



# Golden Uni-Pressor | GUP-1

Professional Universal Compressor Plugin

**Users Manual**

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Thank you for buying the Golden Uni-Pressor | GUP-1 by Kjaerhus Audio

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### **Acknowledgements**

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# 1. General Description

## 1. General Description

The Golden Uni-Pressor | GUP-1 is a general-purpose compressor made for tracking, mixing and mastering. It offers VCA and Opto models that can be run in a Warm or Smooth mode, and a Program Dependent Envelope (PDE) to decrease pumping and increase loudness. High and low cut filters in the side chain can be used to make frequency dependent compression. The compressed signal can be mixed with the uncompressed one, and that can be used to create upward compression. Three versions are available: stereo, stereo with side chain, and mono with side chain. There is no latency, which makes this the ideal tool for real time performance in the studio or on stage.



### Main Features

- Feed forward VCA and Opto modeled compression
- Smooth or Warm sound processing
- PDE for maximum loudness and minimum pumping
- Input Filter to remove sub-noise and DC
- Side Chain Compression (Key In)
- Side Chain Filters and Listening button
- Output Mix and Phase Inversion
- A/B comparisons
- Silent knobs and buttons
- Presets
- 64 Bit Internal Processing
- Supports sampling rates up to 192kS/s
- Full VST<sup>®</sup> automation
- Low CPU usage
- No latency

## 2. Getting Started

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## 2. Getting Started

This chapter contains general info about the GUP-1 and its parameters.

### Variants

The installation package includes three variants of the GUP-1. The variants will display as individual effects in the effects list as GUP1, GUP1\_SC and GUP1\_SCM. Here is a short description of each:

- GUP1: This is the standard stereo version without side chain support. It has two inputs and two outputs.
- GUP1\_SC: This is a stereo version with side chain support. It has four inputs and two outputs.
- GUP1\_SCM: This is a mono version with side chain support. It has two inputs and one output, but will still work on a normal mono track.



*Banks saved by one variant cannot be loaded into other variants, so remember to select the right variant for the job when starting your project.*

### Knob operation

All knobs are operated by vertical mouse movement and holding down the left mouse button. It is possible to change the sensitivity adjustment of the mouse and reset the knobs using interaction from the keyboard.

