Cenozoix

User manual

THREE-BODY TECHNOLOGY

Index

Chapter 1   Introduction

Overview

Cenozoix Compressor is the definitive all-terrain compressor plugin, delivering unparalleled sound quality and adaptability that will elevate your audio projects to their fullest potential. Each of its 24 meticulously crafted vintage & modern compressor styles supports precise customization to match with your distinctive sonic signature. **Engineered for the future, Cenozoix is poised to redefine the landscape of compressor plugins**.

Cenozoix Compressor delivers:

- **Transparent sound quality** powered by ADAA & adaptive anti-aliasing techniques
- **12 vintage model simulations + 12 modern compressor styles** bring you the best of both worlds
- **Flexible attack controls** enable precise shaping of transients according to your imagination
- **Advanced release controls** break the boundary between analog naturalness and smart adaptive modulation
- **Abilities to define your unique compression style** with Peak/RMS, Feed-forward/Feedback customizations and Odd/Even-order harmonics controls
- Advanced parameters, intuitive controls, 50+ presets, user-defined behaviors, customizable GUI, and more to discover…

Learn more details at: https://www.threebodytech.com/products/cenozoixcompressor/

User Interface
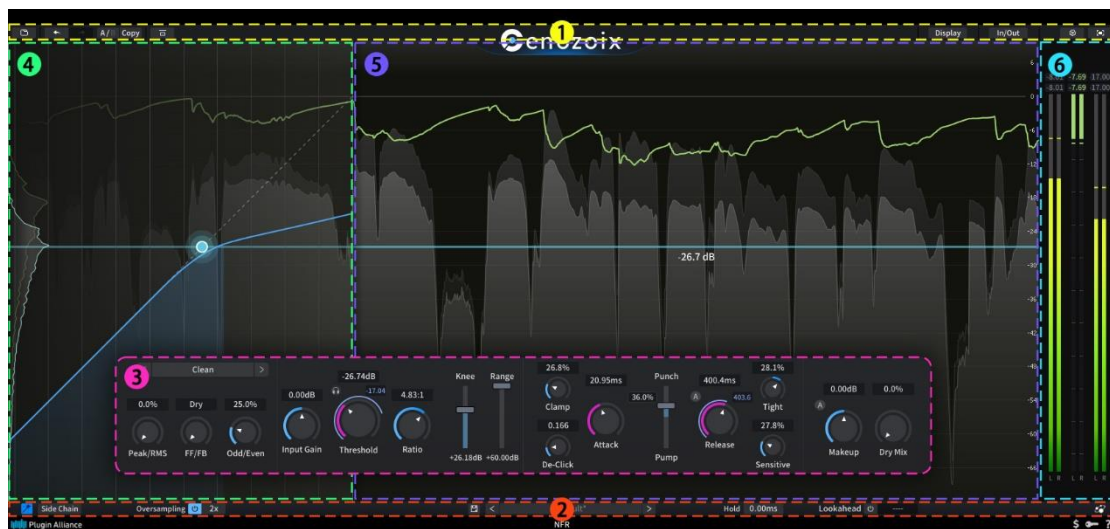
① **Top Bar**
② **Bottom Bar**
③ **Parameter Panel**
④ **Threshold Panel**
⑤ **Waveform Panel**
⑥ **Level Meter Panel**

Specifications

Latency

- Default: 4 sample points, about 0.09ms at 44100 Hz sample rate.
- 2x Oversampling: 56 sample points, about 1.27ms at 44100 Hz sample rate.
- 4x Oversampling: 82 sample points, about 1.86ms at 44100 Hz sample rate.
- 8x Oversampling: 95 sample points, about 2.15ms at 44100 Hz sample rate.
- 16x Oversampling: 102 sample points, about 2.31ms at 44100 Hz sample rate.

Minimum System Requirements

- Intel or AMD CPU with SSE 4.1 instruction set, or Apple Silicon.
- macOS 11 / Windows 10.
- 2GB RAM and 300MB disk space.

Supported Plugin Formats

64-bit VST2, VST3, AAX and Audio Unit.

Contact

If you need technical support or want to report bugs, please contact us via email at support@threebodytech.com. We will respond as soon as possible. Any suggestions for our products are welcome!

For activation/licensing/subscription issues, please get support at support.plugin-alliance.com.

- **Three-Body Technology official website**: www.threebodytech.com
- **Facebook**: @Three-Body Technology
- **Twitter/X**: @TbtechL
- **Instagram**: @threebodytech

Chapter 2   Installation

Plugin Alliance Licensing System

Cenozoix Compressor uses Plugin Alliance's proprietary licensing system that is completely software based. No hardware license dongle, special drivers, or serial numbers are required to run Cenozoix Compressor. Everything is handled from within the software product. All of your licenses are stored in a single file located on your computer or USB flash drive. This file must be updated whenever you buy or start a trial for Cenozoix Compressor.

We offer both online and offline activation. We highly recommend using online activation. It is the fastest and easiest process. Activation requires you to have a current Plugin Alliance account. If you don't already have one, you can create an account on Plugin Alliance's website for free.

License Types

Plugin Alliance licensing system includes different types of licenses that come with related restrictions on their use.

A **full license** unlocks a plugin for an unlimited amount of time. You get a full license whenever you purchase Cenozoix Compressor. These licenses can be activated on up to 3 devices. If you want to use more devices, you can purchase additional licenses to add 3 more devices with each license.

A **trial license** allows you to try a product for 14 days. Trial licenses are free of charge and fully-functional, so you can use all the features of the plugin. A trial license can be activated on up to 99 devices, but it will only be active for 14 days after the first activation.

Lease licenses are licenses which are valid for a specific period of time. The duration of your validity period depends on the product you have purchased and is usually shown as a countdown value in the lower toolbar of the plugin. If you have extended this period, e.g. through a purchase, you may need to re-activate to refresh your license file. This will extend the activation period so you can continue using the plugin. Subscription licenses are Lease licenses. Subscription payments are handled automatically by Plugin Alliance's system. However, you will need to re-activate the plugin according to your subscription period.

You may also have an **NFR license** in your account. These licenses are given out with certain promotions. They may have an expiration date or be unlimited and they cannot be transferred.

Standalone Installers

Cenozoix Compressor have standalone installers available. You can find these installers on the product page on Three-Body Technology or Plugin Alliance websites, or on the Manage Registered Plugins page in your Plugin Alliance account. The same installer allows you to start a trial or use a full license that you have already purchased. We offer separate installers for each platform: Windows, MacOS.

After you have downloaded the installer for your platform, you can run it to select the plugin formats that you want to install (VST2, VST3, AAX, or AU). The format you need depends on the digital audio workstation (DAW) that you are using. If you are unsure of which format your DAW requires, refer to the DAW software documentation.

Plugin Alliance Installation Manager

Cenozoix Compressor is available to download via Plugin Alliance Installation Manager. In Plugin Alliance Installation Manager, you can select Cenozoix Compressor in the formats you need and install it directly on your computer-based audio workstation, or transfer to a dedicated offline machine.

To begin, download the Installation Manager for your system (MacOS or Windows) from the Installation Manager page on Plugin Alliance's website. Then extract the zip file and drag the resulting app to your Applications folder (MacOS) or Program Files folder (Windows).

If you want to install Cenozoix Compressor on an offline computer, you can still use the Installation Manager. See the instructions below.

Online Installation

If your audio workstation has an internet connection, use Plugin Alliance Installation Manager on that computer and select the *Download/Install* installation type in the sidebar.

You can type "Cenozoix" in the search bar to find TBTECH Cenozoix Compressor and filter the plugin formats that you want to install (64-bit VST2, VST3, AAX, or AU). This will also determine which formats are downloaded and installed.

Select TBTECH Cenozoix Compressor and click the *Download & Install* button at the bottom right. When the download is complete, click the *Install* button and Cenozoix Compressor will be available to use in any DAW that supports the formats you selected.

Offline Installation on a Computer

To install Cenozoix Compressor on a computer without an internet connection, you will first need access to an internet-connected computer to download and create an installation package. On the online computer, run Plugin Alliance Installation Manager and select the *Download/Export* option in the sidebar. The platform options will appear: Mac or Windows 64-bit. Select the platform of your offline device.

You can type "Cenozoix" in the search bar to find TBTECH Cenozoix Compressor and filter the plugin formats that you want to install (64-bit VST2, VST3, AAX, or AU). This will also determine which formats are downloaded and installed.

Select TBTECH Cenozoix Compressor and click the *Download & Export* button at the bottom right. When the download is complete, click the *Save As* button to choose a removable drive on which to save the install package. It will be named *Installer.pabundle* by default, but you can rename it to keep multiple packages organized. Also be sure to copy Plugin Alliance Installation Manager app to your removable drive, as you will also need that app to install the package.

With a copy of Plugin Alliance Installation Manager app and your installer package, take the removable drive to your offline computer. Copy the Installation Manager to your Applications folder (MacOS) or Program Files folder (Windows), then run it. In the sidebar, select the *Import/Install* option, then click the *Import* button on the lower right and select the install package. The Installation Manager will verify the package and an *Install* button will appear if the file is loaded and ready to go. Click the button to install Cenozoix Compressor on your offline device.

