USER GUIDE

ANGRY AUDIO

Chameleon C6s
Livestream Processing Software

P/N 991241

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Overview.

Getting livestream loudness right can be tricky. There's a thin line between compelling, listenable streaming audio and fatiguing annoyance. You need an audio processing guru to get it right!

Not only that, but everybody loves the beautiful, warm sound of analog. "Can't we get analog sound from a software processor?" they ask. Well guess what — we've got an app for that.

AUDIO
CHAMELEON

Audio Chameleon takes an entirely new and innovative approach to audio processing with a unique architecture controlled by a form of artificial intelligence. By constantly analyzing the incoming audio, Chameleon adjusts its parameters to best fit the content. You get all the loudness and consistency and punch and clarity of the most advanced program audio processing instantly, on any format — and with all the warmth and goodness of analog.

What does that A.I. do? Well, it helps your audio sound fantastic! Here's how.

- A sophisticated decision engine evaluates every nuance in real-time and tweaks parameters to deliver consistent loudness and amazing clarity

- Instead of complicated settings to fiddle with, you get Personality controls that influence Chameleon's decision-making engine. Tell it "I need a touch less bass" or "make it a little more dense" and Chameleon does the rest.

- Chameleon's loudness governor lets you set your output target to match the requirements of major streaming platforms (like Apple, Amazon, YouTube, etc.). Set it for -16 LUFS, for example, and never think about it again. Your stream will be compliant.

- Chameleon Codec Camouflage matches parameters to your chosen codec, concealing losses and artifacts.

- Every popular computer platform is supported, with clients for Windows and Mac, plus AU and VST plugins to integrate with streaming hosts.

Congratulations on your choice. You're going to sound fantastic!

To begin...

...you're going to need a few things, first of which is a very fast and modern computer with a recent OS. Chameleon C6s will demand a lot of resources so don't try to starve it to death on an old Pentium III running Windows 95. If you get any results at all, it will not be pleasant.

Recommended Specs for Windows PCs:

- Windows 10 or later; Windows 11 recommended.

- Intel 10th Gen i5 (DESKTOP CPU) or newer; 16 GB ram or better. (As with anything designed for speed, more horsepower is always better).

- If you plan on concurrently hosting streaming software and multiple channels on the same PC, we recommend Core i7 or higher with 16-32 GB RAM or more. RAM size dictates the number of streams you can create.

Recommended Specs for Macs:

- MacOS 11 (Big Sur) or later.

- Intel i5 with 8GB of RAM minimum

- Intel i7 with 16GB RAM recommended

Your computer's sound card input can be used to provide audio input from an external source for processing. You can also process content from your local machine by routing the output of your audio player to to the input of the C6s software using a third-party software such as the Virtual Audio Cable for PCs, or VB Audio's VB-Cable for Mac.

Obtaining The Software.

Browse to https://angryaudio.com/c6s/ and download the software package that suits your needs. Launch the Installer and follow the on-screen instructions.

Run the installer.

During installation, you will be asked whether you want to install C6s as standalone software, or as a plug-in.

- You can select Standalone, VST, or AU in MacOS.

- Choose between Standalone and VST in Windows.

- You can also choose to install everything, if you like.

The standalone application will be installed to your Applications folder on

macOS, and to C:\ProgramFiles/AngryAudio on Windows. You will be given the option of creating a desktop shortcut.

Demo Mode.

Before purchasing, install the program in demo mode to ensure that your system is compatible with the software. The program is fully functional even without a license key; all features are active until the license key is installed, but 10 seconds of silence will be inserted into the output every 4 minutes.

If you love Chameleon C6s as much as we think you will, these "silent seconds" will serve as a gentle reminder to purchase the license. (It's much better than having Doc The Rock visit your house and "remind" you in his own unique way.)

Activation.

When you first launch C6s, it will be in Demo Mode (noted in red text at the bottom left corner of the screen). To fully activate the software, enter the key code that was emailed to you after purchase. All of the formats you installed will be licensed for your machine once you purchase the license and enter your key code.

