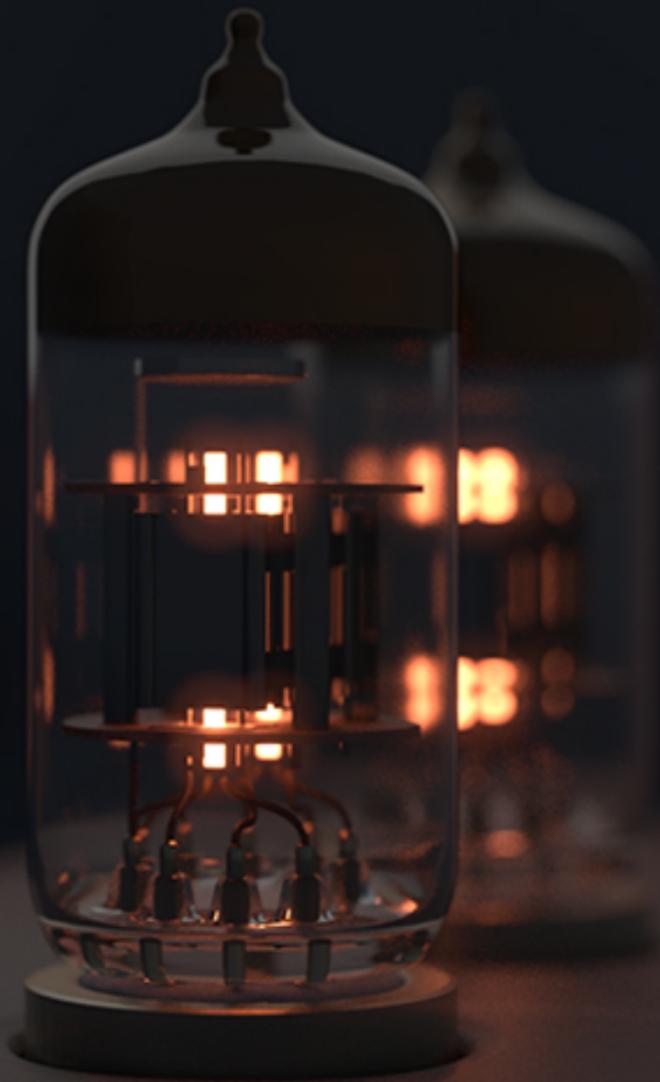


Mercuriall

JCM800 Hot Preamp 1.3



Audio Plug-In
User Manual

Introduction

JCM800 Hot Preamp is a digital emulation of a preamplifier stage of one of the famous tube heads for guitar. Made several modifications to the original JCM800 preamp circuit to improve its sound. Every single component on the signal path of the real analog circuit has been taken into account and modeled in the best possible way to match the original sound, keeping an eye to CPU performances and real-time playability at the same time. JCM800 Hot Preamp is meant to be used as a guitar preamplifier for live playing and jamming, tracking or mixing inside hosts capable of VST or AU Plug-Ins support.

Minimum System requirements

Windows:

Windows XP/Vista/7/8 (32/64 bit)
Intel or AMD processor with SSE3 instructions support

Mac:

OSX 10.7
Intel processor with SSE3 instructions support

Installation

To install the JCM800 Hot Preamp Plug-In, just follow the instructions below, according to the platform and plug-in format you want to use.

Windows VST:

Copy the folder JCM800 Hot Preamp v1.3.dll.dat into your VST Plug-Ins folder. (for example C:\Program Files\Steinberg\VSTPlugins)
Copy the file JCM800 Hot Preamp v1.3.dll into your VST Plug-Ins folder. (for example C:\Program Files\Steinberg\VSTPlugins)

Mac OSX VST:

Copy the bundle JCM800 Hot Preamp v1.3.vst into the path: /Library/Audio/Plug-Ins/VST/

Mac OSX AU:

Copy the bundle JCM800 Hot Preamp v1.3.component into the path: /Library/Audio/Plug-Ins/Components/