Chapter 3   Activation

After you have installed Cenozoix Compressor, start your digital audio workstation (DAW) software. Most DAWs will wait until you instantiate a new plugin in a session before starting the activation process. In Pro Tools, a new plugin will produce the activation window during the plugin scan at startup. Pro Tools will incorrectly report that a plugin is invalid if you don't complete the activation process at startup.

Figure 1: Cenozoix Compressor Window Before Activation

Click on the *Activation Required* text in the Cenozoix Compressor window to open the activation window. You will see a drop-down menu that lets you choose which device to activate. Your options will be your computer or any connected USB drives (see USB Activation below). Selecting *Activate all my licenses* will activate your system on all the available, valid licenses in your Plugin Alliance account. If there were any problems with the activation, a message will describe the reason (such as not having enough available machines on the license).

Because all Plugin Alliance plugins use the same license file, there is no need to reactivate the same plugin in different DAWs. For example, if you activate Cenozoix Compressor in Pro Tools, it will also be active in Logic, as long as you are logged in to the same user account on the same computer or using the same USB flash drive.

In addition, if you log in to a different Plugin Alliance account when activating Cenozoix Compressor, this will replace your license file. Only the plugins that are active in this new account can be used.
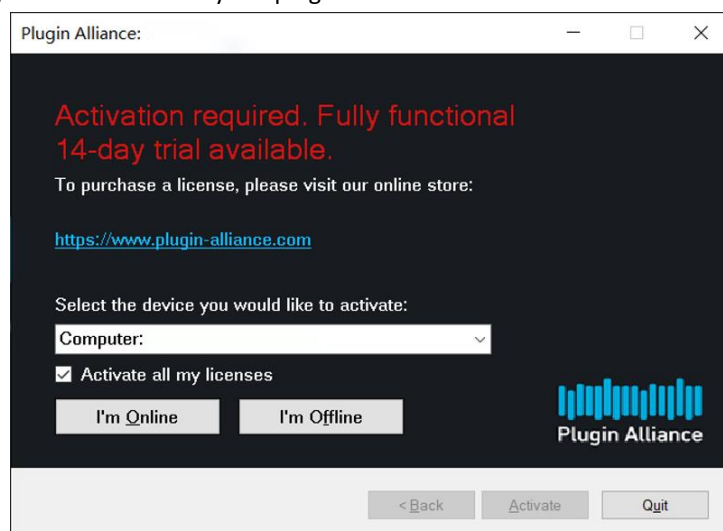

Figure 2: Activation Window

Online Activation

If you chose *I'm online* in the activation window, you can enter your Plugin Alliance account email address and password to connect to the server and get the current version of your license file automatically. The account you use here is the same one that you use to log in to Plugin Alliance's website.

You can choose to save your log in by selecting the *Save password* checkbox (Fig. 3). Your log in details are encrypted for security and can be used to activate new Plugin Alliance products in the future without having to re-enter your log in data every time.

Figure 3: Saving your Log In Information

Cenozoix Compressor will be activated if you have a valid license; otherwise, if you have not started a trial before, you will have the option to start one. The 14-day trial period starts as soon as you activate the plugin.

First-time Offline Activation

If your audio computer is not online, the Cenozoix Compressor activation must be done manually via another computer with internet access. Then, you can copy your license file from the online computer to the offline one.

In this case, choose *I'm offline* in the activation window. Choose *Save to file* and save the text file (Fig. 4), named *machine_id.txt* on a removable drive. Now take the drive to your online computer and connect it.
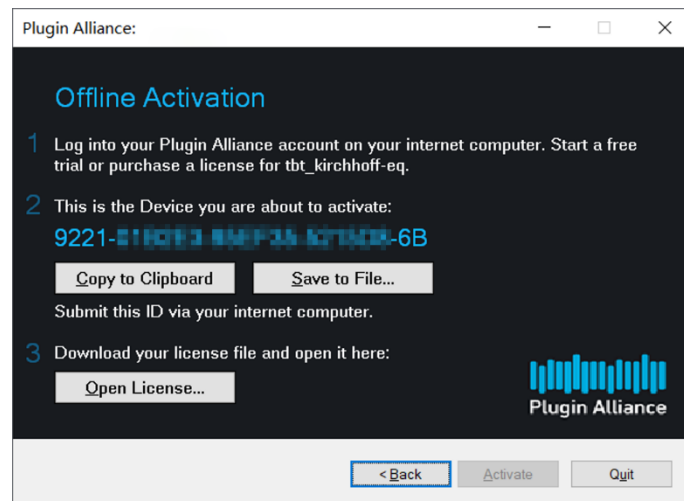

Figure 4: Offline Activation

Log in to your Plugin Alliance account and make sure you have an active license for Cenozoix Compressor. If you want to start a trial for Cenozoix Compressor for the first time, go to Plugin Alliance's Create Offline License page, select Cenozoix Compressor, and click *Create License*. Visit Plugin Alliance's Manage Devices page, upload the *machine_id.txt* file in the *Activate New Device* section (Fig. 5), and click *Activate*.

Download the license file from the *Download License File* section at the bottom of the Manage Devices page to your removable drive (Fig. 6). Take the drive back to your offline computer.
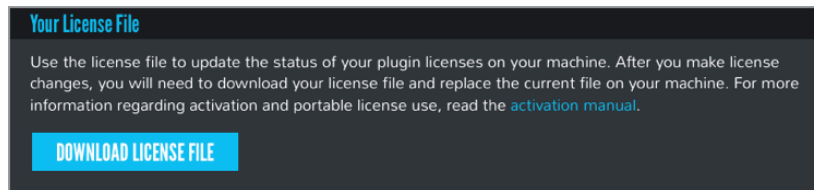
Figure 5: Device Activation Section

Figure 6: License File Download

In the Cenozoix Compressor activation window, click *Open license* and choose the *pa.license* file from your removable drive (Fig. 4). Finally, click *Activate* and Cenozoix Compressor will be available to start using.

Offline Activation for Existing Devices

Each offline computer only needs to be registered once in your Plugin Alliance account. To activate Cenozoix Compressor on a device that is already registered, you can begin on the online computer and skip copying the *machine_id.txt* file.

To activate one plugin, go to Plugin Alliance's Manage Registered Plugins page in your account. Select Cenozoix Compressor, and then select your computer in the drop-down menu under *Activate Existing Device* and click *Activate* (Fig. 7). Download the license file from the *Download License File* section at the bottom of the page and save it on a removable drive (Fig. 6). Take the drive to your offline computer.

To activate all your plugins at once, you can use the Manage Devices page instead (Fig. 7). Download the license file from the Download License File section at the bottom of the page and save it on a removable drive (Fig. 6). Take the drive back to your offline computer.
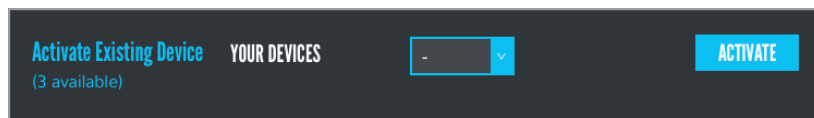

Figure 7: Activate an Existing Device

On the offline computer, open the Cenozoix Compressor activation window, click *I'm offline*, then *Open license* and choose the *pa.license* file from your removable drive (Fig. 4). Finally, click *Activate* and your plugins will be available to start using.

USB Activation

Cenozoix Compressor is portable when you activate it using an ordinary USB flash drive. With this flash drive, you can run Cenozoix Compressor on any computer without the need for the computer to be activated. This is especially useful for front-of-house engineers on tour, or engineers who travel to different studios frequently. We highly recommend activating a USB flash drive via an online computer.

Insert the flash drive and make sure that it is mounted in your file system. On an online computer with Cenozoix Compressor installed, open it in your DAW. Open the activation window by clicking the key icon at the bottom right if it's not open already. Select your flash drive in the drop-down menu under *Select the device you would like to activate*, then click *I'm online*. Enter your Plugin Alliance account email address and password. The account you use here is the same one that you use to log in to Plugin Alliance's website. Click *Activate* to connect to the server and save the current version of your license file to your flash drive. Now Cenozoix Compressor can be used on any computer just by plugging in this flash drive.

Some very old flash drives are unsupported and will not appear in your device drop-down. If your USB flash drive is among the unsupported models, please switch to a newer drive.

Deactivation

Each of your full license can be active on 3 devices at once. It is available to move your licenses from a machine you no longer use to a new one. You can also reclaim a license from a computer or flash drive that is lost or broken. All of your license data is stored on Plugin Alliance's servers, so no need to worry about losing a license on a crashed hard drive.

Log in to your Plugin Alliance account and go to Manage Devices. In the *Activated Devices* section, find the name of the device that you want to reclaim, then click the *Deactivate* button. Trial licenses cannot be reclaimed, but they come with 99 available machines.

Since your license data is stored remotely, there is no need to deactivate a computer or flash drive when you reformat it. Plugin Alliance licensing system will recognize the same machine ID as long as there were no other hardware changes and reuse the existing activation for the device.

Due to the way Windows generates the machine ID, certain hardware modifications may change your computer's machine ID. If this happens, you can use the process above to deactivate the old machine ID, then activate the new one using online or offline activation as needed. You may also consider using USB Activation instead if this happens often on your Windows PC.

