auDSPr

volume**CTRL**

Precise Volume Control

User Guide

Version 1.0.1

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Introduction

Thank you for using volumeCTRL, auDSPr's Precise Volume Control utility which lets you precisely and repeatably set the device volume on your iPad, iPhone, or iPod touch. While the vast majority of people will find this utility to be absolutely useless, a tiny select group of people (myself included) will find this to be exactly what they need. auDSPr volumeCTRL does one thing and one thing only - it sets your device's output volume… **precisely**. If you've ever used the volume up/down buttons on the side of your phone and were frustrated because you couldn't get the exact volume that you want, then volumeCTRL is the right utility for you. For some people, the built-in volume control is too coarse - you try one setting and it's too loud, but when you select the next lower setting, it's too soft. What you want is a setting between the two and you can't get it. So you try the volume slider on the screen and it's too squirrelly to set accurately. auDSPr volumeCTRL eliminates this clumsiness.

volumeCTRL simply works as a companion to your device's built-in volume controls. The rule is: last change wins! So if you use volumeCTRL to set the level, that's the volume that gets used and the operating system updates it interface to show it. If instead you use a built-in control (such as a side volume button or the slider in Control Center), then that is what sets the volume and volumeCTRL simply follows the change. volumeCTRL peacefully coexists with the device's existing volume controls.

# My Use Cases Which Caused Me To Make This Utility

I've had a lifelong love affair with audio and I've been on an endless quest for ever higher quality sound. My listening setups tend to use the minimal number of components in the signal path for the purest sound reproduction. In the simplest cases, I just have headphones plugged directly into my iPad or iPhone so the only option is to use the device's volume control. Other times I often find myself running music from my iPad directly into power amplifiers which do not have a volume control, so again I have no choice but to use the iPad's volume control to set the listening level.

Here is where the problem arises. I want to set a loud enough listening level to have a large sound stage (wide and deep) to hear the detail and impact in the performance, but I don't want the sound to be so loud as to cause hearing damage or ear fatigue from long listening sessions. I need and want a precise volume setting.

BUT… the volume control facilities that are built into iOS and iPadOS don't allow the volume to be set as precisely as I require. So I searched for and tried the few volume control utilities available on the App Store and *none* of them got me where I needed to be. And so, I found myself compelled to create auDSPr volumeCTRL.

Just How Coarse Is The Built-in Volume Control?

Before developing my idea too far, I decided to take some measurements on just how coarse the existing volume control is. I measured the headphone output on an iPad mini 4 generating test signals (pink noise and sine waves) from auGEN X (another sweet auDSPr audio app 😉).
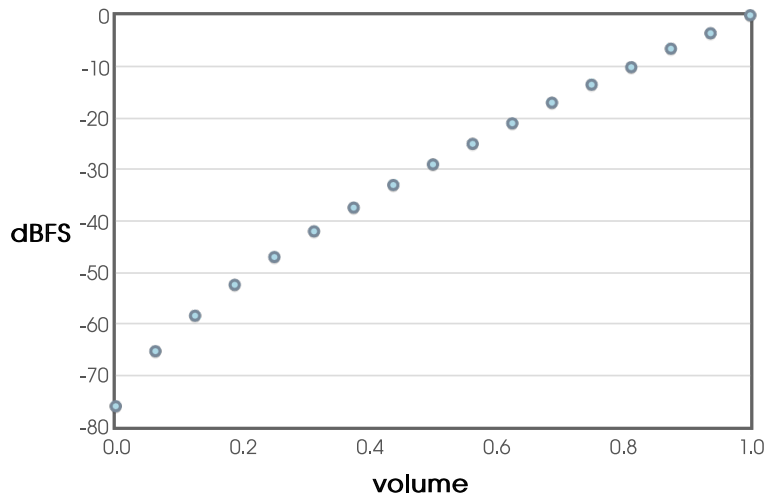
With the device volume all the way up, I clicked (just once) the Volume Down button on the side of the iPad - the volume decreased by about 3 dB! With my years of experience as an audio engineer, I would have expected the step size to be 1 dB - I was surprised it was *that* coarse. Pressing Volume Down again continued to lower the level in 3 dB steps until around the middle of the range where the level started to change by 4 dB steps. At the lower middle of the range the step-size increased to 5 dB and at the bottom of the range it was 6 dB. I counted just 16 steps from maximum volume down to around -66 dB

from max, plus a 17th setting for mute. This coarse-grained control explains why I could never hit my desired precise target volume using the iPad's side buttons!