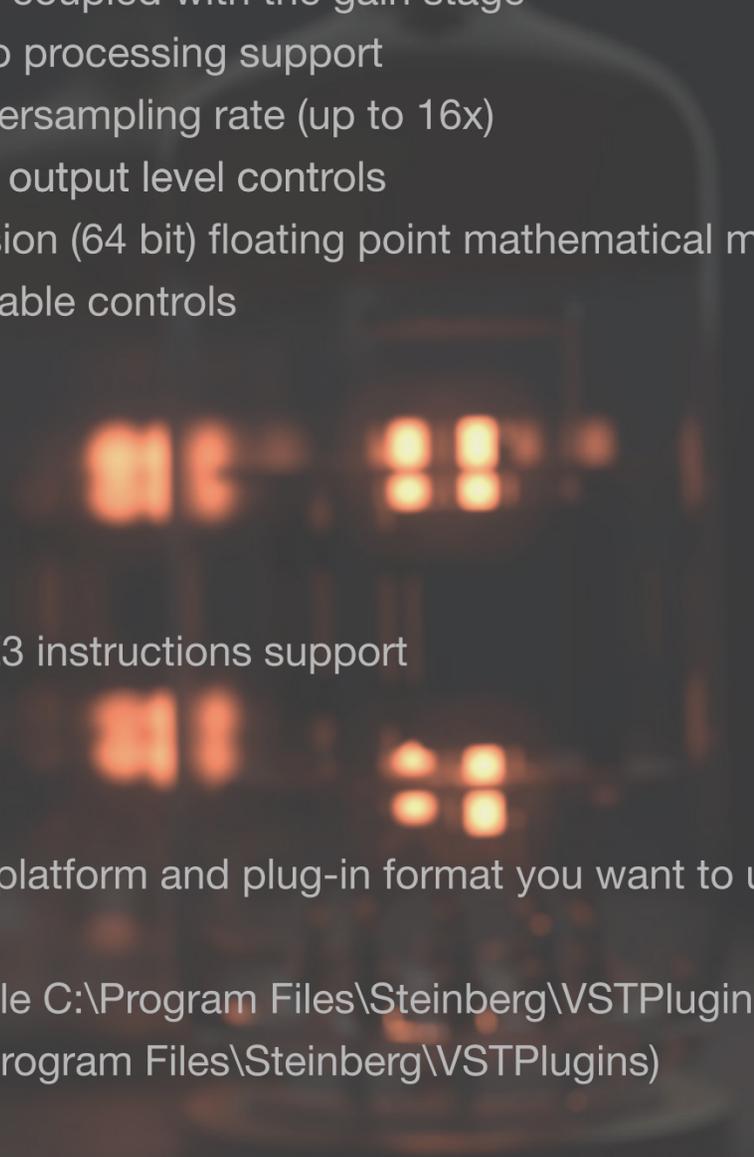
For Windows VST format, I provide separate x86 (32 bit) and x64 (64 bit) binaries, so make sure to choose the right one according to your operating system and plug-in host specifications. Keep in mind that x64 binaries will not run on 32 bit environments

After that, you should (re)start your favourite VST/AU host, making sure it re-scans your Plug-Ins folder(s) to recognize the JCM800 Hot Preamp as a new “Effect” Plug-In (please note that some hosts may not re-scan the plug-in folder automatically at every start-up, so you may need to do that manually. Refer to your host’s manual for instructions).