Please note that you cannot reclaim the same plugin license from more than seven different machines, but if the same machine is deactivated more than once, it will not be counted again. So if you frequently need to move your licenses to new computers, please consider using a flash drive as one of your three devices (see USB Activation).

Plugin Licensing Toolbar

Cenozoix Compressor have a Plugin Alliance toolbar (Fig. 8) below the user interface, giving you access to some basic plugin information, described below.

Figure 8: Plugin Licensing Toolbar

PA Logo

Clicking on the Plugin Alliance logo takes you to the Plugin Alliance website via your web browser if your computer is online.

License Type

The center of the toolbar shows the type of license you are running. Licenses with an expiration date will show the number of days until they expire.

$ Icon

If you have a trial or financed license for Cenozoix Compressor, the dollar sign icon will take you to Plugin Alliance's website, where you can purchase a full license or make your next payment.

Key Icon

The key icon opens the activation window, allowing you to refresh your license file with device changes you made on Plugin Alliance's website, activate a newly purchased or extended trial, or activate a flash drive connected to your computer.

? Icon

The question mark icon contains a context menu that links to the product page and downloads section on Plugin Alliance's website.

Get support at support.plugin-alliance.com for assistance regarding installation or activation problems and questions.

Chapter 4 General Controls

Top Bar

Save/Load/Initialize

Click on the 'folder' button on the left side of top bar to save / load / initialize Cenozoix's plugin states.

- **Load**: Load a previously saved Cenozoix state (.cps file).
- **Save**: Save current Cenozoix state as a .cps file.
- **Reset to Default:** Reset current plugin state to default state.
- **Save as Default**: Save current plugin state as default state.
- **Settings**: Open settings menu.
- **Online Manual**: Open online user manual.
- **About**: Open About Us to find version information, credits, Three-Body Technology official website, etc.
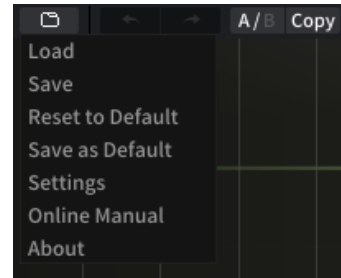
Undo/Redo

Click to undo or redo your last operation in Cenozoix. Please note that changes made in the settings menu cannot be undo or redo.

A/B Switch

Click on the 'A/B' button to instantly switch between two states. For example, if you have built a preset and want to experiment with another, you can switch between these two states quickly to compare their differences.

Click on the 'Copy' button to synchronize current state to the other one. I.e., if you are in state A, clicking this button will copy it to state B, and vice versa.
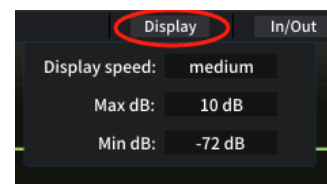
Bypass

Click on the button to the right side of 'A/B' and 'Copy' buttons to enable / disable global bypass.

Waveform Display Settings

Click on the Display button located on the right side of top bar to open the waveform display settings, where the following options are customizable:

- **Display speed**
- **Max dB**
- **Min dB**

Input / Output Settings

Click on the 'In/Out' button located on the right side of top bar to open the input / output settings.

In the drop-down menu, use the knobs on the left to adjust input gain and pan, or manually enter the values in the boxes below; use the knobs on the right to adjust output gain and pan, or manually enter the values in the boxes below. Click on the below button in between to enable / disable phase invert.
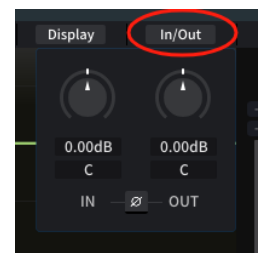
Global Settings

Click on the 'gear' button to the right of the 'In/Out' button to open the global settings menu.

Any changes made here will be applied to the current instance of Cenozoix, as well as to any instances created in the future. For more details, please refer to Chapter 9.
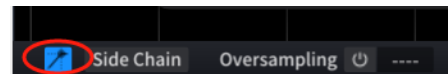
Full Screen Mode

Click on the button on the right end of top bar to enable / disable full screen mode.
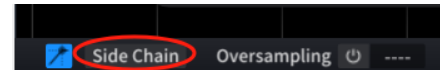
Bottom Bar

Threshold Panel Display

Click the button on the left end of bottom bar to hide / display Threshold Panel. For more details on Threshold Panel, please refer to Chapter 5.

Side Chain Panel Display

Click Side Chain button on the bottom bar to display / hide Side Chain Panel. For more details on side chain controls, please refer to Chapter 8.

Oversampling

Click the 'power' button to enable / disable oversampling. When enabled, you can select an oversampling rate of 2x, 4x, 8x, or 16x.

A compressor as an effect that generates excessive high frequency harmonics, which bring aliasing to the signal, could be applied with oversampling in order to reduce the negative effect brought by aliasing. Although the anti-aliasing algorithms applied in Cenozoix ensured the transparent sound quality under 1x sampling rate, Cenozoix provides multiple oversampling rates to meet higher demands.

Please note enabling oversampling will significantly increase computation cost and latency.
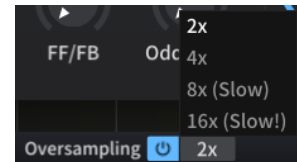
Preset Selector

Preset selector is located at the center of bottom bar. Cenozoix's factory presets and your custom presets that were saved in the specified folder can be selected and loaded here. The paths to the factory preset folder and the default custom preset saving path are as follows:
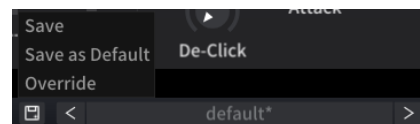
- **Windows**:
  C:\Users\(your username)\AppData\Roaming\ThreeBodyTech\CenozoixCompressor\presets
- **macOS**:
  /Users/(your username)/Library/ThreeBodyTech/CenozoixCompressor/presets

Click on the preset name to open a menu showing every loadable preset. Click on the arrows on the left or right to switch between presets in order.

Click on the 'disk' button on the left to open the save menu. Select Save to save the current state as a new preset. Select Save as Default to save the current state as the default state when opening Cenozoix. Select Override to override the selected preset with current state.

When a new preset is selected, its name will be displayed in white on preset selector. The name will turn gray and be marked with an asterisk (*) when any changes are made.
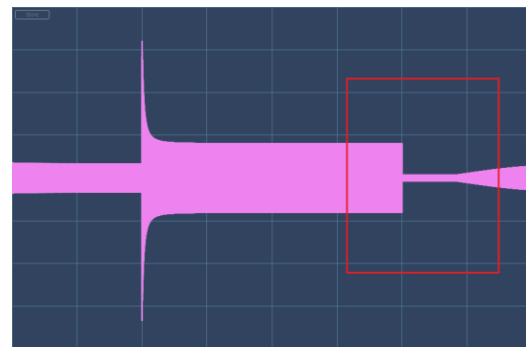
Hold

The Hold parameter can be adjusted on bottom bar, to the right of preset selector.

Hold sets the duration that the peak gain reduction is maintained. A short hold time can increase the transparency of gain reduction, while a longer hold time may produce the nice 'pumping' effect.
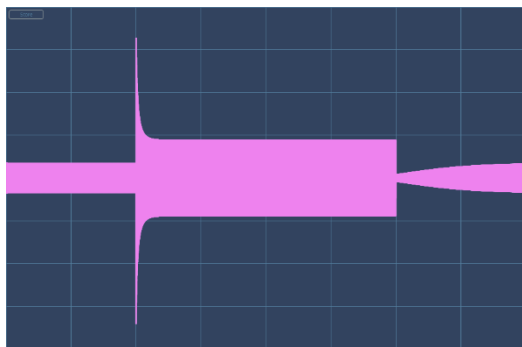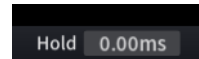
| Before | After |

Lookahead

The Lookahead parameter can be adjusted on bottom bar, to the right of Hold.
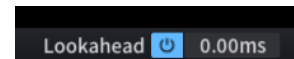
Lookahead sets how much advance time Cenozoix will use to anticipate peaks in the audio signal. When Lookahead is enabled, raising a bit of the value could help preserve signal transients, which results in more transparent gain reduction.

Enabling Lookahead brings Cenozoix an extra 20ms latency. Please pay attention to the latency compensation of your DAW host.
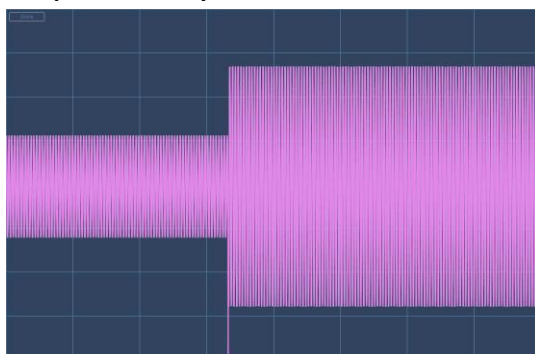
| Before | After |

Chapter 5   Graphic Displays

Threshold Panel

The threshold panel displays a curve that reflects the ratio between input and output levels. The curve changes in response to adjustments made to compressor styles or the ratio, knee, range, and FF/FB parameters. The horizontal and vertical axes correspond to input and output levels, respectively, both in dB.

