

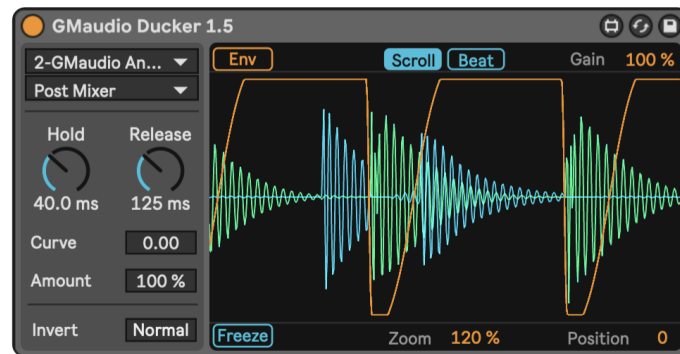
## **GAudio Ducker**

### User Manual

*Product Version 1.5*

*Last Updated 18th July 2022*

# GAudio



# Ducker

Thank you for purchasing GAudio Ducker.

My name is Robert Koster, the founder of GAudio and Fixation Studios. I have 20 years of experience in music production and for the last 7 years I have been working as an educator and mastering engineer. These devices are more than just products, they are my obsession. By using GAudio devices you join a family of artists and engineers that trust my ears, technical expertise and enthusiasm for making music production a more enjoyable and rewarding experience. If you have any feedback or would just like to make contact, please get in touch, I'll be glad to hear from you. 😊

## Concept

We live in the information age, yet so many people out there get it wrong. Sidechaining has been oversimplified as well as overcomplicated, but GMaudio Ducker is here to set the record straight.

When any two sounds play around the same time there is possibility for destructive interference, otherwise known as phase cancellation, this is exacerbated when they are in the same octave range or worse, the same note. To completely avoid destructive interference we need to completely mute one sound while the other plays, this doesn't make sense for all sounds but it does for sounds that are largely mono and low in frequency. Reason being is that waveforms that are slower, therefore lower in pitch, are much more likely to cancel out when combined than faster waveforms, and they are certainly going to be more audible. It takes 50ms for a 20hz signal to complete a full cycle, but only 0.5ms for a 2 kHz signal, this means that to hear low signals properly they need to be longer and therefore provide more opportunity for cancellation. Another reason is that the region that's attributed to 'fat, punchy, bass' is finite and requires a lot more power to reproduce than higher frequencies, so we need to pick and choose what occupies this frequency range and treat it with care.

*So we just mute one low frequency instrument when another one plays, easy peasy...* It's not quite that simple. If we have a 50hz signal it takes 20ms for it to complete a full cycle, if it doesn't then it's not a 50hz signal, its waveform is distorted and the result is artefacts like pops and clicks. If we want this 50hz signal to go from full amplitude to zero amplitude then we need to make those changes over at least one half of a cycle, this equates to 10ms. Gmaudio Ducker uses a 512 sample length for this segment of the envelope, which equates to just over 10ms.

*Problem solved then?* Nope. Our hearing is not linear nor is 'Volume'. Our dB scale is logarithmic and if we were to use a linear envelope to control the volume of the bass we would again get distortions. To further avoid any distortion an S-curve has to be used so that there isn't any chance of discontinuities in the resulting waveform.

*Great, time to apply the envelope then?* You could try but how do you time it right? You can't use the project tempo because not all instruments follow a strict time regime and plugin delay compensation means that quarter note intervals in one part of the signal chain isn't the same as quarter notes in another part of the signal chain. Recent changes in Live 11 and Max allow for much better resolution when using MIDI as a trigger but there is still some latency (a few samples). The only way to reliably ensure that you are triggering the envelope at exactly the right time, every single time, is using transient detection. GMaudio uses its own sidechain filters and transient detection algorithm custom tailored for this specific scenario using gen~ inside Max, which is required for sample by sample accuracy.

Add simplified controls and a clear visualisation of what the signals are doing and you have the essence of GMaudio Ducker. Now, thanks to 500+ users as well as 12 months of feedback and improvements, GMaudio Ducker is better than ever!

## Device Requirements

GMaudio Ducker works on both Mac and PC and can be used with either Live 10 or Live 11 Suite or Live 10 or Live 11 Standard with the Max For Live add-on.