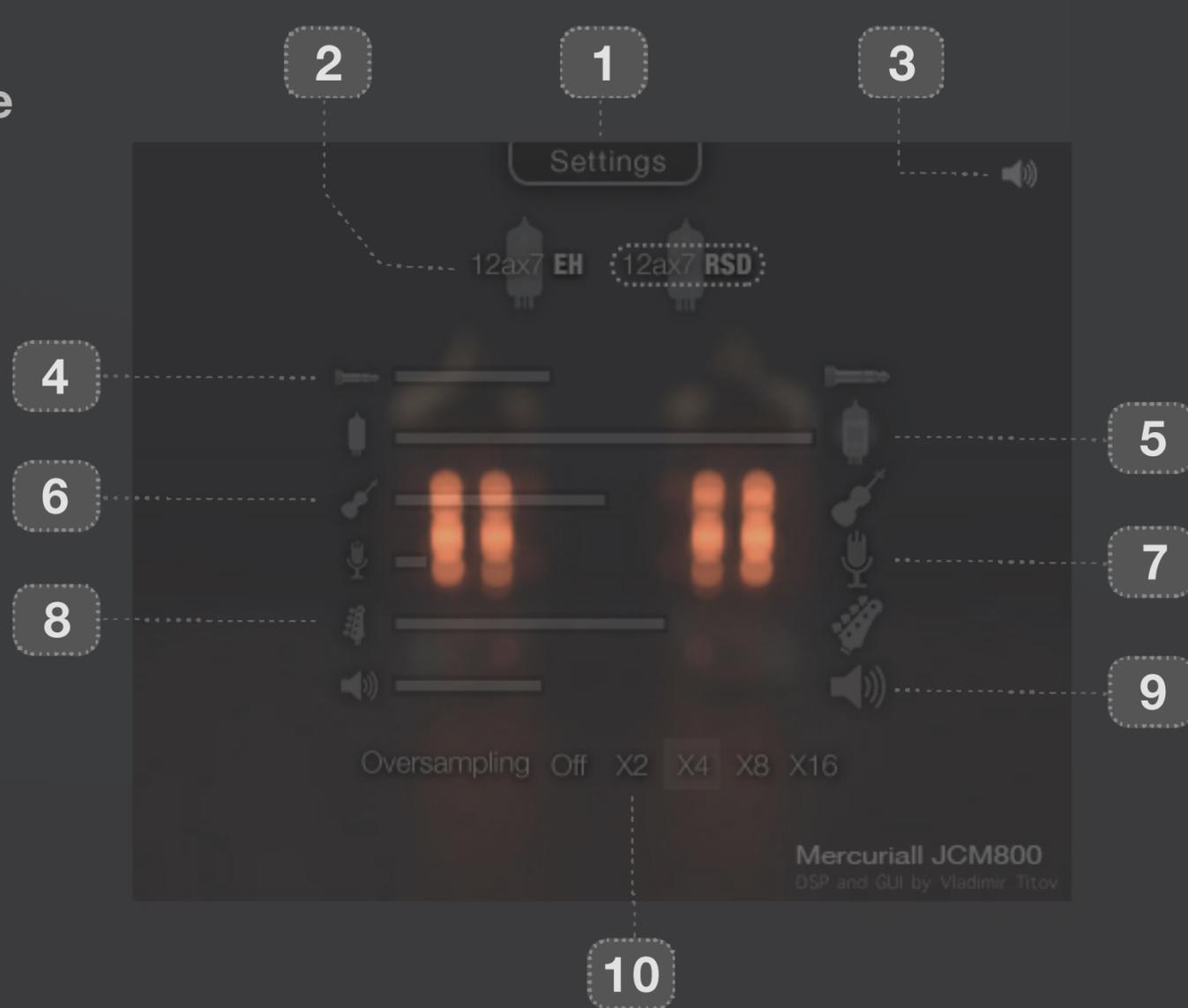
If everything is right, you should now see the JCM800 Hot Preamp v1.3 entry into the “Effect” Plug-Ins list of your host.

Main Features

- Dynamic ECC83 / 12AX7 triode analog modeling
- Two different Dynamic ECC83 / 12AX7 triode models
- Tonestack full coupled with the gain stage
- Mono / Stereo processing support
- Selectable oversampling rate (up to 16x)
- Global input / output level controls
- Double precision (64 bit) floating point mathematical model
- Fully automatable controls



Graphic User Interface



1 Show / Hide settings

Dual triode tube selector. 12AX7 EH gets more clean tone on low input level, best for clean/overdrive sound.