Threshold panel can be hidden or displayed by clicking the button on the left end of bottom bar.

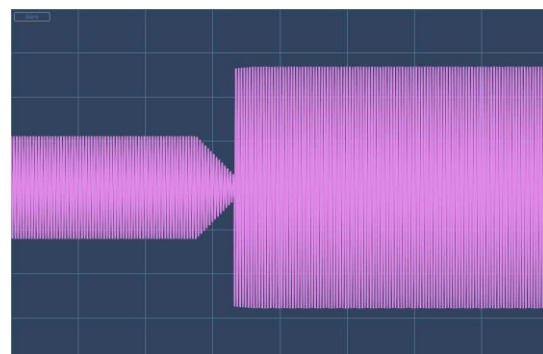① **Threshold Curve:** The blue curve (by default) represents the ratio between input level and compressed output level. When the compression ratio is greater than 1:1, the curve will go below the dashed 45° diagonal that indicates 1:1 input level.

② **Controllable Threshold Point**: Reflects the current threshold value. Click and drag the threshold point to directly adjust threshold in the same way as the knob does. Hover the mouse over the threshold point and use mouse wheel to adjust ratio.

③ **Input/Output Level Histogram**: The peaks reflect the approximated positions of input and output audio content's average levels. Since a compressor is supposed to compress the louder content, setting threshold at or above the highest peak is a common practice.

④ **Input Level Display**: The blue shadow below the threshold curve reflects the real-time input level.

Waveform Panel

Shares the same horizontal and vertical axes with threshold panel.

① **Controllable Threshold Line:** Reflects the current threshold value. Click and drag the line to directly adjust threshold in the same way of the knob. The threshold value is displayed below the line.

② **Output Waveform:** Waveform of the compressed audio content.

③ **Input Waveform:** Waveform of the input audio content.

④ **Gain Reduction Curve:** Displays how much the input level is compressed. A straight line at 0 dB indicates the input signal is not compressed.

Level Meter Panel

The level meters, located to the right of Waveform Panel, display input, gain reduction, and output levels from left to right.
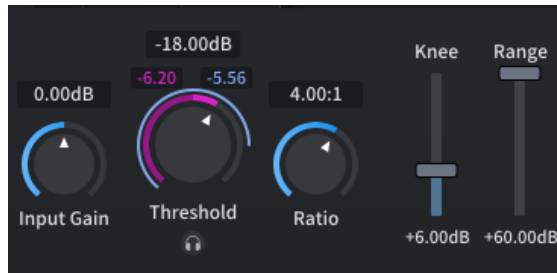
Chapter 6　Parameter Controls

Dynamics Controls

Threshold

All audio content with higher level than the value of Threshold will be compressed.

The purple strip around the threshold knob reflects the value specified by the knob, while the inner lighter purple strip and the purple value on the upper left reflect the real-time gain reduction.

The blue strip around the threshold knob and the blue value on the upper right reflect the real-time input level.

Gain Reduction Monitoring

Click on the headphone button below the threshold knob to monitor gain reduction. When enabled, only the compressed audio content can be heard, with the uncompressed content muted. With this mode we can know what content exactly was compressed.

Input Gain

A gain that is applied to the input signal. Increase input gain while keeping the threshold to increase the gain reduction.

For many vintage compressors without threshold control, users typically increase the input gain to achieve the necessary gain reduction. Input Gain is thus implemented in Cenozoix to cater to this practice.

Please note that when external side chain is enabled, this parameter will not affect the external signal. It always only applies to the input signal, hence called 'input' gain.

Ratio

All audio content louder than threshold will be compressed in this ratio. For example, for threshold at -20 dB and post-input gain audio at 0 dB, a 2:1 ratio will deliver a 10 dB gain reduction. If ratio is 10:1, the gain reduction will be 18dB. When ratio is 1:1, the content will be left uncompressed.

Knee

Smoothness of the threshold curve's inflection point. This parameter determines how 'hard' or 'soft' the compression behaves. The smaller the knee, the harder the compression, and vice versa. Generally, softer compressions bring relatively natural sound, but in some cases, we would use hard compression when unnatural sound is intended.

Range

A limitation of the maximum gain reduction. For example, when range is set at +6dB, no matter how aggressive threshold and ratio were set, the gain reduction will only go up to +6dB. Range can be set at a reasonable value to avoid over compression.

The importance of this parameter has been ignored by many. Actually, an appropriate range value can significantly improve the naturalness of compression.

Makeup

Output gain compensation. Since the output level will be reduced after compression, we will need an extra gain compensation for the output signal. Most compressors commonly feature this parameter.

Auto Makeup

Click the 'A' button besides Makeup to enable Auto Makeup function.

When enabled, an automatically adjusted output gain compensation will be applied, in order to keep the output level close to the input level.

Auto Makeup approximately calculates a fixed Makeup value based on current threshold, ratio, attack and release parameters. Enabling this function helps you better evaluate the effect of the compression in a level-match setting.

Please note that Auto Makeup applies only an approximated value. For example, with a -12dB threshold and a 100:1 ratio, you might think a +12dB gain compensation is necessary. However, the maximum level of the signal we are working on might be only -20dB, which means nothing is actually being compressed. In this case we do not need any extra gain. If we want to get a perfectly precise gain compensation value, the plugin will have to detect the currently playing audio content in advance. That require additional time for the calculation, which we do not consider worthy for a real-time processing plugin.
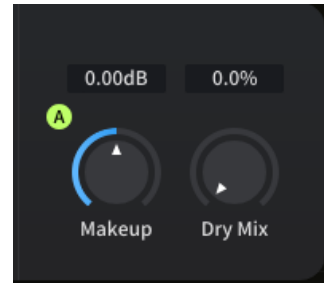
Dry Mix

A convenient way to mix Cenozoix's output with the dry signal in a certain ratio. Mixing wet and dry signals is a commonly used technique called 'parallel compression', which keeps both the compression and some naturalness of the dry signal at the same time.

50% could be a good start to try parallel compression. At 0%, you get the pure wet signal. At 100%, you get the pure dry signal with the entire processing bypassed.

Attack Controls

Attack

The time between gain reduction being triggered and reaching its peak.

Longer attack time allows more transients to go through and more naturalness to be kept in the sound; shorter attack time diminishes the strength of the transients and bring a more compressed feel to the sound.
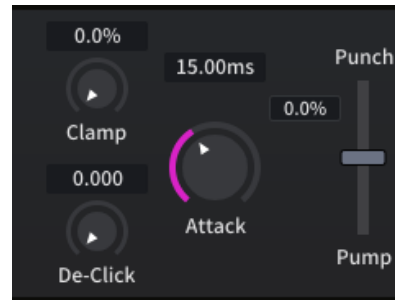
Clamp

We may all have experienced this problem when using compressors: Short attack time leads to an artificial sound, while long attack time leaves transients not fully compressed.

For example, we may have dialed a slower attack, say 50 ms, to obtain a powerful vocal sound. However, then, many leaked, less compressed transients create harsh pops like bullets from a gun. Sometimes it is desirable, but if we prefer to smooth those transients out, sometimes we may have to add another compressor with a shorter attack time.

Cenozoix's Clamp function offers a similar but smarter way to 'recompress' the leaked transients.

With Clamp, Cenozoix can target the leaked transients and recompress them. Increasing this parameter will apply additional gain reduction to the content leaked due to long attack time.
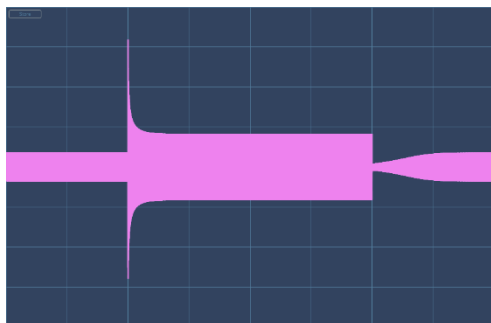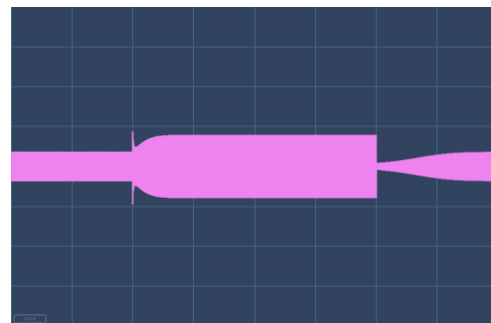
Before	After

De-Click

When processing percussions, especially snares, even a very fast attack may fail to compress some super-fast transients, a.k.a. 'clicks'. Sometimes they are desirable, but when they are not, many compressors have nothing to do to smooth them out.

Cenozoix's De-Click function was specially designed for removing the clicking sounds from transients. Increasing this parameter will apply additional compression to very short transients.

De-click was inspired by a vintage compressor model, which imposes an extreme gain reduction that almost sounds like overdrive. What makes it so special is that, even with such a hard compression, it does not perform any annoying clicking transients. That is because it applies a hard clipping effect following the compression, so that every transient would be limited by this post-compression distortion.