For GMaudio Ducker to operate as intended Max 8.2.2 must be used. You can download Max for free and point Ableton Live to the installed version by following this article from the Ableton's website:

<https://help.ableton.com/hc/en-us/articles/209070309-Using-a-separate-Max-for-Live-installation>

## Installation

### If purchased from Isotonik Studios

Where possible Isotonik Studios will provide the files in the form of an Ableton Live pack (.alp), based on the version that this alp file was created in and the version that you have installed you may see a notification that the pack was created in an earlier version of Live. You are welcome to ignore this notification and proceed.

You will then find the device installed into your Live browser, within its relevant classification as well as directly within the Packs section.

### If purchased from robertkgm.gumroad.com

Simply download the .amxd (Max For Live device) and move it to your Max Audio Effect Preset folder within your User Library. The default location for this directory is as follows.

Windows:

\Users\[username]\Documents\Ableton\User Library\Presets\Audio Effects\Max Audio Effect

Mac:

Macintosh HD/Users/[username]/Music/Ableton/User Library/Presets/Audio Effects/Max Audio Effect

Placing it here will allow it to show up in Live's Browser under Max Audio Effects. Be sure to make use of Live 11's Collections for a more efficient workflow.

## How to use it

GMaudio Ducker is best utilised on instruments that compete for the same frequency range, eg; Kick and Bass. For the purposes of the manual we will call the Kick the 'transient signal' and the Bass, the 'affected signal'. This suggests that GMaudio Ducker can be used for more than just Kick and Bass and is simply an accurate and distortion free way of controlling the amplitude of one signal based on the amplitude of another.

GMaudio Ducker should typically be the last device in your device chain and placed on the Track that you want to control the amplitude of (affected signal).

## **Latency**

GMaudio Ducker adds 512 samples of 'lookahead' for the Attack segment of the Envelope to take place. The attack segment of the envelope is fixed and designed to avoid any distortions.

## **Controls**

### *Audio Controls*

External Input is used to select the transient signal. If mixing at low volumes, it is advised that you select Post FX instead of Post Mixer for the chain input as this generally provides greater signal strength and more reliable triggering of the envelope.

Hold Time adjusts the length of time the affected signal is held at zero amplitude before the Release begins.

Release Time adjusts the release time of the amplitude reduction, allowing the affected signal to fade back in faster/slower.

Curve provides shape adjustment of the rising amplitude, from logarithmic to exponential, allowing for fine adjustment of how the affected signal fades back in.

Amount sets the amount of amplitude reduction when a transient is detected. 100% results in zero amplitude and ensures the affected signal is muted at the time of the transient.

Invert flips the polarity of the affected signal to reduce destructive interference, if necessary. You can use Absolute envelope mode (Abs) to check.

### *Scope Controls*

Envelope Mode switches the display of the top layer in the scope.

Env - Displays the amplitude reduction envelope being applied to the affected signal.

Abs - Displays the absolute envelope of both the transient (Kick) and affected (Bass) signals combined to see if they are interfering. Try 'Invert' if the Absolute envelope dips below either of the signals.

Scope Mode controls whether the oscilloscope is updated continuously (Scroll) or on every quarter note (Beat).

Gain controls the amplitude of the signals going into the oscilloscope, allowing for fine adjustment regardless of device input levels.

Freeze freezes the oscilloscope, allowing you to zoom in and reposition the display to look at various notes.

Zoom controls how much of the waveform is shown on the oscilloscope, allowing you to focus on individual notes.

Position controls the focal point of the oscilloscope, allowing you to focus on different notes.

## **Tips**

For ideal Kick and Bass interaction, the settings you choose will depend on the Kick you use. Shorter kicks will require a shorter Hold Time. The Release Time and Curve should be adjusted based on how and how fast you want the Bass to fade back in, sometimes a slower release creates a nice smooth blend but sometimes a faster release is more desirable to avoid destructive interference. Generally, faster music requires shorter Release Times.

Use the scope in Absolute mode to see the combined envelope of the Kick and Bass, if the Absolute envelope drops below either the kick or bass signals on the scope then destructive interference is occurring and you can either invert the signal to turn the destructive interference into constructive interference or adjust the release time and curve to help mitigate the issue.

GMaudio Ducker was designed to make the process simple as well as dialling in settings as efficient as possible, therefore it does not require presets. All controls have Info View Text and can be viewed anytime within Live (using the shortcut: ?). The default settings provide a starting point that may require very little adjustment depending on the genre of music you are making.

## **Epilogue**

If there's any way that you think GMaudio Ducker can be improved then please get in touch. My only goal is to help you make better music, faster and I hope that GMaudio Ducker is a conduit for your creativity. Happy music making!