2 12AX7 RSD gets more bright sound, best for overdrive/distortion

3 Mono / Stereo switch.
lets the user select the processing mode of the plug-in.

4 Input level. Used to adjust the amount of guitar signal going through the virtual circuit.

5 Gain. Used to controls the amout of saturation/distortion

6 Treble control.

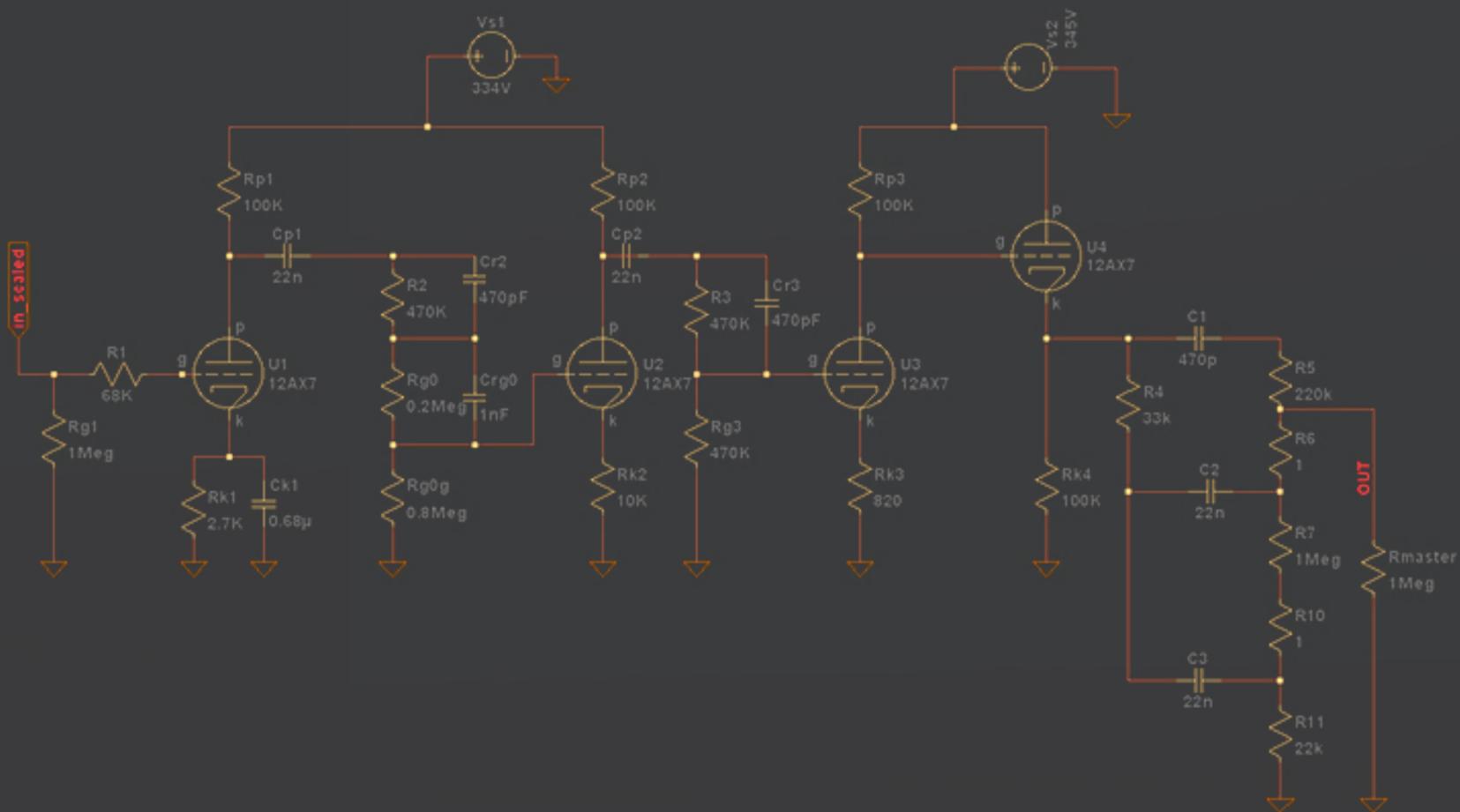
7 Middle control

8 Bass control. Like in real amplifiers, every control (treble,middle,bass) influences the tonal response of the others involved on the circuit