Similarly, Cenozoix detects the transients in real time to find the 'clicks', and sends them all to the specially designed overdrive effect, which transforms the amount of clicking transients into the

amount of overdrive distortion. As a result, the clicking sounds can be prominently reduced while the power of the transients can be kept.

Please note De-click was designed mainly for percussion processing, or other sounds that come with fast transients. For instruments like synth pad or strings, it almost does not make any difference.
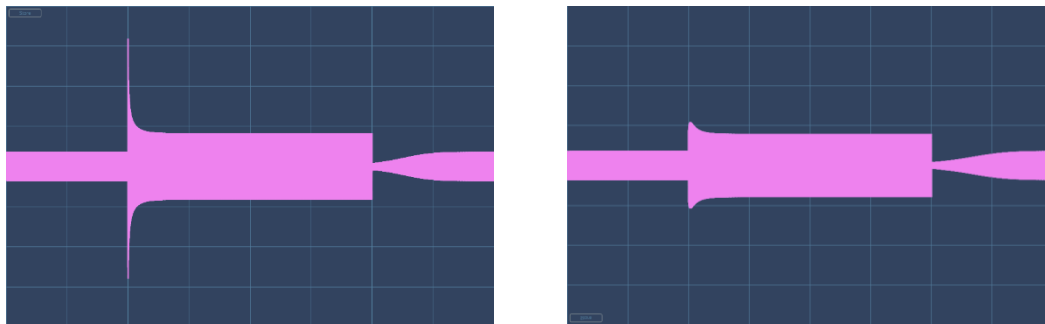
Before	After

Please do not confuse Clamp with De-Click. Clamp recompresses any sound that was left uncompressed due to slow transient, even it is not a transient itself. On the other hand, De-Click dedicately deals with super-fast transients – the 'clicks'.

De-Click also differs from spectral de-noise tools. Although the latters may have the ability to reduce the clicking sounds, Cenozoix's De-Click processes everything in time domain without introducing latency, or any spectrum processing.

Punch/Pump

The shape of attack and release crucially determines whether the compression produces a punchy or pumping outcome. The Punch/Pump slider applies slight tuning to gain reduction in order to achieve a punchy / pumping feel in the compression by adjusting its overall attack and release shape.

Push the slider upward to obtain a more intense and punchy sound, which can turn very aggressive if the slider is pushed to the top. Pull the slider downward to obtain a squeezed, elastic sound where transients are compressed harder. Pull the slider to the bottom to create the 'pumping' effect.
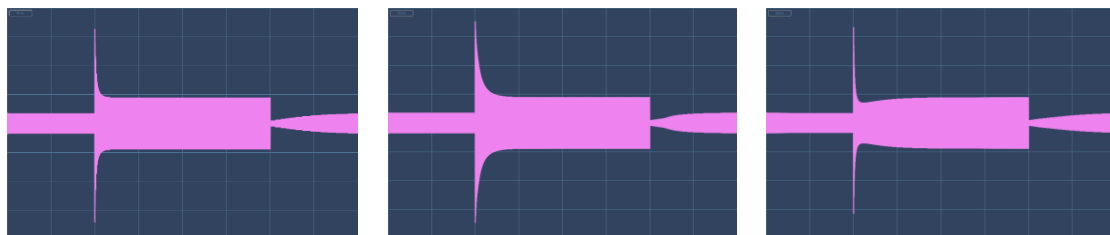
| Punch/Pump 0%	Punch 100%	Pump 100%

To avoid warped results, it is not recommended to push this slider too far. In most cases, a little bit of adjustment is enough.

Release Controls

Release

The duration between the peak of gain reduction and its full recovery. The longer the release time, the more naturalness will be kept in the sound. A very short release time may introduce the 'pumping' effect, while a very long release time can make the sound appear uncompressed.

The blue strip around the release knob and the blue value on the upper right indicate the actual release time after the adaptive adjustment by the sensitive parameter.
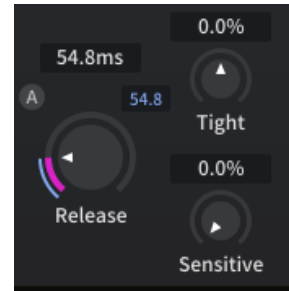
Tight

Automatically adjusts attack and release times for low-frequency content upon detection.

The shapes of release at different frequencies determine how 'tight' a compressor sounds. Turn the Tight knob to the right, Cenozoix will automatically shorten the attack and release times to respond faster to the low frequency transients, making the effect closer to a waveshaper than a compressor, which brings more saturation and tightness into low frequencies.

Oppositely, if we turn it to the left, the attack and release time for low frequency content will be extended (the range of extension is based on the selected compressor style), in order to naturalize the low frequencies and reduce the distortion. Meanwhile it will lose some tightness.

Sensitive

Adjusts the amount of Cenozoix's adaptive release adjustment.

For small and fast transients, we typically would set a shorter release time. Conversely, for longer sustained sounds or when compressing the entire mix, we usually opt for a relatively longer release time.

When Sensitive is enabled, the release parameter will be automatically adjusted to match different transients in the audio content. The larger the Sensitive ratio, the wider the release's adaptive range. 0% Sensitive keeps the current release value fixed, while 100% Sensitive enables automatic release adjustment between 0ms and the current value. For complex audio content, it is recommended to increase Sensitive in order to achieve a subtle and natural compression.

The blue value on the upper right of release knob indicates the actual release time after the adaptive adjustment by Sensitive parameter.

Auto Release

Click on the 'A' button besides the Release knob to enable automatic release adjustments.

When enabled, all release controls will be disabled, while Cenozoix will completely take over the release time modulation based on the audio content.

You may find that under maximum Sensitive parameter, some compressor styles would sound close to Auto-Release on. That is because some specific styles share a very similar way to apply Sensitive with Auto-Release.
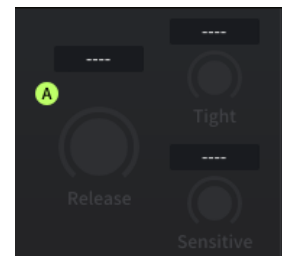
Compression Style Fine-tuning

Peak / RMS Compression

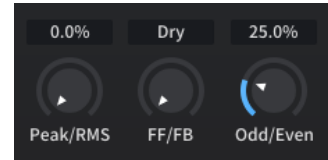Generally speaking, Peak compression excels in capturing fast transients but introduces a stronger sense of compression. RMS compression brings a more natural sound with smooth attack and release, but may leak fast transients due to its slower response.

Use the Peak/RMS knob to switch between Peak and RMS compression modes, or blend them at a specified ratio.

When the value is set at 0%, Cenozoix will process pure Peak compression. When the value is 100%, it will be pure RMS compression. It is recommended to set the knob to the middle, so that Cenozoix will process a mixed compression by detecting both Peak and RMS' gain reductions and always applying the larger one. In this way, you not only can preserve the advantages of Peak compression for your transient processing, but also achieve the smooth release characteristic of RMS compression.
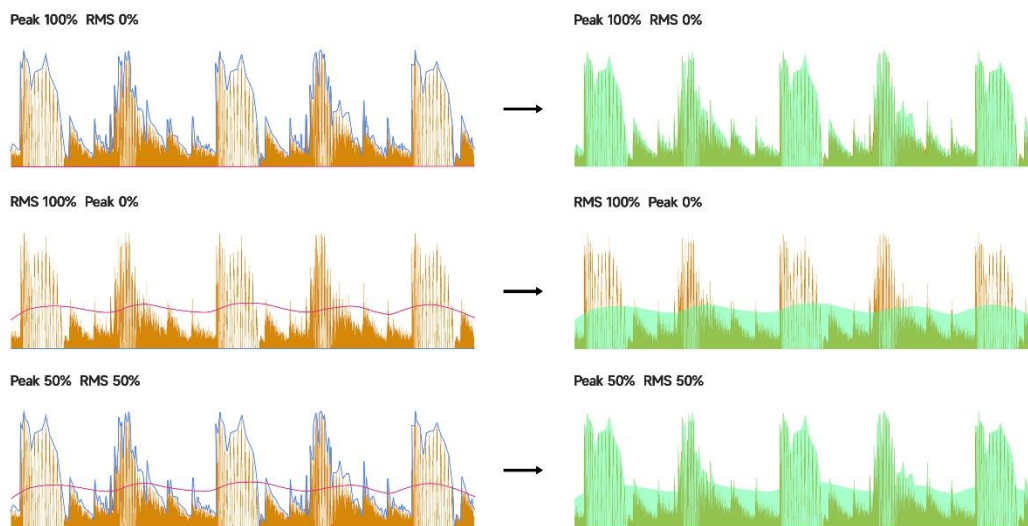
Feed-forward / Feedback Compression

Use the FF/FB knob to switch or blend between the feed-forward and feedback mode.

As the primary mode in many mainstream compressor plugins, feed-forward compression can result in a more pronounced compressed effect on the target audio. Feedback compression, often found in classic compressors, can add a unique and unpredictable vintage flavor.

In Cenozoix, both feed-forward and feedback-style compression are implemented, allowing you not only to switch between the two modes but also to blend them as desired.

