

Digital Audio Basics

In the digital age, recording and editing audio has never been easier. With a couple of keystrokes and the click of a mouse button, you can record yourself, apply effects, and create a studio quality finished product within the comfort of your own home. Unsurprisingly, a fair amount of technology is involved in this process. To save ourselves from too much confusion, we focus on the two fundamental components of digital audio: sample rate and bit depth.

Sample Rate

Sample rate is measured in kilohertz (kHz) and refers to the number of times per second a sample of audio is taken. For example, a sample rate of 44.1 kHz (the CD standard) means that during one second of recording, 44,100 samples of audio are taken. For more information on sample rate, including a list of standard sample rates on certain destination formats check out the Wikipedia page [here](#).

Bit Depth

The bit depth of digital audio refers to the resolution of a single sample. A bit is a single binary value, a zero or a one. The more bits in the bit depth, the higher resolution the audio file. The CD standard is 16 bits, but during the production process, it is advised to work in 24 bits and [dither](#) down to a lower bit depth before distribution. For more information on digital audio bit depth, including a technical description, check out the Wikipedia page [here](#).

Ideal Settings

When working in any Digital Audio Workstation (DAW), these are the standard options you will see for recording digital audio. These settings are largely dependent on your desired final medium. For everyday digital audio work, having your settings at a 44.1 or 48 kHz sample rate with a bit depth of 24 bits is ideal.

Digital Audio Formats

There are several common digital audio file types you've probably heard of, the most ubiquitous perhaps being .mp3. There is a necessary distinction that must be made before working with digital audio as certain file types actually cause purposeful degradation of the audio file. A compressed file type is one that is algorithmically reduced in size. There are two types of compressed audio, "lossy" and "lossless." Lossy compressed audio is audio from which data is irrecoverably removed, thus resulting in a very small file. Some very popular formats including .mp3 and .wma are both examples of lossy compression. Lossless compressed audio is somewhat less common, as it compresses the audio file while still maintaining all sonic qualities exactly.

Digital Audio Formats (cont.)

Lossless compression is popular among audiophiles, or those who prefer exact digital duplicates while keeping a reasonable file size. When working with digital audio in a recording setting, we prefer uncompressed, lossless audio files, typically in .wav or .aiff format. Uncompressed audio files are the largest in size, but they do not need to be converted or extracted in order to be played in your Digital Audio Workstation (DAW), so they have become the standard in digital audio production. For more information on digital audio formats check out the wikipedia page [here](#).

Final Notes

Working with digital audio can be fun and rewarding. Knowing optimal settings for the files you work with is fundamental to ensuring best results. Every DAW has options to change these settings to guarantee that you are fully satisfied with the finished product.