

# Red Phatt Pro

Dynamics processor

**User manual v1.0.3**  
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## 1. Description

Red Phatt Pro is a stereo Virtual Studio Technology (VST) plug in that allows real-time, zero-latency dynamics processing.

## 2. Demo limitations

The DEMO version of this plug in has the following limitations:

- The parameter display is disabled;
- The soft knee switch is disabled;
- The limiter switch is disabled;
- The mono/stereo switch is disabled;
- The sidechain switch is disabled;
- The listen switch is disabled;
- The release curve selector is disabled.

These limitations are only reflected in the user interface; all functionality is fully operational and can be tested using a variety of supplied presets. The full version does not have these limitations.

## 3. Installation

This plug in comes without installation program. The installation can be performed manually by the following two steps:

- Extract the file 'jb\_redphatt\_pro.dll' and 'jb\_redphatt\_pro\_alt.dll' from the corresponding zip file, using an (un)zip program or using the build-in functionality from Microsoft Windows XP or Vista;
- Store the dll file in the directory where your host program stores all VST plugins. This directory depends on the host program. Please refer to the manual of your host program to determine the correct directory.

The plugin comes in two flavors:

- **jb\_redphatt\_pro.dll**: this plugin has 4 input channels and supports mono and stereo side chaining;
- **jb\_redphatt\_pro\_alt.dll**: this plugin has 2 input channels and does not support stereo side chaining but does support mono side chaining. This alternative version of the plugin can be used in the following 2 cases:
  - Hosts that do not support 4-channel input formats (such as some versions of Steinberg Wavelab);
  - If no side-chaining is required.

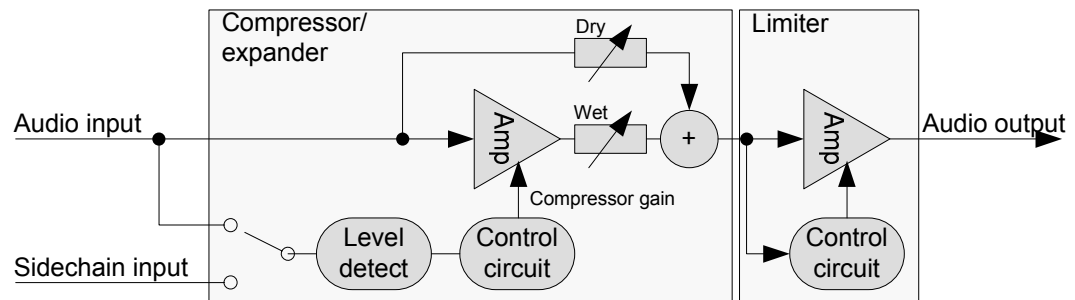
*If you have used the demo version of this plug in (with the word 'demo' in the file name) and would like to install the full version, or if you have earlier beta versions, you are advised to delete all earlier versions of this plug in before installing newer versions.*

## 4. Red Phatt Pro overview

Red Phatt Pro is a flexible dynamics processing plugin that supports the following features:

- Zero latency processing optimized for both live and studio use;
- Mono and stereo operation modes;
- Support for all sampling frequencies supported by the plugin host;
- Support for 64-bits (double-precision) audio data for high-end use;
- Mono or stereo sidechain input for broadcast or advanced music production purposes;
- Higher-order level detector with controllable filter and hysteresis for maximum control of the detected signal envelopes;
- Variable attack, hold and release characteristics;
- Different release curves for more sonic variety;
- Dual-ratio compression / expansion curves for maximum dynamics flexibility supporting both upward and downward compression;
- Support for parallel (New-York style) compression;
- Integrated zero-latency peak limiter;
- Clear user interface and display with dry input/output curve, effective input/output curve, current input level, compressor and limiter gains for visual inspection of plugin operation;
- Variety of categorized presets to quickly set all 20 parameters depending on the desired use case.

A simplified schematic overview of Red Phatt Pro is shown in Figure 1. A first stage comprises a compressor/expander with selectable sidechain input. A level detection and control circuit determine the compressor gain using a feedforward topology. This part is also called 'sidechain'. Subsequently, the gain is applied to the input signal ('wet' signal) and the dry and wet signals are mixed in variable amounts. Finally, a peak limiter (which can be disabled) analyzes the signals by another control circuit and changes the output gain in the case of signal levels that are beyond the full digital scale.



**Figure 1 - Simplified schematic overview of Red Phatt Pro.**

## 5. Usage

### 5.1 Graphical User Interface (GUI)

The GUI of Red Phatt Pro is shown in Figure 2. The various GUI elements and their functions are listed in Table I.