9 Output level. No need to explain much about these control

10 Oversampling lets you choose the internal processing sample rate of the plug-in. This means that if your host is set up to process at 44100Hz sample rate, by selecting 4x oversampling, for example, plug-in will process your signal at $44100 \times 4 = 176400$ samples per second. Oversampling is needed to avoid digital artifacts (aliasing) and improve the accuracy. Obviously, the higher the oversampling, the **higher the CPU usage**.

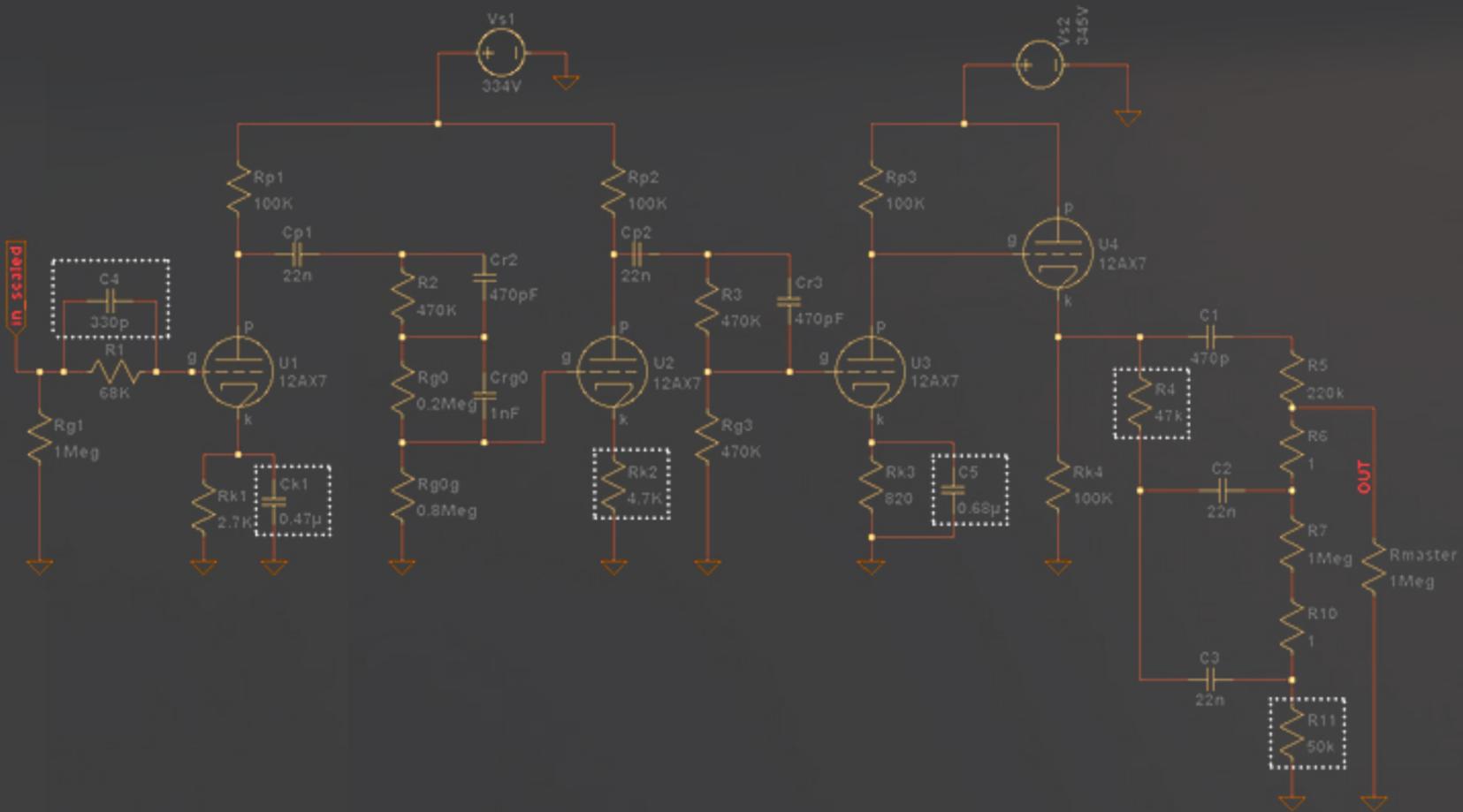
Original JCM800 Preamp circuit



Circuit Modifications

1. Locate the 68K input resistor and place a 330pf cap across it. This will beef up the mids and lows and make the entire amp feel more "meaty" and "thick".
2. Locate the 10K cathode resistor and replace it with a 4.7K resistor. This will beef up the gain. This seems to be the "sweet-spot" on these amps.
3. Locate the 820ohm cathode resistor and place a .68uf cap across it. This will increase the gain a little. But mostly it gives you the nice "Plexi" midrange boost.
4. Locate the 33K "slope resistor" which is in the EQ section and replace it with a 47K resistor. This bumps the amp's entire midrange frequencies up a notch. The result is a very "fat", "thick" or "beefy" tone that is really awesome.
5. Locate the 22K Midrange knob and replace it with a 50K pot. This is for those who are seeking more flexibility out of the midrange knob.
6. Locate the .68uf cap which is found on U1 and replace it with a .47uf cap. This alters the midrange response and adds a "heavier" tonal quality to the amp.

Changed JCM800 Preamp circuit (JCM800 Hot)



Tips for guitarists

Make always sure to have the highest input signal before the AD conversion, avoiding clipping. Once your guitar signal is converted to digital, it will be represented as a series of numbers that you can see as voltage values. These voltages can have a maximum and minimum value of 1.0 and -1.0 respectively. Supposing your input signal is peaking at its higher possible value right before the clipping threshold of the converter, it will be represented as 1.0 inside your host and the JCM800 Preamp will react to it like if you're sending a 1.0V signal to its input stage.

