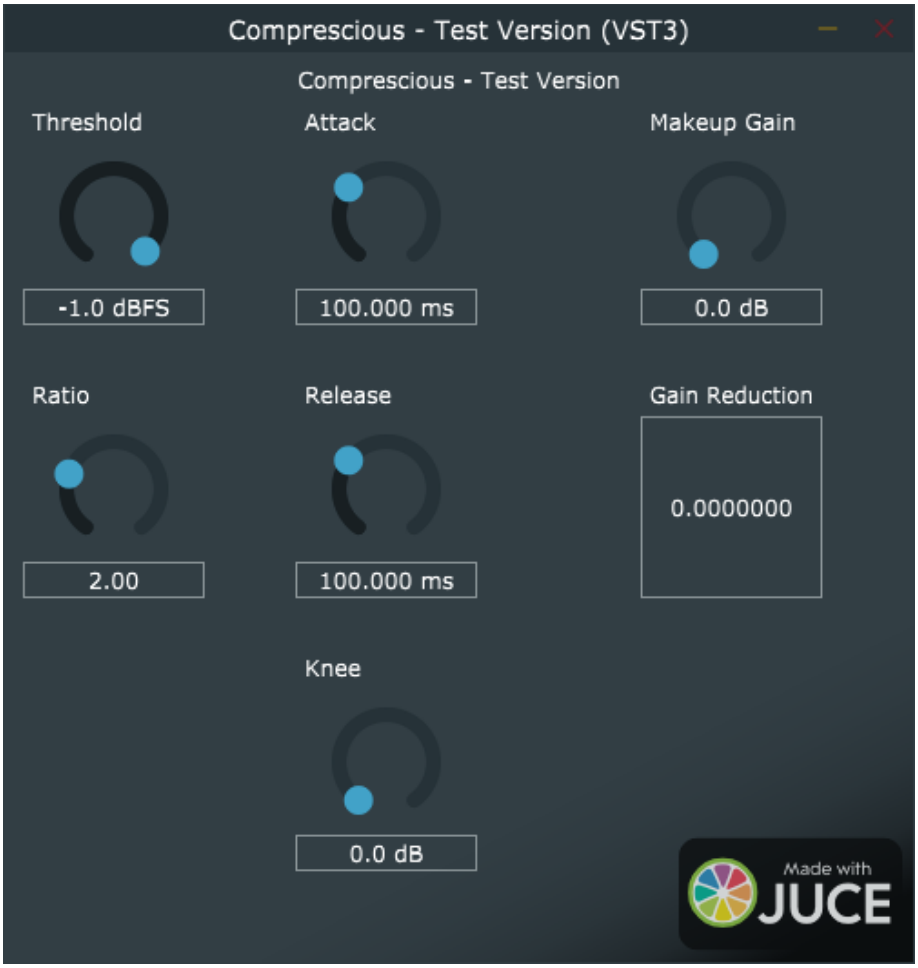
Compresciously

A basic mono/stereo linked digital compressor plugin



Made with JUCE, by Jeremy Lau

Manual Ver. 1.0; Software Ver. 0.1.0

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Preface

Firstly, thank you for showing your interest in this plugin and obtaining it for yourself! This plugin was initially developed as a major project for my undergraduate bachelor's degree that does not teach audio programming. As such, I spent 12 weeks learning audio programming with JUCE, studying basic digital signal processing in the context of compression, and making this plugin. While the compressor is very simple, I plan to expand on this compressor and give it more features. With this compressor, my aim was to create a compressor that is both simple but also able to give the user as much control of the compressor as possible.

If you would like to leave some feedback on the plugin, I have prepared a response form via the link here: https://forms.office.com/Pages/ResponsePage.aspx?id=R7hEWr7Xe02I_7UqEAMrSFUrfeMx-QlJoi0h4bF0y0FURUZGWEgwQkZHSDJQWEVMUE5QRFEwWUlZUi4u

If you have found any bugs or unexpected behaviours, please send me an email titled "Comprescious – Bug Report" at jlau3@myjmc.edu.au or jeremy_rocket@hotmail.com.

How-to-Use

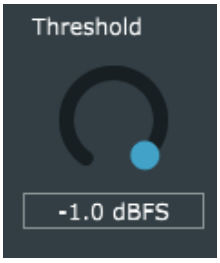
The Basics

This plugin comes in VST3 and AUv2 formats. There are Windows-compatible and MacOS-compatible versions. Be sure to download and install the correct version!

The plugin comes in both mono and stereo formats. When in stereo, the compressor is **stereo-linked**, meaning that both audio channels will have equal compression applied to them. The sidechain signal or the detection signal used is, at the basic level, the maximum amplitude of either signal, as opposed to average signal level.