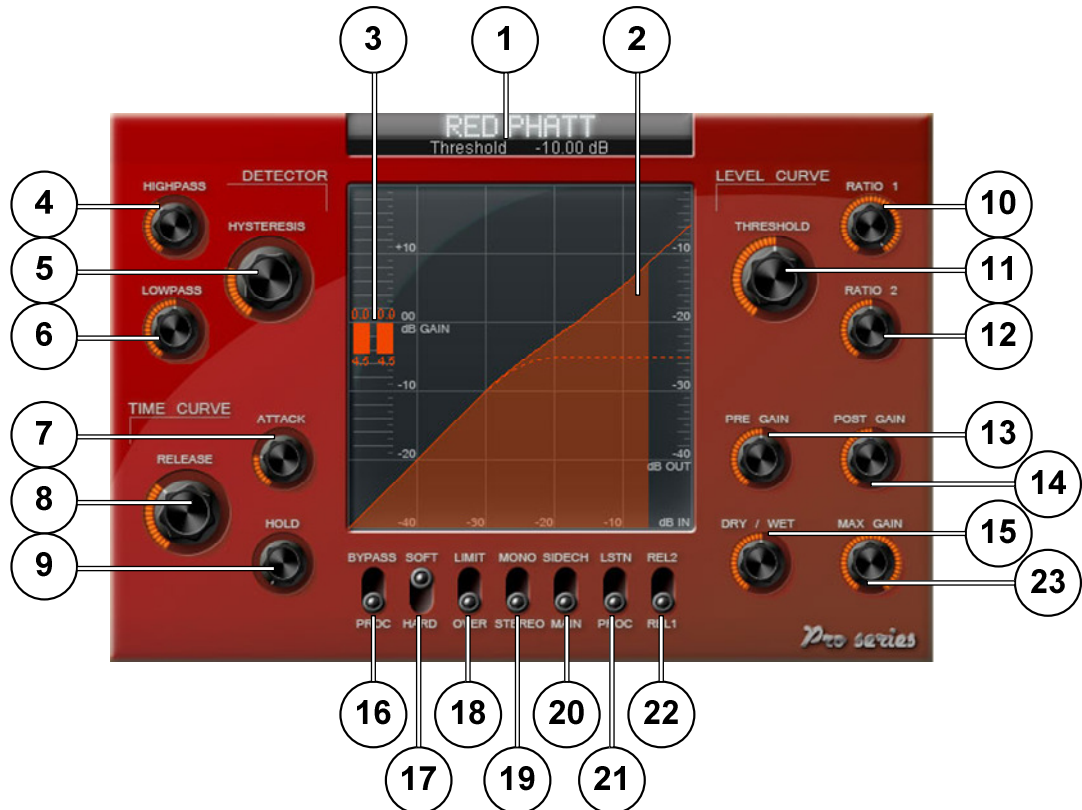


Figure 2 – Graphical User Interface of Red Phatt Pro.

1	Parameter display	Displays parameter value of active GUI element (disabled in demo mode)
2	Input/output display	Displays input/output curve and current input level
3	Compressor and limiter gain	Displays compressor gain and left/right limiter gain
4	Detector high pass	Modifies lower cut-off frequency of envelope detector input
5	Detector hysteresis	Sets the amount of hysteresis in the envelope detector
6	Detector low pass	Modifies upper cut-off frequency of envelope detector input
7	Time curve attack	Sets the attack time of the compressor gain
8	Time curve release	Sets the release time of the compressor gain
9	Time curve hold	Sets the hold time of the compressor gain
10	Level curve ratio 1	Sets the compression/expansion ratio for input levels above the compressor threshold
11	Level curve threshold	Sets the compressor threshold
12	Level curve ratio 2	Sets the compression/expansion ratio for input levels below the threshold
13	Level curve pre gain	Sets pre-amplification of input signals
14	Level curve output gain	Sets the make-up gain of the output signals
15	Level curve dry/wet	Sets the amount of dry and wet signals at the output
16	Bypass/proc	Enables bypassing of compressor
17	Soft/Hard	Enables soft-knee compressor curve
18	Limit/over	Enables integrated peak limiter
19	Mono/stereo	Sets mono or stereo operation mode
20	Sidech/main	Sets the sidechain operation mode
21	Lstn/proc	Enables listening to filtered level detector (sidechain) signal
22	Rel2/rel1	Selection of different compressor release curves
23	Max gain	Maximum compressor attenuation / gain (range)

**Table 1 – GUI elements and their functions.**

## 6. Quick start

The various GUI elements can be controlled by left-mouse clicks (switches) or left-mouse drags (knobs and sliders). The following key combinations apply that modify the behavior of GUI elements:

- Control: Set the control in its default value;
- Shift: Decrease the sensitivity of the control;
- Alt (applied on rotary knobs): Jump to clicked position;

### 6.1 Parameter display

The parameter display shows the parameter value of the GUI element that is modified by the user. A left-mouse click only on an element will show the current parameter value in the parameter display.