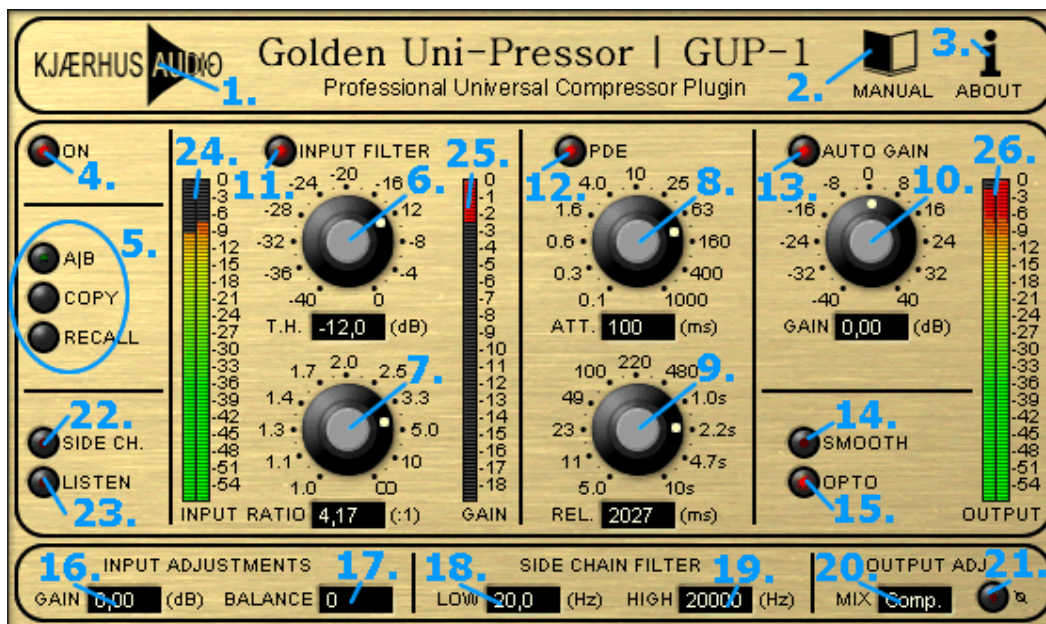


- No Key: Under normal operation (no keyboard interaction), the knob will turn relatively fast and the parameter increase / decrease will be relatively large (but fine enough for most purposes).
- Shift: Hold down the Shift key while pushing the left mouse button to make fine adjustments.
- Ctrl: Hold down the Ctrl key while pushing the left mouse button to reset the knob.

## 2. Getting Started

### Overview

Below you will find an overview with a basic description of each control.



1. Logo: Kjaerhus Audio logo. For your convenience, we have added a hyperlink to our web site. This allows you to check for new products and updates (you will need an open Internet connection to use this).
2. Manual: Click here to open the Users Manual.
3. About: Click to get an info dialog with registration details and the product version. If you have not yet registered, you will see the remaining trial time and be able to open a license key to register from this dialog.
4. On: Shifts between processed and unprocessed signal (bypass when off).
5. A | B comparisons: Used to switch between two parameter sets (more about this later).
6. Threshold: The level where the compressor will begin compressing significantly. This compressor has a soft knee characteristic, so lower levels will also be affected (more about that later).
7. Ratio: The input level increase that will lead to one extra dB of output level, i.e. if the ratio is 4:1, the input should increase 4dB in order to get the output level increased by 1dB.
8. Attack: The time it takes for the compressor to compress effectively. Signal peaks shorter than the attack time will not be compressed as much as continuous signal levels.

## 2. Getting Started

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- 9. Release: The time it takes for the compression to cease once the input level no longer exceeds the threshold.
- 10. Gain: Adjustment of output gain used to make up for the level lost during compression.
- 11. Input Filter: Used to remove Sub noise and DC that might interfere with proper compression.
- 12. PDE: Program Dependent Envelope used to minimize pumping and increase loudness.
- 13. Auto-Gain: Makeup gain based on the actual threshold and ratio setting.
- 14. Smooth: Switches between a smooth (clean) sound when on, and a warm sound when off.
- 15. Opto: Switches between Opto compression when on, VCA compression when off.
- 16. Input Gain: Used to correct the input level.
- 17. Balance: Balances the input signal.
- 18. Side Chain Low: Sets the low cutoff frequency of the Side Chain Filter.
- 19. Side Chain High: Sets the high cutoff frequency of the Side Chain Filter.
- 20 Mix: Used to mix the uncompressed and compressed signal.
- 21. Invert: Inverts the output (180 degree phase shift).
- 22. Side Chain: If on, compression will be based on the side chain signal instead of the input signal.
- 23. Side Chain Listening: Listen to the Side Chain signal. This signal is routed directly to the output of the compressor (post Gain and pre meter).
- 24. Input Level Meter: Shows the peak input level.
- 25. Gain Meter: Shows the peak gain (Compression).
- 26. Output Level Meter: Shows the peak output level.

## 2. Getting Started

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### A to B comparisons

You can have two sets of alternate parameters for a track, allowing you to switch back and forth between the two to decide which sounds best. Use “A/B” to swap between the two preset sets, and “Copy” to copy the current parameters (those you see now) to the other set.

A/B: Select either the A or B set of parameters.

Copy: Copy the current actual parameters to the other set of parameters.

Recall: Will load the original factory parameter values for the current patch.