Please note that in feedback mode, the threshold and ratio parameters cannot be precisely controlled. The values displayed are approximated references of the actual values.

Odd-order / Even-order Harmonics

Theoretically speaking, regular compressors only generate odd-order harmonics, which make the sound harsh, sharp, and edgy. However, Cenozoix offers an option to artificially generate even-order harmonics, providing a warm and pleasant sound reminiscent of the analog tube compressors.

Turn the Odd/Even knob to the right to increase the richness of even-order harmonics and decrease odd-order harmonics..

Please note that more harmonics mean more power, so the compression will become slightly harder when the knob is turned to the right.
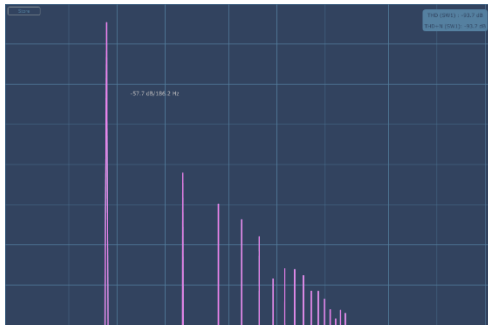
0% Odd/Even: only odd-order harmonics were produced
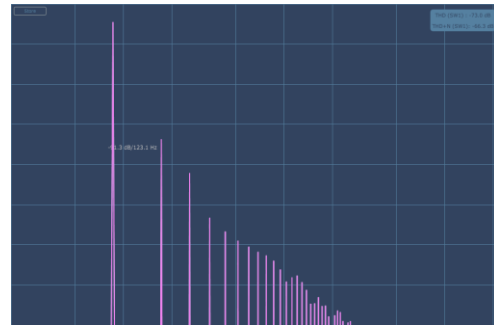
100% Odd/Even: even-order harmonics were raised

Chapter 7 Compressor Styles

Cenozoix provides a suite of 24 compressor styles, including 12 classic vintage styles and 12 meticulously crafted modern styles, each tailored to meet your diverse needs and preferences.

Click the current style name on the upper left corner of Parameter Panel to open the Style Panel. You can select a compressor style directly from the panel or cycle through the styles by clicking the arrow buttons on either side of the current style name. Upon selecting a hardware model, Parameter Panel will automatically update to reflect the model's design and control layout.

Vintage Styles

Brit VCA

Inspired by the compressor on a very classic channel strip, which is known for its tight, punchy sound and capability to handle a wide range of genres and instruments.

In Cenozoix, this model is fine-tuned to make the Tight parameter also available, so that you can make it sound even tighter if you like.

This style may sound similar to the Tight style. The difference is that Tight utilizes the modern approach of adaptive attack and release, while Brit VCA achieves its tight sound by modeling the 'magic' of vintage circuits.

Glue VCA

Inspired by a classic VCA compressor nicknamed the 'Glue' compressor. When added onto the bus, it 'sticks' the tracks together like glue and create a more cohesive mix. Also having a tight sound, this compressor is particularly well-suited for drums and bass.

This style sounds a bit similar to the Tight or Bus styles. The difference is that Tight and Bus achieve their sounds through the modern approach of adaptive attack and release, while Glue VCA achieves its tight sound by modeling the 'magic' of vintage circuits.

US VCA

Inspired by a classic American VCA compressor good at handling various instruments. A defining feature of this style is its punchy transient response, which imparts a distinctively 'straightforward' sound almost opposite to the Glue or Brit VCA styles. This is most noticeable when compressing bass drum, snare, or bus.

Additionally, while it delivers a harmonically rich sound, it actually does not introduce much harmonics into the spectrum, adding to the unique appeal of this style.

Black VCA
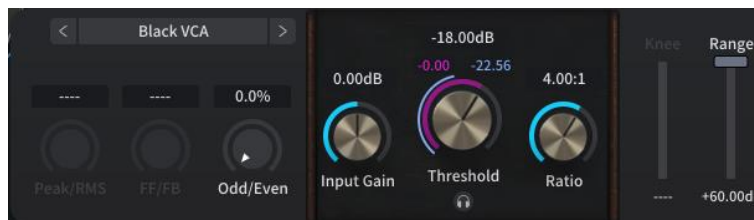
Inspired by a classic black-colored VCA compressor, which stands out for producing unique transients that practically no other model can replicate—even in the absence of an attack knob.

Very ideal choice for drum compression, but its range of applications is limited due to its unadjustable attack and release.

Red VCA

Inspired by a very famous red colored VCA compressor celebrated for its clean, transparent and warm sound, besides getting the job done.

Dist. VCA

Inspired by a classic VCA compressor that generates extremely rich saturation, which makes the sound tighter and thicker. Excellent choice for modern-style sound processing, especially for drums.

Black FET & Blue FET

Inspired by 2 versions of a classic FET compressor. Black and Blue sound similar but not exactly the same. Vocal, drums, guitar, bass… They nail it on all kinds of sound.

Please note that the original hardwares do not offer as wide adjustable ranges for attack and release as Cenozoix does. They were not limited here so that you can freely discover more possibilities from these models.

Vintage Opto

Inspired by a renowned Opto compressor. Beyond a decent sound quality, it is distinguished for its unique 'multi-stage' attack and release.

What is 'multi-stage'? Take attack as an example, a transient could be separated into 2 parts (or more) and having one part processed with an ultra-fast attack time (e.g., 0.1ms) to tame sharp transients and minimize clicks, while another treated with a slower attack time (e.g., 20ms) to preserve more naturalness. The same goes with release. This feature makes it possible to control transients while sounding natural. Vintage Opto does not support adjustable attack/release as it is unlikely to need them.

Versatile in application, this style excels on a wide array of audio sources: vocals, drums, synthesizers, and buses…The 'multi-stage' feature enables aggressive compression without leaving an artificial trace, and its harmonic distortion imbues tracks with a desirable 'warmth.' For added texture, the Odd/Even parameter can be adjusted to further enhance the warmth of the output.

Diode-Bridge

Inspired by a very famous Diode-Bridge compressor model. The harder we compress with it, the opener the sound will be. When inserted on a vocal track, it makes the sound 'huge'. Talking about the rich low frequency harmonics and the extra depth it brings… Just try using it on a bass track—oh boy, Lord have mercy...

The only imperfection is its unadjustable attack, which sometimes leads to overly big transients. However, the transient could be further adjusted with Cenozoix's Clamp parameter.

Virtual-Mu

Inspired by a classic tube compressor. The model is well-known for its rich even-order harmonic distortion, which brings a full low end and a pleasant high end. It also produces very unique and punchy transients. Recommended for various kinds of sounds, such as vocal, drums, mastering, etc.

The original unit does not provide a constantly adjustable ratio, but Cenozoix has no such limitation.

Vintage Tube

Inspired by a classic vintage electron tube compressor known for its rich harmonic distortion, which brings warmth and deep diving low end. Suitable for compressing various kinds of sounds, especially bass.

Please note that attack and release cannot be adjusted separately on the original unit, but Cenozoix makes it available in its modeling. Like many hardware compressors, the values of these two parameters may not be perfectly precise, but you have the opportunity to exercise your discretion.

*In summary, some parameters are not available in specific hardware styles due to features of the original units. Meanwhile, some simulations enable part of the originally unavailable parameters to give you more versatility.

Modern Styles

Clean

The scientifically 'correct' compression style that avoids all kinds of 'special processings'. Clean is the default style of Cenozoix, with all parameters available for fine-tuning. Theoretically you can achieve any kind of compression you want in this style by adjusting Tight, Sensitive, etc.

Tight

Close to Clean, with internal parameters fine-tuned to make it sound tighter and more modern.

Most of the tight feeling comes from the adaptive adjustments on low frequencies: when the low end is getting compressed, their attack and release time will be automatically shortened, which creates more tightness. Of course, this will increase distortion at low frequencies and sacrifice some naturalness.

Open

Suitable for all purposes, easier to obtain wide open sounds. Some parameters are unadjustable in this style.

Natural

Similar to Open but sounds more natural and less compressed. Recommended for various acoustic instruments, particularly those with legato playing styles such as string quartets.

Vocal

Similar to Clean but does a better job on vocals.

Pluck

Very similar to Clean but more suitable for plucked string instruments such as guitar and harp. Pluck's attack section is applied with extreme adaptive adjustments which give plucked string instruments' transients more 'magic'.

Smooth

Similar to Natural, but 'smoother'.

Drum

Producing 'hard' transients with a bit of a ducking feel, which produce a more powerful sound. Release is applied with slight adaptive adjustments to create longer sustain for drums. As this style produces stronger transients, it is recommended to increase the Clamp parameter to compress them further and transform the 'amount of volume' into 'amount of distortion'.

Hard

The most aggressive style that drives the sound crazy with 'harder' attack. Designed for any track that is expected to be processed 'hard'.

Loud

Very similar to Open but more aggressive. Achieve a 'wall of sound' effect by compromising slightly on naturalness. When using this style, you can compress boldly with a huge ratio, then increase the makeup gain to achieve elevated loudness. In this style, user-defined attack and release work only as 'hints', while more effects are handled by the initial adaptive attack and release adjustments.