Don't get me wrong - iPhone and iPad's volume control facilities are perfectly fine for most people's purposes. And in systems where my amp or receiver has it's own volume control, I'm perfectly fine using the built-in controls as well. But for specific use cases where the audio system does *not* have a volume control, auDSPr volumeCTRL saves the day. volumeCTRL takes your consumer-oriented device and lets it behave more like a professional device.

## Beware: Some Bluetooth Devices Have Coarse Volume Hardware

My volume control journey has revealed to me that, though it would seem simple, system volume control is A LOT more complicated than you would expect! My volumeCTRL app is basically a *software* volume setting that controls volume level *hardware*. This means the volume hardware can be a limiting factor in the overall system performance. Wonderful fine-grained software control can be WRECKED by clunky coarse-grained hardware.

Here is a graph of measurements I took on a "high end" Bluetooth receiver (which one I will not reveal):
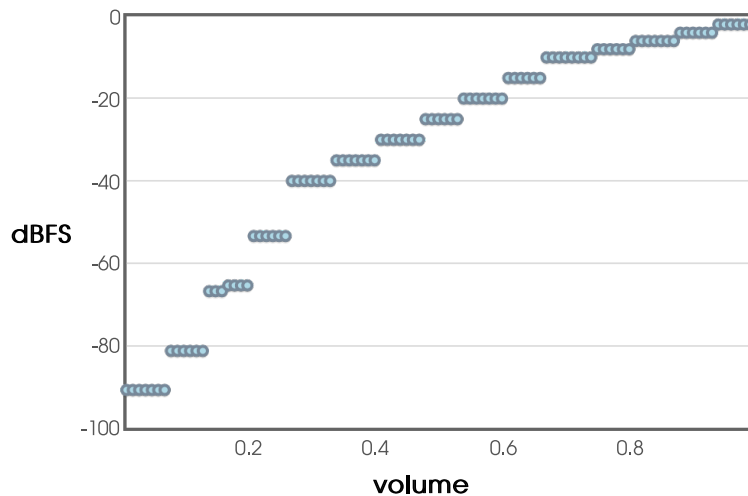
Notice how no matter what control signal volumeCTRL sends to the Bluetooth device, its response is coarse and stair-stepped! Unacceptable!

Let's Tour The Controls
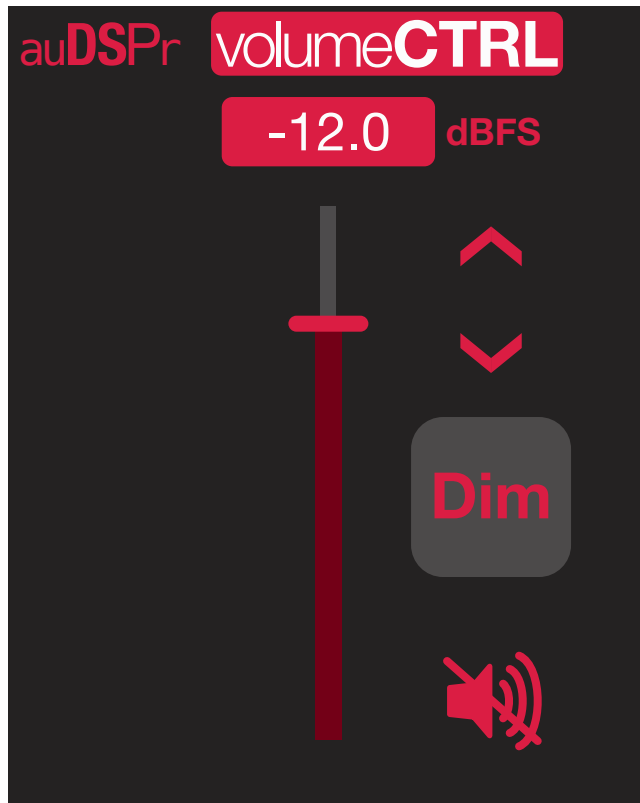
As musicians and audio creative types ourselves, we at auDSPr understand that things need to be fast and responsive so as not to lose creative flow. So we designed volumeCTRL to be butt-simple - use the slider for fast changes, nudge the setting in small steps, key in an exact value, and Dim or Mute it. That's pretty much it.