*One patch can only hold one set of parameters. When closing the user interface of the equalizer or the Host, it will only remember the parameters that were last selected. When the user interface is opened after it has been closed, the last selected set of parameters will be shown as ‘A’ parameters, despite what it was before. The ‘B’ set will be empty. If you want to keep both ‘A’ and ‘B’ parameter sets, save them in one of the banks before closing the user interface.*

### Side Chaining

The GUP-1 supports side chaining in two special variants named “GUP1\_SC” and “GUP1\_SCM”, the second one being the mono version (see “Variants” in this chapter).

Side chaining is used to compress one signal depending on the signal level of another. Common applications are ducking a bass guitar when there is a kick drum, or to duck music when a speaker talks (often used for background music in radio- and television programs). There are of course many more applications not mentioned here.

#### How to use side chaining

First you will need a track that supports the amount of inputs in the side chain plugin (four in the stereo version and two in the mono version). The side chain signal is always applied to the last input(s) of the plugin. Enabling side chaining will lead the side chain input(s) to the level detector. This creates compression based on the side chain signals level instead of its normal input level.



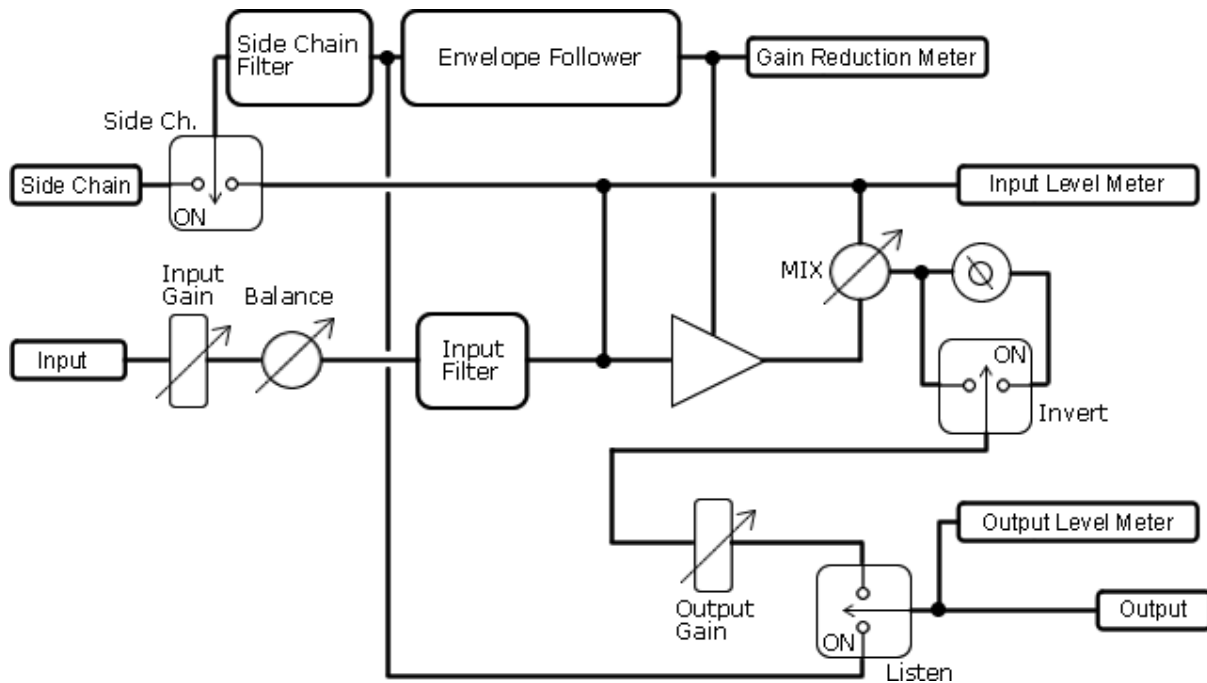
*The mono side chain version can always be inserted on a mono track, as the host will always supply both inputs with the same signal.*