If you wish to continue in Demo Mode, simply dismiss this; at each restart, the serial code registration prompt will be displayed again.
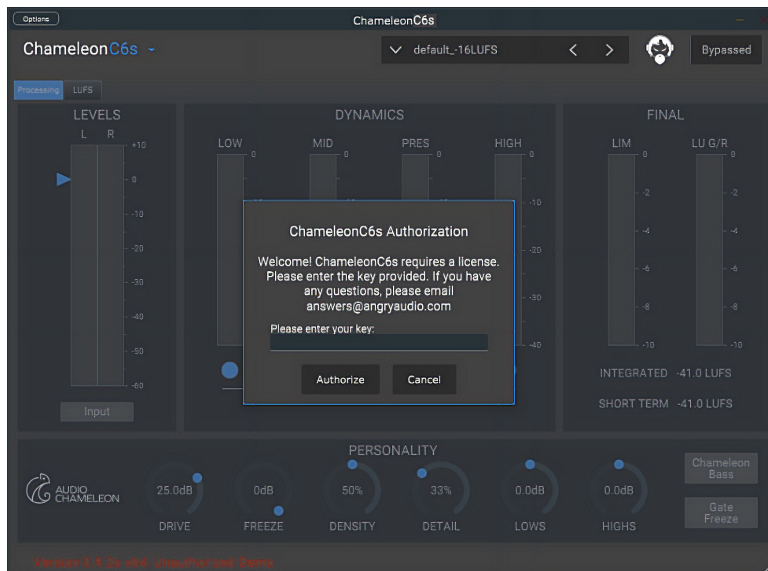
Uninstallation.

We really can't imagine why you'd want to remove Chameleon C6s from your computer. All it's ever done is love you, care for you, and bring you your favorite dark chocolates on those weepy days. But seasons change, and if you must part ways we promise we can still be friends afterward.

To uninstall the software, simply delete the following folders and their contents from your drive:

- **macOS:**
  AU: /Library/Audio/Plug-Ins/Components/
  VST3: /Library/Audio/Plug-Ins/VST3/
  Standalone App: /Library/Application Support/AngryAudio/C6s/

- **Windows:**
  VST3: C:\Program Files\Common Files\VST3
  Standalone App: C:\Program Files\AngryAudio\C6s

Interesting fact #1.

Everyone knows that chameleons can change color. Scientists have recently discovered that they do this not by changing the pigment in their skin, but by using nano salt crystals in their skin cells to actually refract light. Some species of chameleon can even *fine-tune* their coloration to match the visual system of their main predators. How cool is that? And you wondered why we picked this name for audio processing technology!

Important Note.

The decisions made by the Audio Chameleon's smart engines are based both on what is happening in the moment on program audio and (more importantly) also draws from what has happened in the recent past. When you first initialize an Audio Chameleon audio processor, it begins not knowing what is going on (yet).

Over the course of 15-25 seconds or so (depending on the type of content), Chameleon assembles a rolling history of the program characteristics and uses that data, along with the "in the moment" audio data to start dialing in its parameters. It is advisable to let this process play out before making changes to the controls. Chameleon needs at least 20 seconds of history to get itself acclimated to your programming; letting it it tune itself for a minute or so is even better.

It can also be fun to watch the process happen by observing the gain reduction meter activity during this time period!

With that in mind, let's start the tutorial!

About the Chameleon Processing Engine.

A program audio processor uses a combination of signal modifying tools to shape the sound and control loudness. And though these products can work quite well, they are typically very expensive and complex devices requiring expert setup and tuning.

Chameleon takes an entirely new and innovative approach to program audio processing. Controlled by a form of artificial intelligence, Chameleon analyzes the incoming audio and continually adjusts its parameters to fit the content.

Typically, Audio processing products employ static parameters (such as attack and release, etc.) and imposes them onto the source audio. With that approach, most songs can be made to sound OK, but then you have that series of "other tunes" that sound terrible as a result. It's hard to fix that issue without messing up the sound of songs that comprise the bulk of your music format!

The Audio Chameleon processing engine uses intelligence to analyze the audio, and applies the appropriate parameter settings (based on parameters the end user applies). In this approach, the program audio drives the settings, and not the other way around!

With Audio Chameleon, those outliers drop to a much smaller number of tunes (if any!)

The Processing tab.