Fine Tune the Volume Value - Nudge It!

While the big slider lets you quickly set a rough volume level, once you've gotten there you then might want to dial in your setting just right. The ⌃ and ⌄ buttons let you change the volume in fine-grained steps (0.5% or about 0.5 dB) without straying too far.

Keying In An Exact Volume Value

Sometimes you already know exactly what volume you want for your device. For example, you might want to run a test at precisely -10 dBFS. In a case like this, it is faster simply to key in your value. To do so, just tap on the numeric value and a virtual keypad will appear. Tap in your value and confirm it by tapping the checkmark. If instead you decide to cancel, just tap anywhere outside the keypad and it will disappear without making any changes.

The Dim and Mute Buttons

volumeCTRL has two handy buttons, Dim and Mute, for situations when you might want to lower temporarily from your optimal listening level. These are handy if you're in the middle of a hot and heavy listening session when suddenly your phone rings or your loving significant other hollers, "Dinner's ready!" You temporarily engage Dim to lower the volume and reply, "What was that, hon'?" And after a brief conversation you politely holler back, "I'll be right there. Just let me finish this one song." Then you disengage Dim, finish enjoying your song, *slip in one more song* 😉, and then go have dinner. (I'm speaking from experience.)

Pressing **Dim** will lower the volume by 18 dB from its current setting. Pressing it again will disengage the Dim feature and

return the level to its previous setting. Dim lets you keep the groove going but lowers the volume so you can hear your conversation about this section of the track. (We stole this idea from professional studio mixing consoles which often have a Dim feature.)

Press to mute your sound (to 0% — i.e., -Infinity dBFS). Press it again to un-mute it — the volume will return to your last setting.

Setting Your Preferred Volume Unit, in % or dBFS

volumeCTRL lets you decide how you want to view the value - in Units of Percent (%) or Decibels from Full Scale (dBFS). While a lot of consumer-oriented devices simply use Percent because it's easy to understand (for example, you can just eyeball a control and see that is at about 25% of its full value), professional-oriented devices instead tend to use Decibels since dB more accurately reflect how human hearing works. volumeCTRL elects to use dBFS which are Decibels referenced from Full Scale (Full Scale meaning when the setting is at it maximum value). A volume setting of -12 dBFS means that it is 12 dB down from full blast.

 or   Tap to switch back and forth between % and dBFS. volumeCTRL will convert the value for you.

Your setting for your preferred Volume Unit is saved on your device so it is remembered from app launch to app launch.

Become an auDSPr Power User in Minutes

All auDSPr audio apps share common user interface features, so learn to be a power user *now* and you'll be a power user for all auDSPr audio apps!

First, each app consistently uses a specific key color to indicate interactive elements. This color is chosen to be eye-catching — a graphic designer might say that it "pops". So when you see this color, the control is saying "See me! Touch me! Hear what I do!" Hint: The "pop" color is the color of the App icon.

Getting the best performance

For optimum performance, when you are running any auDSPr audio app, you might want to consider first disabling Wi-Fi or activating Airplane Mode. Doing so will prevent any network activity or notifications from interrupting your session and competing for CPU and battery.

If you are running off battery, keep your charge above 50%. Otherwise the operating system might reduce CPU performance which can result in audio glitches or a sluggish user interface.

