



**AV** CaptureAll

## **How-to Guide: Adjust Microphone Recording Level**

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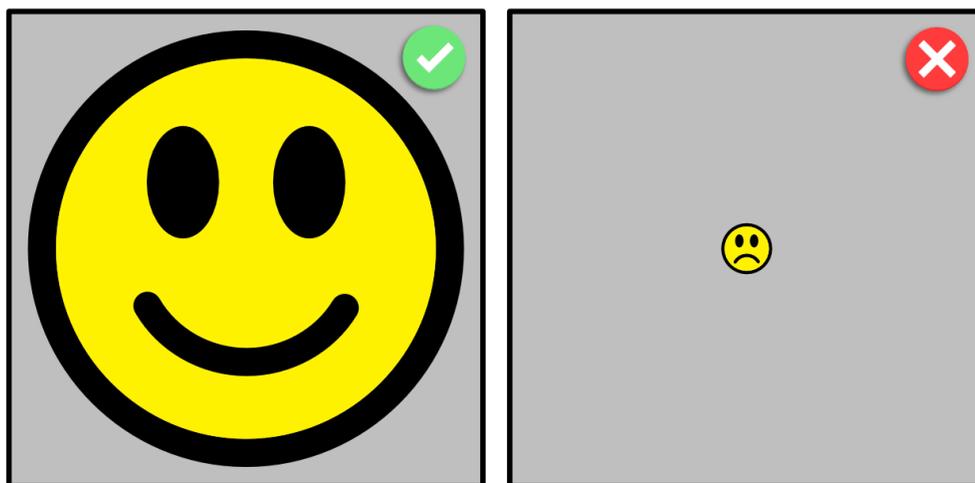
## 🔗 Overview 🔗

Complex audio systems tend to have a string of gain controls (i.e. volume knobs). Collectively, these level controls are referred to as the system's gain structure. You're likely reading this because your audio recordings are too quiet, or there is too much background noise. Usually this indicates that one of the gain controls is set incorrectly. The purpose of this guide is to walk you through the steps necessary to optimize the gain structure of your audio system. If at any time you have questions regarding this process, please call our customer support line at [888-360-2822](tel:888-360-2822) or email us at [Support@AVCaptureAll.com](mailto:Support@AVCaptureAll.com).

## 🔗 Investigation - The Big Picture 🔗

### **Distance:**

Before we start down the path of adjusting gain levels, it is important to understand how gain structure works. Let's use a digital photo as an analogy. If your end goal is to have a high-resolution photo displayed on screen, the best place to start is by making sure the camera is at the proper distance from the subject. See the two examples below.

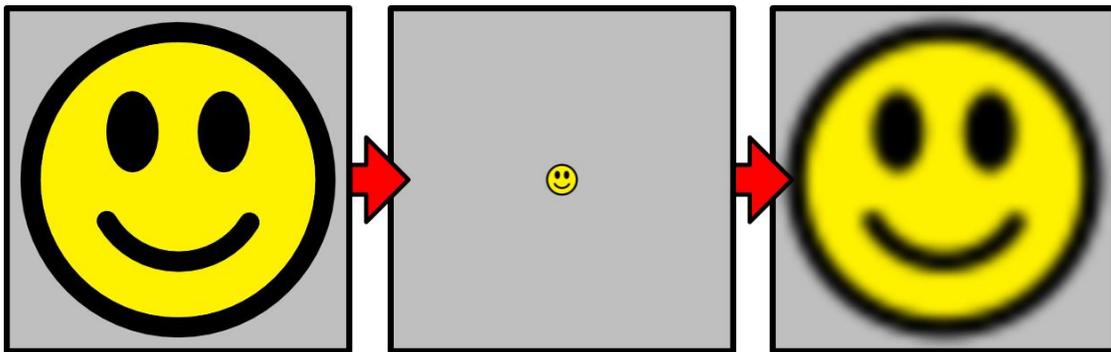


Some microphones are designed to record at a distance. This is true of ceiling mics and conference mics. However, gooseneck mics are designed to be as close to the talker as possible. Boosting your system's gain may be as simple as moving gooseneck mics closer to the talkers... or training the talkers to move closer to the mics.