1. **Controls tab.** Selects between general audio processing controls, the BS 1770 loudness (LUFS) management, and Codec Conditioning algorithms. (Short cut combo: CTRL-1 for proc tab, CTRL -2 for LUFS)

2. **Input Levels.** By default, the processing view meters show INPUT levels.

3. **Gate Threshold Visualization.** Changes according to gate threshold and shows where the freeze gate threshold is relative to program levels. Also changes to blue whenever audio is below gate threshold.

4. **Input/Output meter toggle.**

5. **Drive control.** Sets audio processing (compression) depth. Chameleon's AI keeps the audio texture consistent across an extremely broad range. Feel free to use this control with impunity! Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

6. **Freeze Gate threshold.** Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

7. **Density %.** Sets the amount of processing "thickness" applied to program audio. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

8. **Detail %.** Sets how deep the Chameleon AI will "dig" to provide spectral consistency from source to source. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

9. **Lows.** Sets the overall amount of Low Frequency (Bass) energy applied to program audio. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

10. **Highs.** Sets the amount of High Frequency (Treble) energy applied to program audio. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

11. **Gate Mode.** Gating behavior can be set to freeze when below threshold, or to a "Gate to Zero" style behavior. Metering scales will change accordingly.

12. **Chameleon Bass.** When engaged (blue), Bass energy is treated by Chameleon AI to provide punch and percussion detail in low frequency content.

13. **LUFS Readouts.** Displays rolling Integrated loudness and Short Term loudness. When evaluating loudness performance, always refer to integrated loudness. (More on this on the "LUFS" management controls page.)

14. **Gate Override.** While there is a user defined freeze gate threshold, the multiband AI routinely "overrides' this global setting according to what it sees in the program content to ensure maximum "stability" of the program spectrum across a wide range of gain control scenarios.

15. **LU G/R meter.** Shows the amount of "loudness correction" currently applied to program audio by Chameleon's A.I. to meet user defined loudness target (See Loudness Leveler Page for more information)

16. **Final Limiter activity.** Shows the amount of lookahead True Peak peak limiter activity.

17. **Engage / Bypass.** Turns audio processing on and off.

How to use the "Personality" settings.

Overall notes: These "Personalization" controls are interactive and are your keys to dialing in the sound you want. They influence the AI. Use them to tune the AI to your specific programming needs.

The collection of personality controls interact with each other. This allows for a wide palette of sound by setting these controls at various positions. This lets you to do what might take tuning tens of dozens of controls in other program content audio processors! Here are some tuning hints.

Density: This control not only adjusts the overall "density" or "thickness" added to your Program audio, it can also be used for greater source-to-source density matching when set to values above 50%. Chameleon does this by automatically increasing density on Light / open-produced material to the value on the control. Already dense material causes the Chameleon AI to turn this parameter down so as to not "over-process" this (already dense) content material.

How to adjust it: Density sets how aggressively the Audio Chameleon tracks program level variations.

We consider the range between about 1% to 20% to be the "Fine Arts setting" area. Maximum dynamics are preserved in this range. The higher the setting, the more aggressive the processing becomes.

From 20% to around 50% is considered the "general music" setting. Can't go wrong with most rock and lite music here.

We consider from 50% to 70% great for pop music, or anything that requires more processing "oomph".

Above 70%, there is a logarithmic shift in density where the Chameleon shifts into its most aggressive level control. Chameleon will modulate this range automatically depending on program density & makeup. It will reduce the setting internally for already dense material and will increase density to your maximum setting on less dense / processed source material.

More About "Personality" settings.

Detail: Values above 50% will cause the Chameleon's AI to force more spectral consistency Source-to-source. Material that is already "spectrally rich" causes the AI to back off on this control so as to not "overdo" spectral consistency. Think of this as the audio equivalent to the "Color Saturation" control used in video editing tools...except that In Audio Chameleon, it's under intelligent control so you can't "cartoon-ize" your audio. This spectral consistency system beautifully brings out subtle spectral details normally lost through normal audio processing measures – hence the name.

How to adjust it: As the "Detail" control nears 75-80 %, some frequencies may become more dominant In some formats. It's common for bass frequencies to start to stand out as more bass detail is brought out. If this is the case, feel free to reduce the "Lows" control by 1 dB or so to offset.