### 6.2 Input/output display

The input/output display indicates the actual compressor input/output function in decibels (see Figure 3):

- The effective input/output function incorporating the amount of 'dry' input signal that is mixed with the output by means of the dry/wet control (15) is shown by the solid line;
- The wet-only input/output function is shown by the dashed line;
- The current input level is indicated by the filled area under the input/output curve.

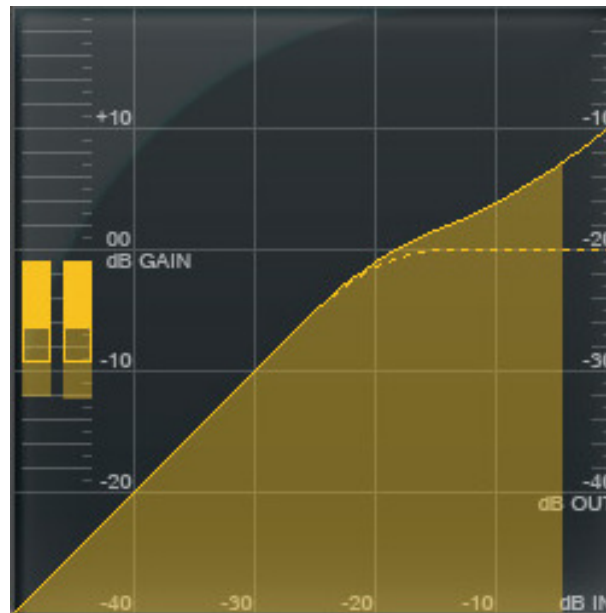


Figure 3 - Input/output display.

Red Phatt Pro allows to mix the input and compressed output in variable amounts by the dry/wet knob (15). If this knob is set to 'wet' only, the actual and wet-only input/output functions will be identical and overlapping. A lower value of the dry/wet setting will create an input/output curve that is more 'straight'.

### 6.3 Compressor and limiter gain

The current gain of the compressor and limiter are visualized by the vertical bars on the left-hand side of the input/output display (see also Figure 4). The gain is subdivided in compressor gain (filled area), limiter gain (non-filled area) and maximum gain range history (transparent area). The limiter gain will only be visible if the limiter is enabled using switch (18). The gain history can be reset by clicking on the display. Numerical values will be given below and above the bars (without incorporating the sign of the values).

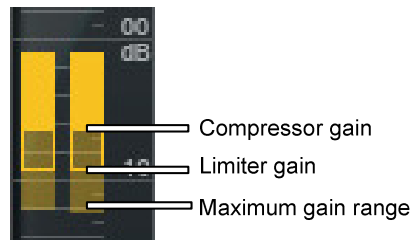


Figure 4 - Compressor and limiter gain display.

### 6.4 Detector high-pass

This knob controls the high-pass cut-off frequency of the level detector input. This allows selection of a certain frequency range that the compressor responds to.

### 6.5 Detector hysteresis

This element determines the amount of hysteresis of the level detector. A non-zero hysteresis takes information from the past into account to avoid distortion and/or pumping artifacts. The higher the hysteresis setting, the lower the risk for distortion and pumping/breathing problems, at the expense of slower release times.

### 6.6 Detector low-pass

This knob controls the low-pass cut-off frequency of the level detector input. This allows selection of a certain frequency range that the compressor responds to.

### 6.7 Time curve attack

This knob controls the speed at which the compressor responds to increases in input signal level. Longer attack times result in slower responses. This knob also controls the attack time of the peak limiter (if enabled using switch (18)).

### 6.8 Time curve release

This knob controls the speed at which the compressor responds to decreases in input signal level. Longer release times result in slower responses and hence slower recovery of the compressor gain. This knob also controls the release time of the peak limiter (if enabled with switch (18)).

### 6.9 Time curve hold

This knob controls the time that is required before the compressor switches from the attack to the release phase. This knob also controls the hold time of the peak limiter (if enabled with switch (18)).



### **6.10 Level curve ratio 1**

This knob determines the compression ratio (for values > 1) or expansion ratio (for values < 1) of the input/output curve for input levels above the level curve threshold. Its value is the amount of signal level change (in dB) required for 1 dB change at the output.

### **6.11 Level curve threshold**

This knob determines the threshold of the compressor.

### **6.12 Level curve ratio 2**

This knob determines the compression ratio (for values > 1) or expansion ratio (for values < 1) of the input/output curve for input levels below the level curve threshold. Its value is the amount of signal level change (in dB) required for 1 dB change at the output.

### **6.13 Level curve pre gain**

This knob determines the gain or attenuation of all input signals before processing.