Because if your guitar pickup has a maximum output voltage higher than 1V (or 2V peak-to-peak), like many modern active pickups have, you'll need to adjust the input signal that's being sent to JCM800 Preamp. That's where the **Input Level** control comes into play. You need to tweak it to compensate the voltage scaling/normalization made by your AD converter.

if you are using a humbucker pickups (maximum output of 1.5V), you'll need to set the **Input Level** slider at the center position. By doing this, your input will be multiplied by 1.5. If you are using a single coil, instead, and its maximum output value is, let's say, 0.5V, you'll need to set the Input slider to the one-sixth of full slider range. By doing this, your input will be multiplied by 0.5. Input level slider allows you to change the multiplier linearly from 0 to 3.

JCM800 Preamp is a preamplifier simulator, so it needs a cabinet simulator after it, to sound like a real mic'd tube amplifier. There are numerous free and commercial cabinet simulator plug-ins available, so make sure to place one (and only one!) of them right after JCM800 Preamp.

Contacts

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Changes from initial release

- Better stability and quality of simulation. Proper simulation with input signal more than 6V peak-to-peak.
- Increase processing speed up to x2 times
- More realistic 12ax7 triode model
- Better quality of modeling of cathode follower section
- Better quality of modeling of tone stack section
- More precise and quick algorithm for oversampling
- Increase speed of triode model switching
- Less memory consumption
- Faster loading
- Lower disk space consumption

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JCM800P reamp