### Gain Controls:

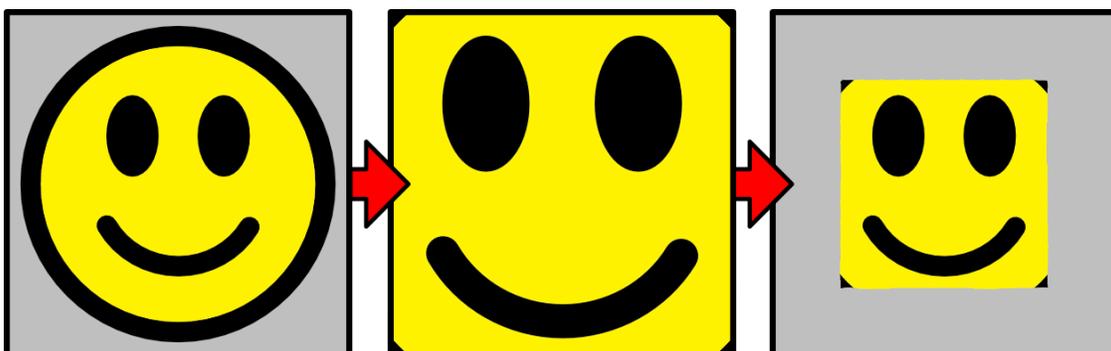
Once you have positioned the camera at the proper distance, you want to set it to capture at the highest resolution. The equivalent in an audio system is the microphone input gain control on the mic mixer. Depending on your equipment, this could be a physical slider or knob on the mixer, or a virtual knob in the mixer's control software.

If this gain control is set too low, no amount of boosting downstream gain controls will improve the audio. The same is true for taking a photo; if the resolution is low, the image will be too small, and increasing the size later will lead to a poor-quality display. The example below shows what this looks like.



The example above remains valid as we work our way further downstream. Let's say that the photo was taken at a high resolution. If the photo is later resized smaller for some reason, any subsequent attempt to enlarge it to the original size will lead to the blurry image above. The audio equivalent of blur is increased noise. The higher the noise level, the harder it is to discern what the talker is saying.

Likewise, setting a gain control level too high can cause clipping (i.e. distortion). Here is where the digital photo analogy starts to fall apart... but hey, we've come this far – let's keep going! If the photo is resized too large (let's pretend it has physical boundaries), any subsequent attempt to lower it back down to the original size will lead to clipping. The example below shows what this looks like.



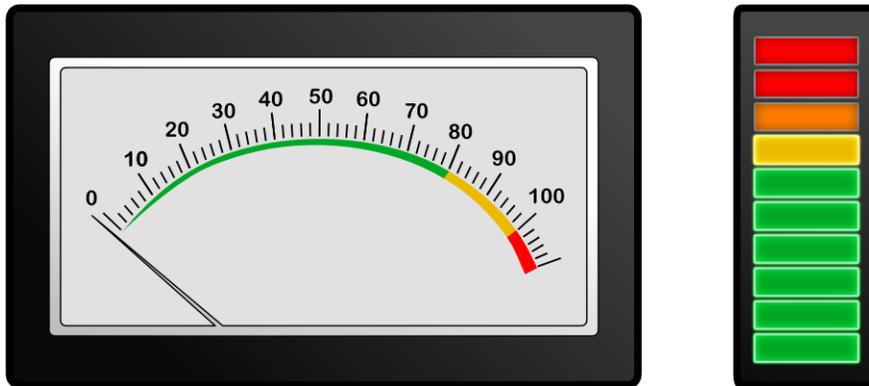
In addition to the mic mixer's input gain control, there are at least three more downstream gain controls. These are:

1. Mic mixer output
2. PC audio input
3. AV Capture recording level

To troubleshoot gain structure, the first step is to know where the gain controls are in the signal chain, and how to access them.

### Setting Levels:

Whether a gain level is set too high or too low, the end result is poor quality audio. The goal is to find the sweet spot for each gain control. This can be achieved using audio meters. There are different styles of meters, as shown below.



