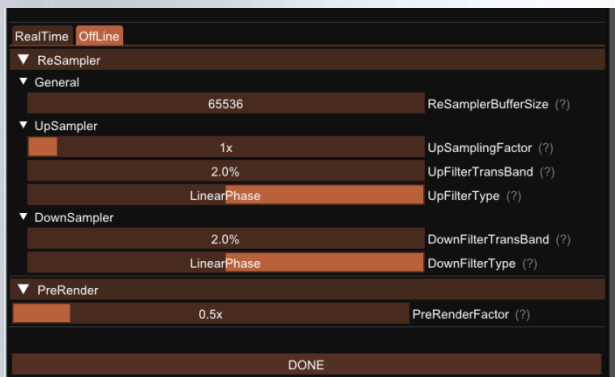
SET window – OffLine

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: MinimumPhase or LinearPhase.

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: MinimumPhase or LinearPhase.

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.

PREAMP
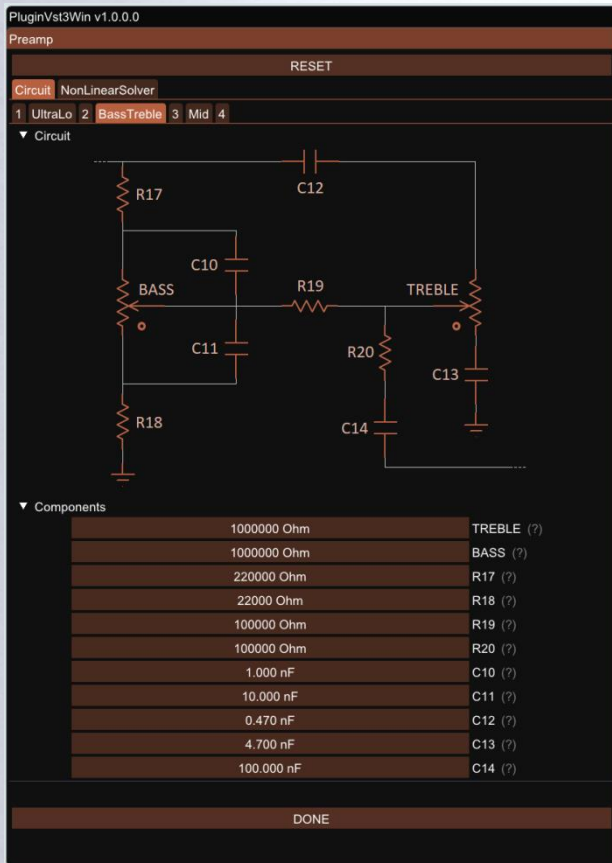
PREAMP window

The PREAMP 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 PREAMP window.

Primary tabs. The primary tabs provide access to the circuit and to the 12AX7 triode model. There can be only one triode model for all triodes of TaurusClassic.
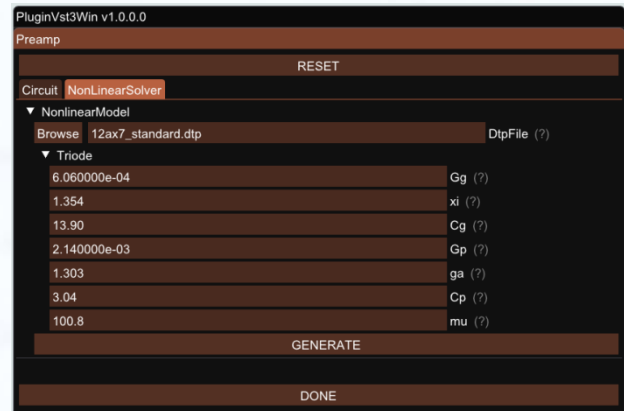
PREAMP window – NonLinearSolver tab

NonLinearSolver tab. Use this section to change characteristics of all the triodes in the preamp. It is the most advanced and consequently the least user-friendly feature. Browse button opens the dialog window to select an existing dtp file. The dtp file contains the triode characteristic. The first time a file is selected, it is necessary to generate the look up tables (LUTs) for that triode by pressing GENERATE. Change the name in Browse text input to save a new dtp file and then press GENERATE.