The Controls

Threshold

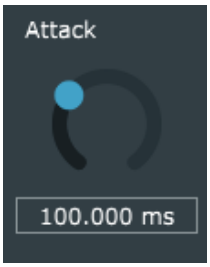


The threshold control sets the level at which the compressor begins to compress a signal, when the knee setting is at 0dB. The setting ranges from –100dBFS to 0dBFS, with increments of 0.1dB. If the dBFS unit confuses you, just remember that for standard digital metering, this is the equivalent to your signal level. Strictly speaking, the signal that dictates whether compression is applied, that is the sidechain signal, is not the actual signal, but a smoothly detected signal. See the next section if you are interested.

Ratio

This sets the strength of the compression. The ratio setting ranges from 1.00 to 100.00, with increments of 0.01. As an example, when the knee setting is at 0dB, if the detected signal exceeds the threshold by 10dB, the compressor will reduce the signal by 8dB with a setting of 5.00, or by 5dB with a setting of 2.00.

Attack

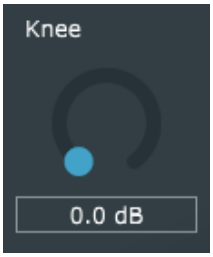


Loosely speaking, the attack sets the speed at which the detector signal level increases to the input signal level. The setting ranges from 0ms to 10000ms, with increments of 0.001ms, where a smaller value is considered fast, and a larger value is slow. Note that the time should not be used as an absolute measure, but as a general guide of the speed of the detection. Thus, do not expect an actual 1 second delay when the setting is at 1000ms. For an in-depth example, see the next section.

Release

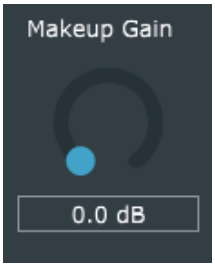
Loosely speaking, the release sets the speed at which the detector signal level decreases to the input signal level. The setting ranges from 0ms to 10000ms, with increments of 0.001ms, where a smaller value is considered fast, and a larger value is slow. Note that the time should not be used as an absolute measure, but as a general guide of the speed of the detection. Thus, do not expect an actual 1 second delay when the setting is at 1000ms. For an in-depth example, see the next section.

Knee



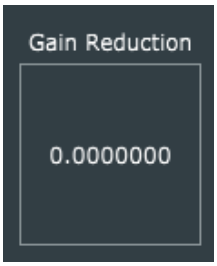
The knee setting provides a smooth transition for the amount of compression applied. The setting ranges from 0dB to 50dB, with 0dB being a hard knee. As an example, when the knee is set to 10dB, then 5dB before and after the threshold value, the ratio will be more than 1, but less than the value set by the ratio control. A graphical example is provided in the next section.

Makeup Gain



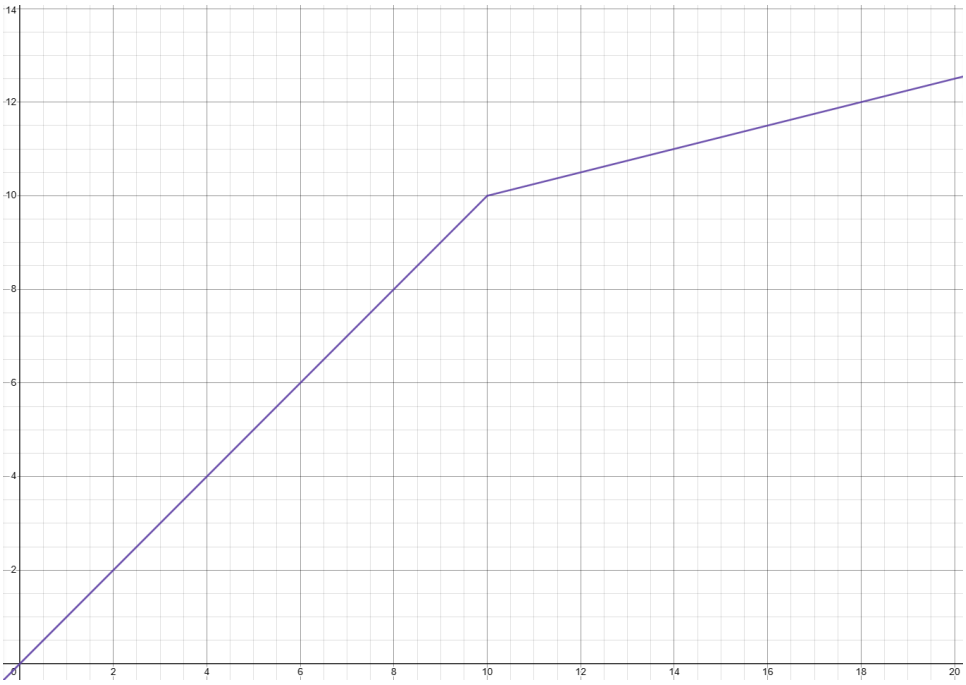
Sometimes known as output level, this control increases the level of the signal that comes out of the compressor by the designated amount. The control ranges from 0dB to 40dB, with increments of 0.1dB. Note that makeup gain is applied regardless of whether compression is applied, and it is applied as a peak level increase, rather than an RMS (root-mean-squared) level increase.