### **6.14 Level curve output gain**

This knob determines the gain or attenuation of the total output signal (including dry). The gain is applied *before* the peak limiter (if the peak limiter is enabled).

### **6.15 Level curve dry/wet**

This knob determines the amount of dry signal that is mixed with the processed output. A setting of 100% will only result in processed (compressed) output signals; a setting of 0% sends the input signal only to the output. Intermediate settings can significantly improve the temporal properties of the compressor by better transient responses, and reduced pumping/breathing problems. This method is often referred to as 'parallel compression' or 'New York style' compression.

The input/output curve (2) will display the 'effective' input/output characteristic which incorporates the setting of the dry/wet knob (15). In this way, the effect of mixing dry and wet can be visually inspected. The dry and wet signals are fully aligned before mixing to avoid phasing or comb-filter problems.

### **6.16 Bypass/proc**

This switch 'bypasses' the compressor and limiter.

### **6.17 Soft/hard**

This switch enables a soft-knee compressor curve resulting in a gradual change in the curve around the threshold point. The soft-knee range is 12 dB (-6 to +6dB below/above the threshold value). When set to 'hard', the compressor curve slope will instantaneously change from ratio1 to ratio2 at the threshold value.

### **6.18 Limit/over**

This switch enables the integrated peak limiter (if set to 'limit'). Signal levels beyond the digital full scale ('overs') will be limited to the maximum allowed value. The attack, release and hold settings of the limiter are the same as those from the compressor.

Because of the zero-latency of this plugin, the limiter is not designed for ultra-transparent limiting such as the Barricade Pro multi-factor limiter. The limiter of Red Phatt Pro provides means to add additional 'character' and 'warmth' to the sound, depending on the attack,

hold and release times. Fast attacks will predominantly limit incoming 'overs', while slower attack times will slightly 'deform' transients using tube saturation algorithms.

When this switch is set to 'over', no limiting is applied and 'overs' may remain in the output.

### **6.19 Mono/stereo**

This switch toggles between mono and stereo operation mode. In mono mode, only input 1 is used. In stereo mode, the input signals are taken from inputs 1 and 2.

### **6.20 Sidech/main**

If set to 'Sidech', the compressor operates in sidechain mode. In this mode, the external sidechain input is used for level detection. If in stereo mode, the compressor gain is derived from inputs 3 and 4; in mono mode, the compressor gain is derived from input 2. The low-pass, high-pass and hysteresis controls are also effective on the sidechain inputs.

For the alternative version of Red Phatt Pro that is designed to provide compatibility with hosts that do not support 4 channel inputs, stereo side chaining is not possible. If the sidechain input of this version is activated, the external sidechain input is derived from input 2 (i.e., mono side chain) and the signal to be processed is taken from input 1.

### **6.21 Lstn/proc**

In 'Lstn' mode, the filtered signal fed into the level detector (sidechain) is sent to the output for listening purposes. The normal operation mode is 'proc' which does not send the level detector signals to the output.

### **6.22 Rel2/rel1**

This switch toggles between two different release characteristics of the compressor:

- Rel2: This curve is mostly suitable for (1) pumping compression and (2) very low-frequency input signals (such as bass guitar);
- Rel1 (default): This curve is mostly suitable for dense, warm and transparent compression of generic content.

### **6.23 Max gain**

This function determines the maximum gain range of the compressor. If set to x dB, any compressor gain values are limited to the range [-x, +x] dB.

## 7. Disclaimers

VST is a trademark of Steinberg Media Technologies GmbH.

## 8. Specifications

Property	Supported values
Supported input/output formats	Stereo Mono (as dual mono via host) 4 channels (stereo side chain configuration)
Plug in delay (latency)	0 samples
Supported bit depths	32 bit float 64 bit float
Number of parameters	20
Supported sample rates	All supported by host
VST version	2.4

## 9. Known issues

- Some versions of Steinberg Wavelab do not support 4-channel input formats, resulting in an error message: *Error reported by plug-in "jb\_redphatt\_pro": can't handle required number of input channels.* Please use the plugin version with stereo side-chaining disabled (indicated by the 'alt postfix in the file name) in Steinberg Wavelab if this error is encountered.

## 10. Change log

### Version 1.0.3

- Improved transient behavior
- 

### Version 1.0.2

- New GUI design
- Numerical value indicators for maximum and minimum gains
- Improved gain tracking algorithm

### Version 1.0.1

- New function: compressor gain range limiter
- Several algorithmic optimizations and improvements
- Bug fix for bypassing in some hosts
- Updated GUI including:
  - o Larger parameter value screen
  - o Improved compressor and limiter gain metering including gain history indication

### Version 1.0.0

- Initial version.