The same goes for high frequencies (treble). If the highs (treble) become too dominant on your format, reduce the "Highs" control.

Lows: At values above 0 dB, the AI will "weight" more bass in the overall spectral mix of your program content. Sometimes higher "Detail" settings can cause an overall increase in bass texturing. If this is the case for you, settings below 0 dB will help to bring things back in line".

Highs: The effect is the same as with "Lows" but dealing with high frequency (treble) content instead.

The Gating mode.

Zero Point
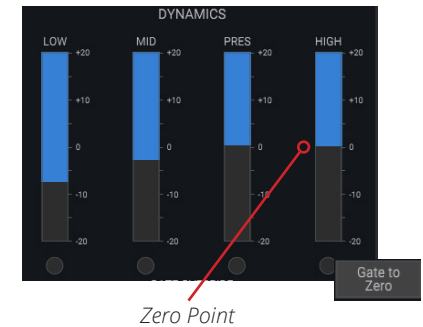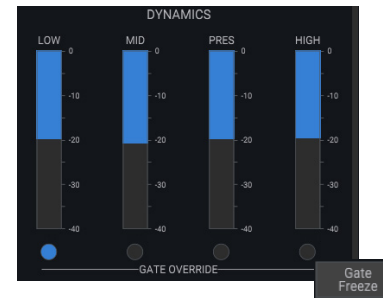
Here are some hints for using the Gating system in its two modes of operation:

Gate Freeze: This control causes Chameleon to act in a classic multiband compressor mode...but with intelligence! As audio falls below the user defined Freeze Threshold, the multiband processing freezes its recovery function and waits until audio increases above this threshold. This prevents noise rush-up or other unpleasantries during silent portions of programming.

Gate to Zero: This is an alternate "gating" behavior in that when audio falls below the user defined "freeze" threshold, the Chameleon's multiband processing resets to "zero". One way to calibrate the Chameleon in this mode is to set the Drive levels in such a way that when program levels are "normal" (say, between -18 and -12 dBFS), the dynamics meters hover more-or-less at the "0" point on the scale. This represents "unity gain" where no additional processing is applied unless content deviates from this zero point. If there is a change away from "normal" then corrective measures are applied.

This is helpful if you have content that must stay somewhere (tonally) neutral (i.e minimal OBVIOUS coloration of content over time).

The Loudness Tab.

About Loudness Confidence metering and the ITU 1770 Loudness Meters.

The Chameleon C6s has built-in confidence monitoring for loudness. These meters are in the center of the Loudness control screen.

The Momentary and Short-Term loudness meters show the current loudness trend. As you go from left to right, more integration filtering is applied to show the trend towards the final integrated loudness results.

The Momentary loudness meter shows loudness within a 400 ms. window average. The Short Term meter shows loudness across a 3 second window average. The Integrated meter shows loudness since the last reset was applied.

Controls.

1. **Loudness tab.** Selects between general audio processing controls, the BS 1770 loudness (LUFS) management, and Codec Conditioning algorithms. (Short cut combo: CTRL-1 for proc tab, CTRL -2 for LUFS)

2. **Output Levels.** By default, loudness view meters show OUTPUT levels.

3. **Reset.** Clears the loudness histograms. When checking Integrated

Loudness, it is useful to clear this every 60 seconds or so to get an accurate feel for your integrated loudness target. Otherwise, it will free integrate for a few minutes before automatically resetting itself. Integrated loudness is the important parameter to pay attention to.

4. **Leveler Loudness Target (LUFS).** Allows users to define the LUFS target for intended applications. For Streaming, YouTube, and podcasts the target is defined as -16 LUFS, so this is the default setting you'll see after software installation. This can be increased up to -8 LUFS. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

5. **Leveler Sensitivity.** If the user wishes to have the LUFS leveler work harder, or work less, this control facilitates adjustment of this trade-off. We recommend adjusting this control to provide an average of -2LU of loudness reduction. Mouse or Up-Down arrows allow for adjustment after the control of interest has focus.

6. **Leveler Active/Bypass.** This control bypasses or engages the loudness controller. We recommend leaving this "active" as it not only maintains consistent loudness across a broad range of content, it also optimizes the final look-ahead limiter for efficient (and transparent) operation!