The generation has to be done each time the triode parameters are modified in order to make them effective.

Once the LUTs are generated they are stored in files in the same path of the dtp file and automatically loaded

when selecting the dtp file with the Browse button / dialog window.

To create a new triode characteristic follow these steps:

1. Modify the name in the DtpFile textbox.
2. Change one or more parameters of the triode model[1].

3. Press **GENERATE** button.

DONE. It closes the SET window.

If you accidentally overwrite the characteristics of the factory triodes we recommend reinstalling the product from Center.

PWR/CAB

The PWR/CAB section allows to quickly switch among 8 preloaded Pwr/Cabs. Only one Pwr/Cab can be selected at a time. As said in a previous dedicated section, a Pwr/Cab is the non-linear representation of a chain including:

- a tube power amp,
- a cabinet/speaker,
- a microphone,
- and a high-end studio preamp.

A Pwr/Cab representing only the power amp is also provided: use this Pwr/Cab to experiment with "larger than life" clean sounds, or to drive an external IR

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[1] Have a look at https://www.dafx.de/paper-archive/2011/Papers/76_e.pdf for more details.

(A 3rd party IR loader placed after TaurusClassic plugin would be needed in this case).

TaurusClassic comes with 5 selectable Pwr/Cabs:

TaurusCl_000_300W_6550
TaurusCl_001_300W_6550_A810_3_EMI_112_B73
TaurusCl_002_300W_6550_A810_3_EMI_57_B73
TaurusCl_003_300W_6550_A810_3_EMI_201_B73
TaurusCl_003_300W_6550_A810_3_EMI_201_B73

The power amp is 300Watt with 8x6550 tubes.

One cabinet is available: a classic 8x10 loaded with EMI speakers. 3 is the sequential number indicating which speaker has been sampled; it corresponds to the second row starting from the top, left speaker.

The mic preamp we used is a B73, a top notch preamplifier that set the standard for both vintage and modern recordings.

All Pwr/Cabs are **automatically phase aligned** and can be blended together using different instances of TaurusClassic – one for each Pwr/Cab.

PWR/CAB LOAD. Pwr/Cab Load gives access to the 8 slots on the GUI. Browse opens the window to select the Pwr/Cab path, while Void cleans up the slot and no Pwr/Cab is applied to the signal. While the output of the preamp section is not bounded by any volume limit and can be used to drive subsequent plugins (ie: another TaurusClassic), the output of a Pwr/Cab
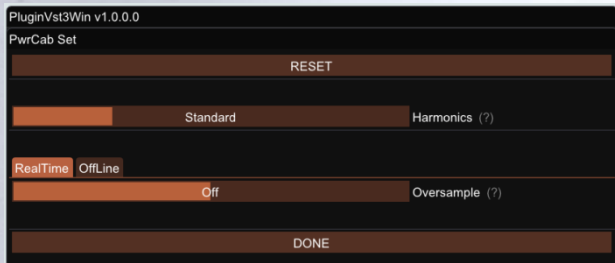
is protected by a safety mechanism that clips the signal when above 0dB.

Pwr/Cab LOAD window

PWR/CAB SET. With Pwr/Cab Set you can select the number of harmonics in the Pwr/Cab section:

- Standard: 10 harmonics
- High: 20 harmonics
- Ultra: 30 harmonics
- Non-Plus-Ultra: 40 harmonics

Pwr/Cab SET

HEAD

HEAD window

Head (HeadRoom) is a powerful tool to shape the behavior of the power amp section, including the type of clipping when pushed to the limit (soft/hard, symmetrical/asymmetrical) and the effect of depth and presence when the power amp is working in the non-linear region. Each Pwr/Cab has its own setting.