The general rule is you want to see activity on the meter, but not in the red. If the meter is not registering activity, the gain control is set too low. If the meter is going into the red at all, or pegged at 100%, the gain control is set too high. The goal is to set the gain control so the meter goes into the yellow for the loudest talker and registers at least some meter movement for the quietest talker.

During installation and setup, gain controls should be adjusted following the order they are found in the audio signal path. In other words: mic placement -> mic mixer input -> mic mixer output -> PC audio input -> AV Capture recording level. For troubleshooting, we recommend skipping the mic mixer gain controls at first. Unless they were set incorrectly or something has changed since installation, these gain controls are unlikely to be the cause of the issue.

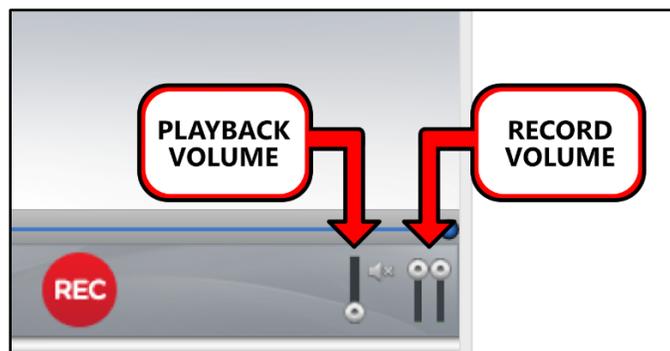
Is the issue specific to one microphone, or all of them? If only one, the best place to look is at the mic placement and mic cable. If all of them, the best place to look first is at the PC audio input. The directions below explain how to set the PC audio input level.

## Directions

**Step 1:** If applicable, connect audio/video cables to the recording PC. Make sure the A/V system components are powered on, and all microphones are unmuted.

**Step 2:** Open AV Capture and create a new session.

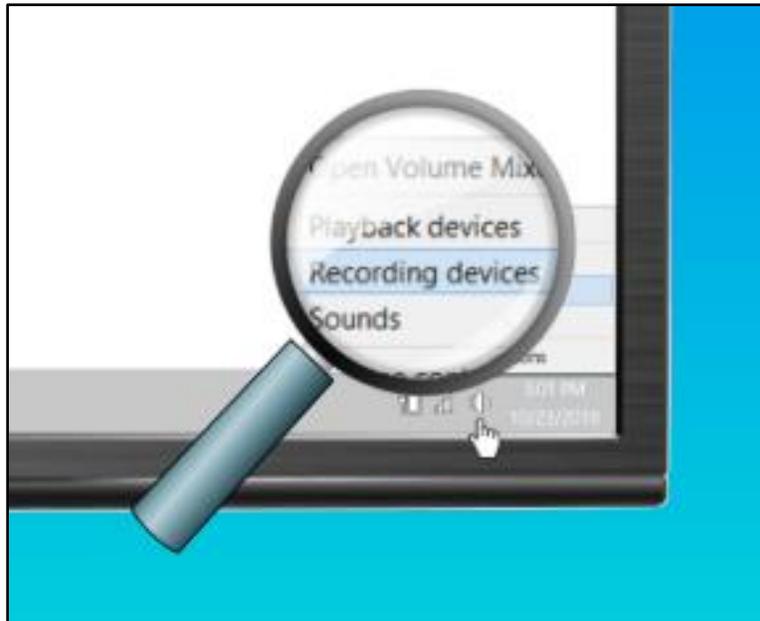
**Step 3:** The playback volume slider, as shown below, controls the volume level for the computer speakers or headphones. During recording, we recommend turning this down all the way in order to avoid a feedback loop unless headphones are being used.