7. **Loudness Controller Action.** Toggles between "Natural" (high-fidelity loudness control) and "Tight" (tighter loudness control). We like "Natural" for music, and "Tight" for speech, though either can be used to tailor your desired sonic signature.

8. **True Peak Setting.** According to the ITU, Many True Peak meters use 4X oversampling. As a result, accuracy is typically around 0.6 dB. The ITU recommends not using a value any higher than -1dBTP to account for the discrepancy. This is the default value for Chameleon C6s.

   Important Note: Some lossy codecs may add up to 3dB of "overshoot" as part of their normal operation, so Chameleon's True Peak setting can be lowered to -3dB. LUFS leveler algorithm will automatically compensate loudness target when TruePeak is raised or lowered.

9. **Master Out Setting.** The Master Out level must be at 0dB for the True Peak setting to be accurate. *LUFS target is NOT compensated when the master output is changed!*

10. **LU Gain Reduction Meter.** This meter shows the operation of the Chameleon Loudness Leveler. We recommend adjusting the sensitivity control for a gain reduction of roughly 2-3 Loudness Units (LU) on "really loud" (heavily loudness mastered) source material for best dynamic fidelity. Higher sensitivity settings will cause output of Chameleon to conform to LUFS target across a broader range of material at the expense

of dynamic range.

11. **Momentary Loudness Meter.** This meter shows the K-Weighted average program loudness over a 400 millisecond (ms) time window.

12. **Short-Term Loudness Meter.** This meter shows the K-Weighted average program loudness over a three second time window.

13. **Integrated (Long-Term) Loudness Meter.** In our current implementation of the loudness meter, this meter shows the K-Weighted average loudness over a roughly 2.5-minute time period. This value will typically read lower than the the Momentary and Short-Term meters, and we recommend using Momentary and Short-Term loudness meters to get a feel for output loudness program dynamics.

14. **Loudness Controller Engage/Disengage.** Toggle to activate or deactivate the Loudness section of C6s.

Interesting fact #2.

Chameleons have long fascinated humans. Representations of them have been found in Egyptian petroglyphs dating as far back as 16,000 B.C. (according to carbon-dating techniques), and its coloration and behavior is described in the Brooklyn Snake Papyrus, a catalog of reptiles, using the name "ka-ra" (literally, "the soul of Ra," chief god of the Egyptian pantheon).
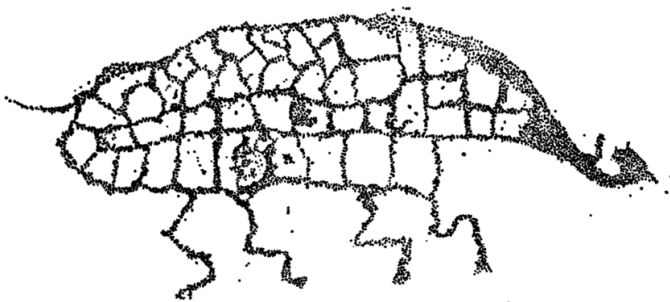
The Codec Tab.

About Codec Camouflage.

Each codec employs a different method of compression, and each imparts its own kind of audible artifacts. Codec Camouflage is a codec preconditioner which helps to minimize those artifacts.

1. **Codec tab.** Selects between general audio processing controls, the BS 1770 loudness (LUFS) management, and Codec Conditioning algorithms.

2. **Target Codec.** This section allows users to target the bitrate reduction CODEC used to provide programming to the audience. Each setting optimizes the audio processing and other specialized algorithms to said target CODEC for best audio performance / clarity. Options are:

   ■ MPEG AAC, 128 KBPS minimum

   ■ HEAAC / XEAAC, 32 - 96 KBPS

   ■ MP3, 128 KBPS

3. **Mono Bass Mode.** Some CODECS will exhibit best performance (fewer audible side effects / coding artifacts) when bass content is removed from the L-R domain. This is a great "cheater" mode to use to improve CODEC performance, as bass energy is generally understood to be "non directional"; that is, it is very difficult for humans to determine which speaker bass energy originates from.