PWRCAB PRESET. It restores the factory preset for the selected Pwr/Cab.

RESET. It restores the values to the general default values.

PrePhase. Phase of the signal in input to the power amp (Normal or Inverted).

PreGain. It sets the level of the signal in input to the power amp.

PostGain. It defines the level of the signal coming out of the Pwr/Cab.

ClippingType. Soft/Hard.

LowThreshold/HiThreshold. These can be used to set the clipping thresholds of

the negative and positive half waves respectively: use different values for asymmetrical clipping and identical values for symmetrical.

PresenceGainPostPerc/ DepthGainPostPerc. Percentage of Presence and Depth effect after the power amp clipping. They affect the behavior of Presence and Depth only when power amp is saturating.
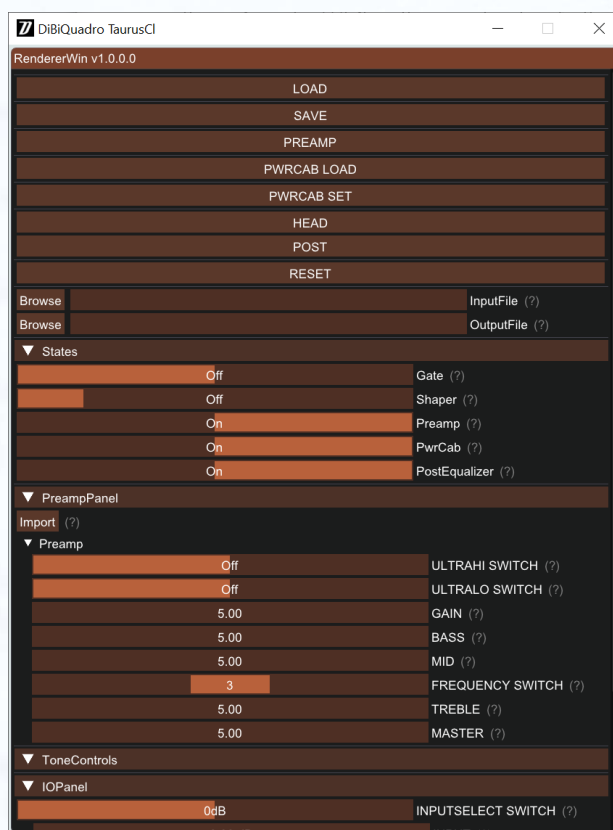
POST

POST window

Post (PostEqualizer) is a handy minimum-phase equalizer at the end of the signal chain, with the same bands of the ParametricEqualizer available in the Shaper section.

PWRCAB PRESET. It restores the factory preset for the selected Pwr/Cab.

RESET. It restores the values to the general default values.
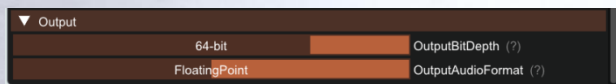
The Renderer

Renderer window

The Renderer is provided to process an input wave file in OffLine mode. It collects all the controls described in the previous sections, plus you have 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 panel setting from a TaurusClassic plugin preset file. There is also an additional