**Step 4:** Click the Record button. Set the two record volume sliders to max (as shown above).

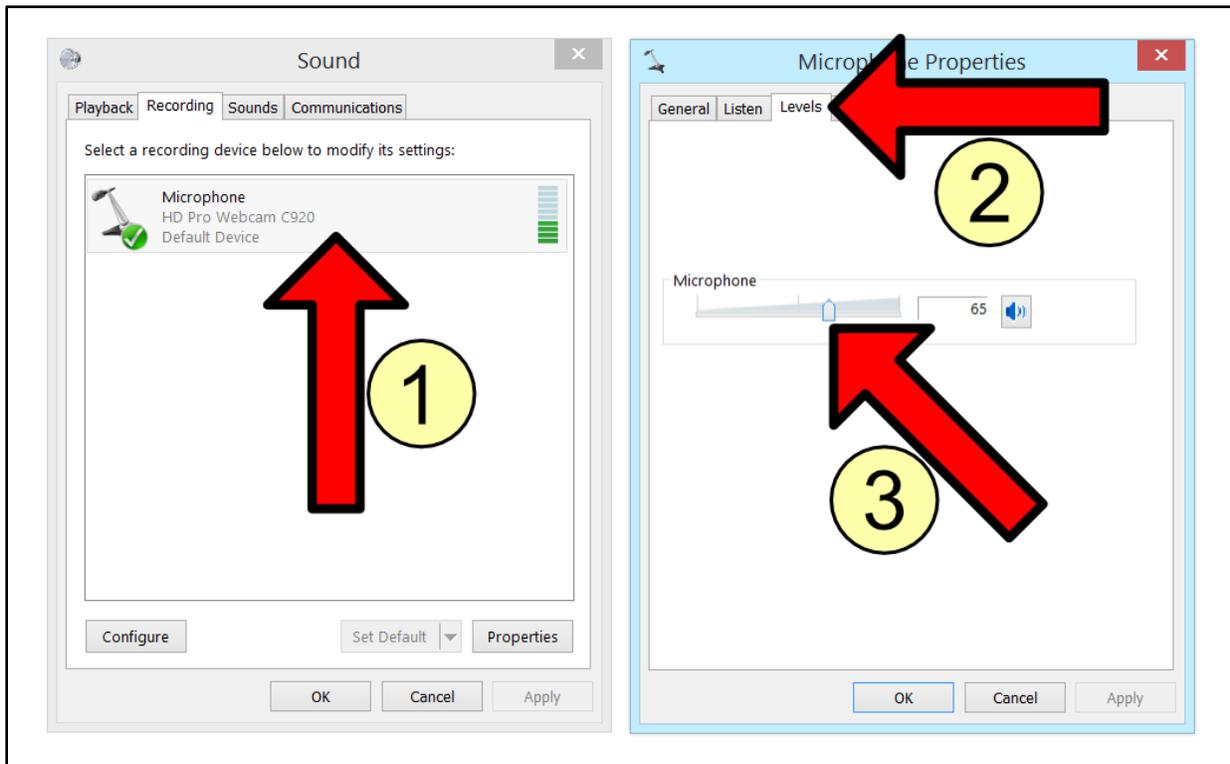
**Step 5:** Right-click on the loudspeaker icon in the lower-righthand of your Windows system tray and select "Recording Devices" from the dropdown menu. This will open the Windows Sound settings window.

Note: If "Recording Devices" is not an available option, select "Sounds", then navigate to the Recording tab.



**Step 6:** There should only be one recording device listed as enabled. If any other devices are enabled, right-click the device and select "Disable" from the dropdown menu.

**Step 7:** Double-click on the audio device used for recording in AVC (①). This will open the device's Properties window. Next, select the Levels tab in the Properties window (②). Have someone speak into the microphone(s), counting from 1 to 10; "1" being the quietest, and "10" being the loudest. Use the meter in the Sound window to guide your level adjustment (③). The goal is to have the quietest speech register on the meter, and the loudest speech avoid maxing out the meter.



**Step 8:** Once you reach a satisfactory recording level, stop the recording in AVC and exit the session. Open the session and playback the end of the recording to verify the audio is intelligible both during quiet and loud speech, and free of noise/clipping.

If further adjustment is necessary, repeat these steps until you are content with the results. If satisfactory results are unobtainable, the mic mixer gain controls may need adjusting.

## 🌀 Summary 🌀

If you followed the steps above, your organization's audio recordings will sound clear and audible. If this is not the case, please call our customer support line at [888-360-2822](tel:888-360-2822) or email us at [Support@AVCaptureAll.com](mailto:Support@AVCaptureAll.com).