*Not all hosts support four inputs. Refer to the manual of your Host application.*

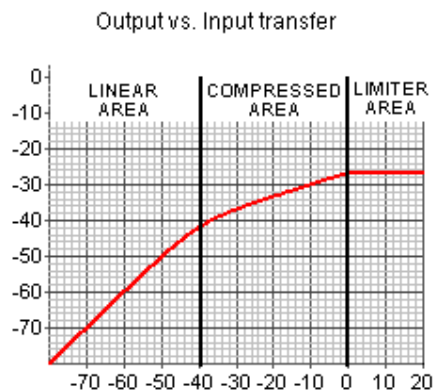
### 3. Getting Into the Details

### 3. Getting Into the Details



#### Adjusting compression (Threshold & Ratio)

The amount of compression is controlled by the Threshold and Ratio knob alone. The compressor will begin to compress significantly when the input level exceeds threshold, but also levels below threshold will be slightly compressed due to the soft knee of these compressors. Soft knee compression is considered more musical sounding than hard knee compression, which is mostly used for mastering. As an extra feature, both compressors have a limiting characteristic for input levels higher than 0dBFS.



The output level vs. input level transfer can be divided into three areas:

1. Linear area below threshold (where little or no compression takes place),
2. Compressed area (where the signal is compressed according to the ratio) and
3. Limiter area (where hard knee  $\infty$ :1 compression takes over).

### 3. Getting Into the Details

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#### Adjusting Attack and Release

Setting the right attack and release time is an important part of the compressors' character. Attack is used to allow shorter peaks in the signal to pass uncompressed. With a decent amount of attack, significant compression can be accomplished without squelching the sound. Release is the time it takes for the compression to cease and the output level to be brought up to its original level, once the input level no longer exceeds the threshold. Generally, a low attack and release time gives a higher RMS output (loudness), limited pumping, and relatively high harmonic distortion. A higher attack and release gives a smoother sound with less RMS output and minimum distortion. With the built-in PDE algorithm, it is possible to minimize pumping and get a higher RMS output, while still retaining minimal distortion, when used with a medium to high release time.

#### Setting the output gain

After compression, the signal is obviously lower than when it entered the compressor, and you will probably want some makeup gain to bring the output level up to a reasonable level (peaks around 0 dBFS). To accomplish this, we have two parameters: Auto-Gain and Gain (manual).

Auto-Gain will calculate a default makeup gain to ensure that the transfer ends up giving 0dBFS out for 0dBFS continuous input. Auto-Gain does not ensure that the output will not go over 0dBFS! First, the input signal might already be over 0 dBFS, and peaks in the input material might be allowed to pass uncompressed or less compressed by the chosen attack time. What auto-gain will do is give a better offset for the final makeup gain, which might have to be adjusted on the manual gain control.

## 5. Specifications

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Technology: Analog modeled peak detecting feed forward compressor

Input:

Gain adjustment:	+/- 20 dB
Balance:	Left to Right (constant signal level)
Filter:	20 Hz Butterworth Low-cut (12 dB / octave)

Compression:

Threshold:	-40 – 0 dBFS peak detecting
Ratio:	1:1 – Limiting
Attack:	0.1 – 1000 ms <sup>1</sup>
Release:	5 – 10000 ms <sup>1</sup>

1) Attack and release times are defined as the time it takes to reach 63.2% of the destination level (natural RC time constant “tau”)

Output:

Makeup Gain:	-40 – 40 dB
Mix:	Uncompressed to Compressed (constant signal level)
Phase Button:	180°

Side Chain Filter:

Low Cut:	20 Hz Butterworth (12 dB / octave)
High Cut:	20 Hz Butterworth (-12 dB / octave)

Meters: Peak sensing input level, gain and output level

Processing: 64 Bit Floating Point

Supported sampling rates: 44100, 48000, 88200, 96000, 176400 and 192000 S/s

Latency: 0