Bus

Similar to Mastering but leaves more traces of compression and emphasizes the 'glue' feel. Sounding tight at the same time makes it resemble a blend between Mastering and Tight styles. Suitable for all kinds of bus/group channels.

Mastering

Functions as a very smooth and natural limiter. Produces a moderate 'glue' feels without undermining the volume balance between multiple tracks. Suitable for mastering as well as all kinds of bus/group channels.

Chapter 8   Side Chain

Click on the 'Side Chain' button on bottom bar to open Side Chain Panel.

Side Chain Settings

- **Ext.**: Enable / Disable external side chain.
- **Monitoring**: Click on the headphone button to enable / disable external signal monitoring.
- **Gain**: Apply level control to the external signal, if necessary.
- **Side Chain Stereo Mode**
    - **LR**: Process signals in left/right. 'LR linking' indicates the extent to which left and right channels are linked
    - **MS**: Process signals in mid/side. 'MS linking' indicates the extent to which mid and side channels are linked.
    - **Mid**: Process mid signal only, without affecting side signal.
    - **Side**: Process side signal only, without affecting mid signal.
    - **M->S**: Detect mid signal for side signal processing.
    - **S->M**: Detect side signal for mid signal processing.
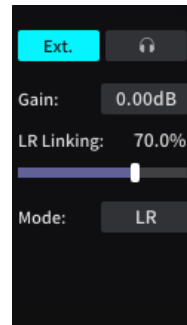
LR Linking / MS Linking

Imagine we are listening to a mix that only compresses the left channel, if a huge crash cymbal hit occurs in the left channel, we may hear that the entire sound image suddenly pans to the right, which is obviously not correct. In this case, the channels should be linked to synchronize their reduction in volume.

Now imagine another mix with vocals in the left channel and guitars in the right channel, both starting out with similar volume. If the vocals then become louder, only the left channel should be compressed, leaving more headroom for the guitar. In this case, the two channels should not be linked. This is the purpose of the LR Linking / MS Linking options.

The extent of linkage can be adjusted according to your stereo content. When it is 0%, gain reductions are entirely separated for each channel. When it is 100%, one channel's gain reduction will be fully applied to the other channel. By default, this value is set at a reasonable 70%. When side chain mode is LR, this value will be available as 'LR Linking'. When side chain mode is MS, this value will be available as 'MS Linking'. This value is not applicable under other stereo modes.

Side Chain EQ

Click on the 'power' button on the upper left corner of Side Chain Panel's spectrum analyzer to enable / disable side chain EQ.
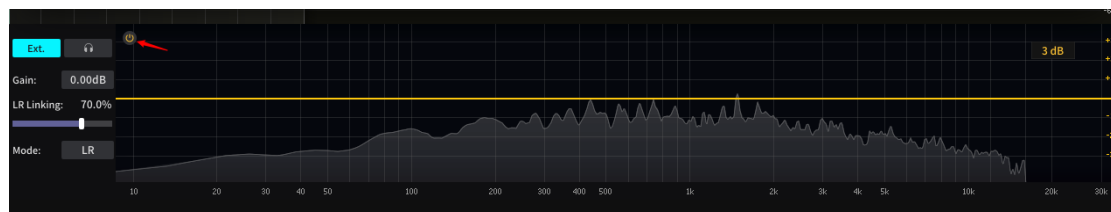
Side chain EQ is an 8-band parametric EQ with basic controls of Kirchhoff-EQ by Three-Body Technology. To learn more about Kirchhoff-EQ, please visit https://www.threebodytech.com/products/kirchhoffeq.

Controls

To create an EQ band, double-click or Ctrl/Command + left-click, or drag from the total frequency response curve (yellow by default).

Left-click on an EQ band to select it. Ctrl/Command + left-click to select or deselect multiple bands. You can also drag across to select multiple EQ bands. Under default setting, Ctrl/Command + right-click to delete an EQ band.

Right-click an EQ band to change its filter type or remove it. If multiple EQ bands including the one you have clicked on are being selected, the change will be applied to all of them.

Click on the dB value at the upper right corner of spectrum panel to select a display volume range from 3/6/12/18/22/30 dB.

Filter Types

- **Bell**: A bell curve. The shape can be adjusted by Q and slope.
- **Low Shelf**: Boost/attenuate low frequency. The shape can be adjusted by slope.
- **High Pass**: Filter out low frequency and let high frequency pass through. The shape can be adjusted by slope.
- **High Shelf**: Just like Low Shelf but adjusts high frequency.
- **Low Pass**: Just like High Pass but reversed.
- **Notch**: Remove a very narrow frequency band. The shape can be adjusted by slope.
- **Band Pass**: The reverse of Notch, let only a narrow frequency band pass through.
- **Tilt Shelf**: Boost low frequency and attenuate high frequency, or vice versa. The shape can be adjusted by slope.
- **Flat Tilt**: Apply a straight line to the whole spectrum.
- **Flat Top**: A bel curve with 'flat' top. The shape can be adjusted by slope.
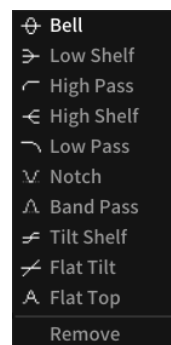
Chapter 9　Settings

Behavior Settings
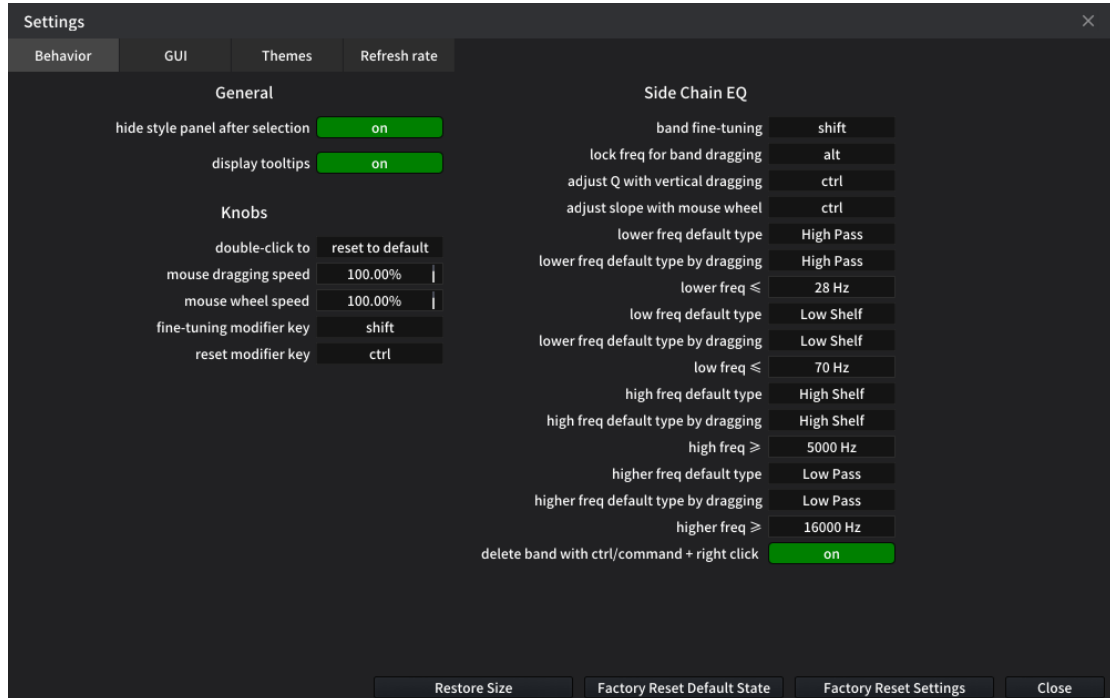
General
- **hide style panel after selection**
- **display tooltips**

Knobs
- **double-click to:** Defines this behavior as reset to default or manually input value.
- **mouse dragging speed:** Adjust the speed of mouse dragging behavior on knobs.
- **mouse wheel speed:** Adjust the speed of mouse wheel behavior on knobs.
- **Fine tuning modifier key:** Define modifier key for fine-tuning on knobs and sliders.
- **Reset modifier key:** Define modifier key resetting knobs and sliders.

Side Chain EQ
- **band fine-tuning:** Defines modifier key for this behavior.
- **lock freq for band dragging:** Defines modifier key for this behavior.
- **adjust Q with vertical dragging:** Defines modifier key for this behavior.
- **adjust slope with mouse wheel:** Defines modifier key for this behavior.
- **lower freq default type:** Defines default filter type of EQ band created by double-click in 'lower frequency range'.
- **lower freq default type by dragging:** Defines default filter type of EQ band created by dragging in 'lower frequency range'.
- **lower freq ⩽:** Defines maximum frequency of 'lower frequency range'.
- **low freq default type:** Defines default filter type of EQ band created by double-click in 'low frequency range'.
- **low freq default type by dragging:** Defines default filter type of EQ band created by dragging in

‘low frequency range’.