Gain Reduction Meter

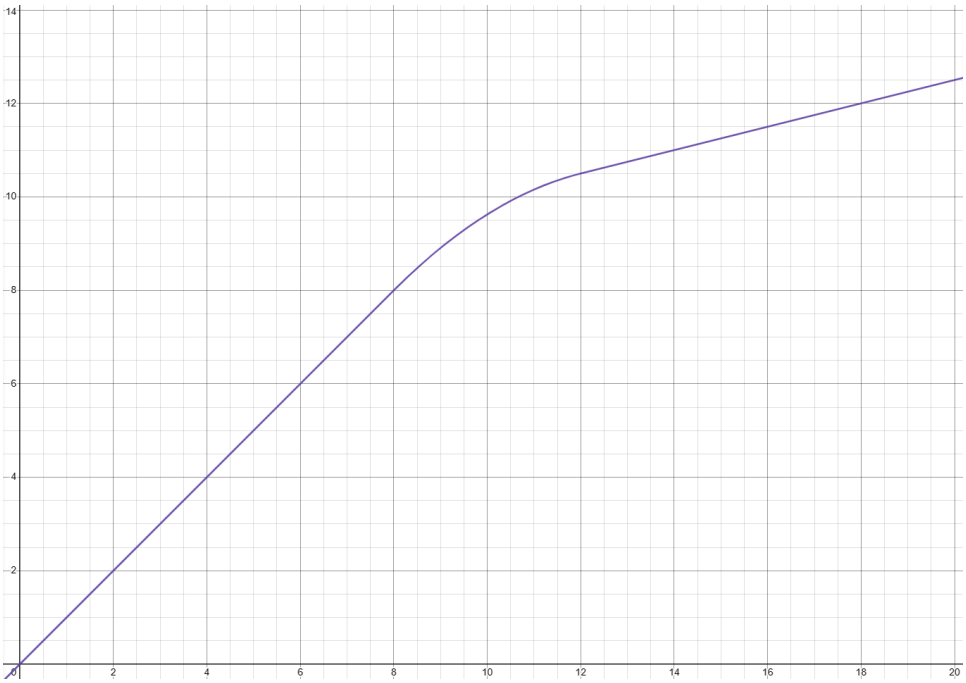


This is not a control, but rather a display to provide visual feedback to the user. The meter shows the amount of compression, also known as gain reduction, applied to the signal at a particular moment.

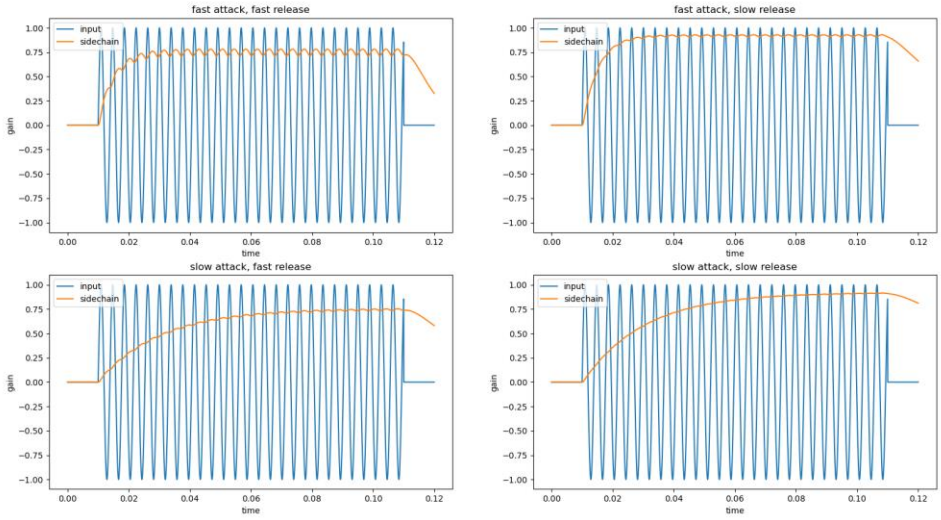
Example Visualisations



Model transfer function of the compressor, with threshold at 10, ratio of 4, and a hard knee.



Model transfer function of the compressor, with threshold at 10, ratio of 4, knee at 4.



Visual example of the impact of attack and release. The orange line is the detector signal's level, which is the signal that the threshold control will reference.