Sliders

All auDSPr Sliders, in addition to behaving just like typical sliders, have several added features designed so you can get to your desired setting quickly and accurately:

- Tapping a slider anywhere above or below the "thumb" (which you now know the thumb will be our "pop" color) will nudge the value in fine steps. (Obviously "above or below" is for vertical sliders — substitute "left or right" for horizontal sliders.) We have thoughtfully chosen step sizes for each parameter type. This allows you quickly to close in on your setting by first sliding to it, and then tapping up or down to fine tune accurately. (On other apps, I can't tell you how many times I've painstakingly made a setting only to have it nudge away as I lift my finger. Arrrgh! Our "Tap Slider Track To Step Value" Feature corrects this once and for all.) Furthermore, if you tap and hold, the value will keep stepping, just like key repeat on a computer.
- Double-tapping the slider thumb resets the value to a default setting which has been judiciously chosen.

Range Sliders

- For sliders which control a range (for example, Frequency Range or Level Range), dragging from the middle of the range will move the entire range as a unit. The lower and upper values will move in lock step with each other so the range width stays the same. Tapping outside the range will nudge the entire range in fine steps.
- Sliding from either of the triangle-shaped controls at the lower left or upper right will change just the lower or upper value (depending on which one you touch, obviously). As with the simpler sliders, tapping will nudge the value in fine steps.
- Sliding from one of the dashed lines will change the width of the range.
- Double-tapping in the middle of the range resets both the lower and upper values to their default settings.

Number Keypads
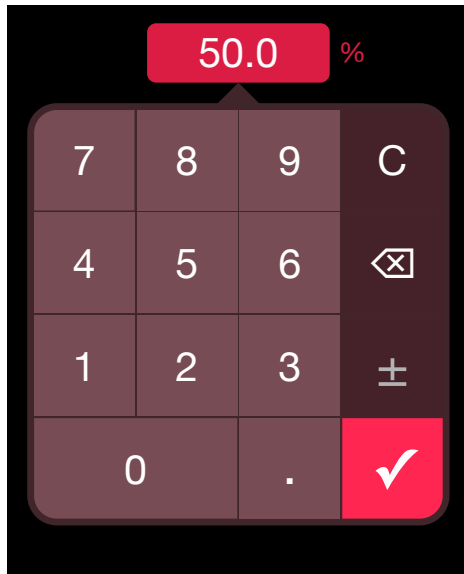
Lastly, all of the numeric parameter readouts are actually buttons. Tapping on one will bring up a convenient number keypad so you can directly enter in an *exact* value. And for parameters which are always negative (for example, Level), the minus sign is automatically entered for you, so you don't have to do it every time. (If you haven't figured it out already, I'm a control freak and efficiency freak. I'm hoping other control freaks like myself will appreciate these details and love auDSPr audio apps.)

Number Keypads now support Hardware Keyboards (iPad) If you have a hardware keyboard connected to your iPad, you can use it to type in values quickly when a Number Keypad is showing.

Product Info Page

Tap to bring up the volumeCTRL product information page. Here, you'll find convenient buttons for visiting the volumeCTRL product page on our website, for viewing this informative User Guide, and for contacting us with a friendly e-mail. You'll also find the app version number.

auDSPr Company Info Page

Tap to bring up our company information page. Here, you'll find convenient buttons which link out to our website and to our social media. Earn brownie points by supporting us in public - we'll be your best friend!

In the future, the auDSPr Company Info Page is where you'll find information about our other sweet audio apps.

Knowing all this, you shouldn't ever need to crack another auDSPr manual, except to enjoy my quirky writing style.

Now go make something sound cool!

Dave Simpao
auDSPr

P.S. If you enjoy our audio apps, **please write a favorable review on the App Store**. At the very least, give us a 5 Star rating. It really helps a lot. Thanks in advance!

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More sweet audio apps from auDSPr

auGEN X

Expressive Audio Generator AUv3

auSCOPE X

Smart Audio Oscilloscope AUv3