- **low freq ≤:** Defines maximum frequency of 'low frequency range'. The minimum frequency is the maximum frequency of 'lower frequency range'.
- **high freq default type:** Defines default filter type of EQ band created by double-click in 'high frequency range'.
- **high freq default type by dragging:** Defines default filter type of EQ band created by dragging in 'high frequency range'.
- **high freq ≥:** Defines minimum frequency of 'high frequency range'. The maximum frequency is the minimum frequency of 'higher frequency range'.
- **higher freq default type:** Defines default filter type of EQ band created by double-click in 'higher frequency range'.
- **higher freq default type by dragging:** Defines default filter type of EQ band created by dragging in 'higher frequency range'.
- **higher freq ≥:** Defines minimum frequency of 'higher frequency range'.
- **delete band with ctrl/command + right click:** Disable / enable the modifier key of Ctrl/Command + right-click to remove an EQ band.

GUI Settings
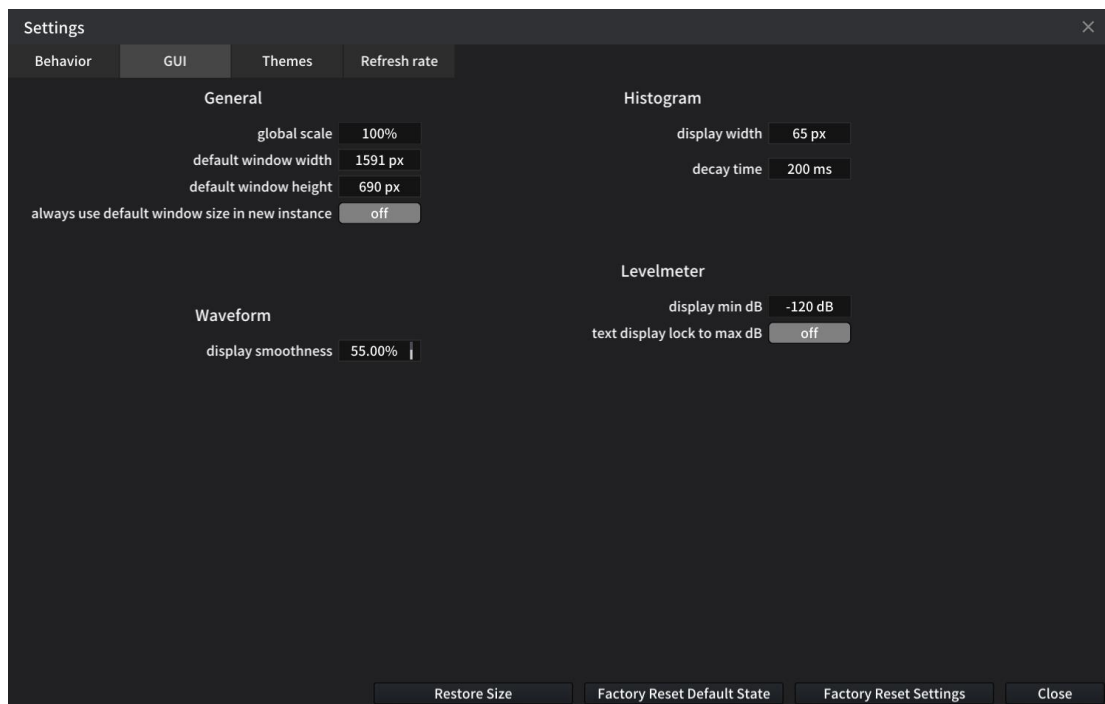
General
- **global scale:** Adjusts global display scale.
- **default window width**
- **default window height**
- **always use default window size in new instance**
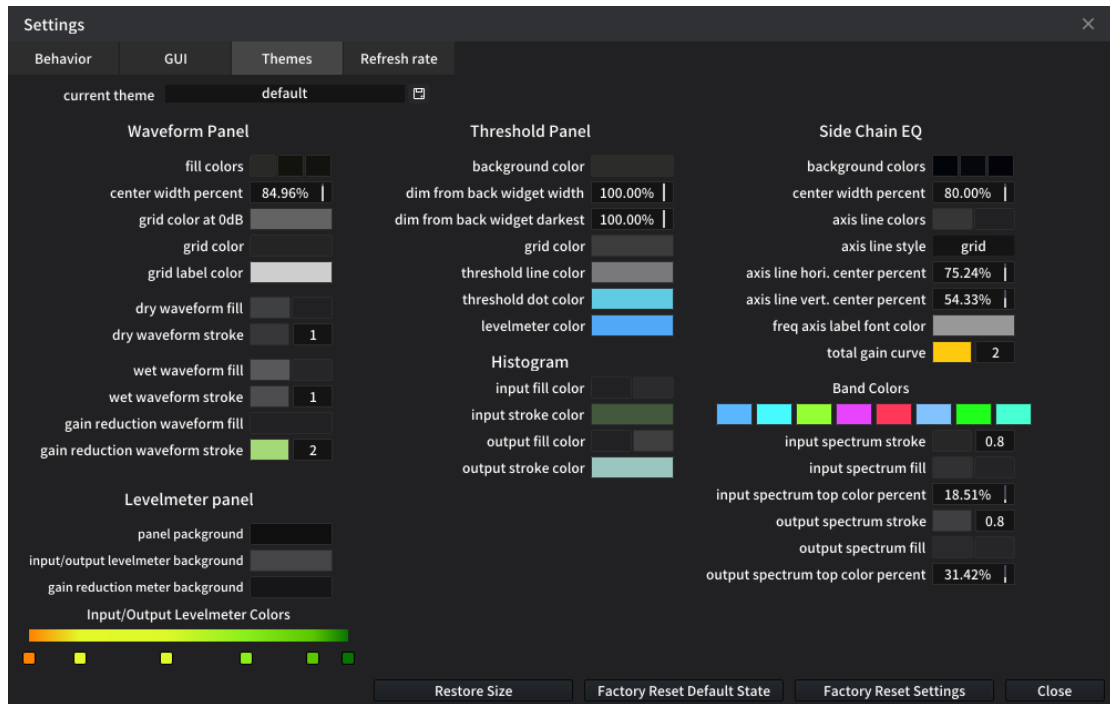
Waveform
- **display smoothness**

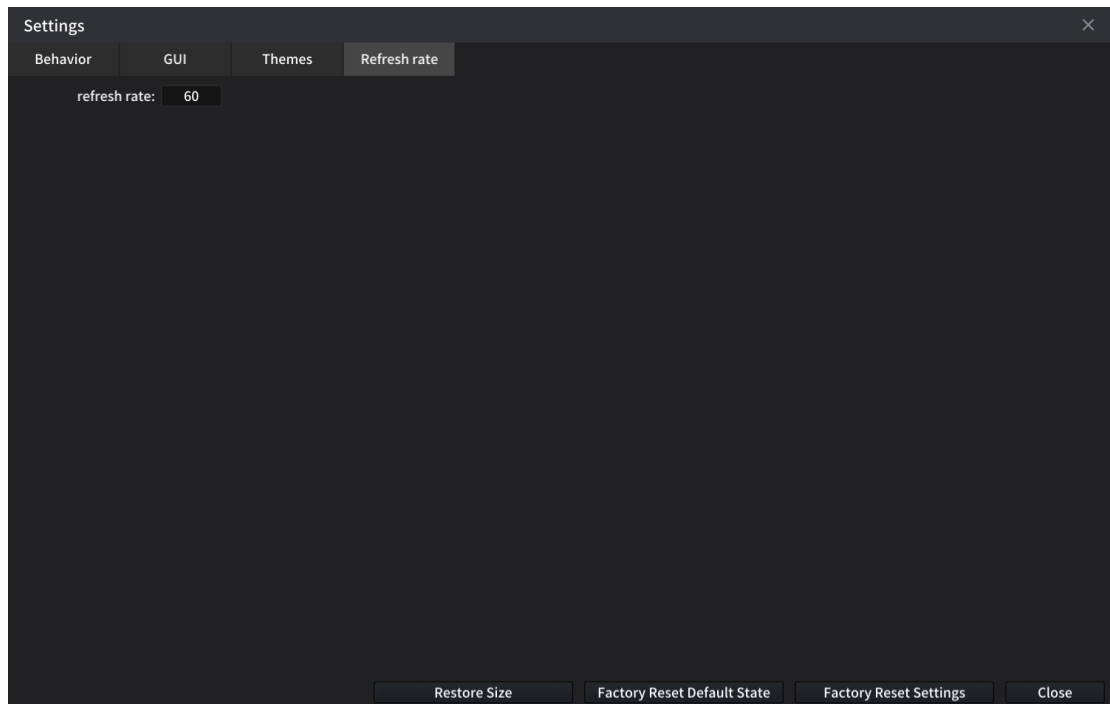## Histogram
- **display width**
- **decay time**

Level Meter

- **display min dB**
- **text display lock to max dB**

Theme Settings

Cenozoix provides flexible customization settings for every panel. You can customize the visuals and save them as your own themes. Most changes in themes settings will be applied to the current interface in real-time.

Refresh Rate

- **refresh rate**: Global OpenGL refresh rate. The higher the refresh rate, the smoother the display and the higher the resource utilization. Being a global setting, the changes on refresh rate will be applied to all Cenozoix instances.

Chapter 10 Credits

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Dear Users
Our friends and family

Thanks for the measurement software @Plugindoctor

Cenozoix Compressor User Manual

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