**Output** header which allows to specify the output wave file format.

Renderer – 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.
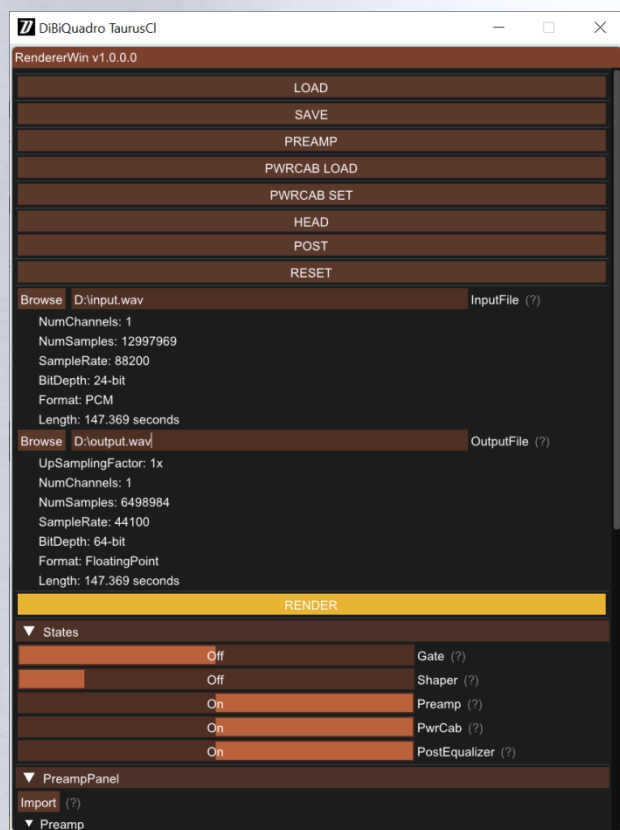
Renderer – RENDER button

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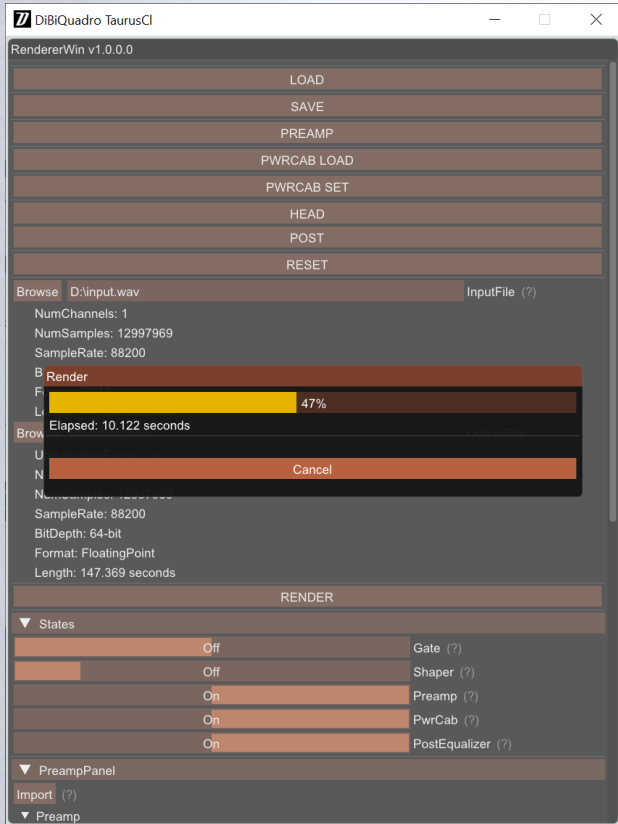
1. the full path (absolute or relative path + name) of the Renderer preset;
2. the full path (absolute or relative path + name) of the input wave file;
3. the full path (absolute or relative path + name) of the output wave file.

Reminder:

TaurusClRenderer.exe –c presetFile.drp input.wav output.wav

Example of Prompt command on Windows

DiBiQuadro TaurusCl

RendererWin v1.0.0.0

| LOAD |
| SAVE |
| PREAMP |
| PWRCAB LOAD |
| PWRCAB SET |
| HEAD |
| POST |
| RESET |

Browse D:\input.wav   InputFile (?)

NumChannels: 1
NumSamples: 12997969
SampleRate: 88200

Render

47%

Elapsed: 10.122 seconds

| Cancel |

NumSamples: 12997969
SampleRate: 88200
BitDepth: 64-bit
Format: FloatingPoint
Length: 147.369 seconds

| RENDER |

▼ States

Off	Gate (?)
Off	Shaper (?)
On	Preamp (?)
On	PwrCab (?)
On	PostEqualizer (?)

▼ PreampPanel

Import (?)

▼ Preamp

Renderer – Render in progress

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$$E=[db]^2$$