

CHAPTER OVERVIEW

3.17: Electronics

This chapter explains several electronic devices used in sound recording and reproduction. Concepts needed to explain the function of these devices were introduced in the previous chapter.

There is no way to record, transmit and replay sounds perfectly so that they sound exactly as they were heard originally. All recording processes fail to capture the full range of audio frequencies present when the original sound was made. Microphones have limited ranges of sensitivity as do speakers and amplifying systems. These problems are referred to generally as **distortion** and are discussed below. The problems of sound reproduction are further complicated by the fact that all the devices involved in recording, transmitting and reproducing sound add unwanted frequencies called **noise**. Pure noise can generally be defined as a sound sample which contains some of all frequencies. The amount of each range of frequencies present determines the **color** of the noise. Here are Wikipedia pages on different colors of noise: [white noise](#), pink noise, Brownian noise, grey noise.

Key Terms

Noise, speakers (magnetic, electrostatic, tweeter, bass), microphones (dynamic; 3 types: electrostatic, piezoelectric, carbon), vinyl, magnetic tape, analog, analog to digital, digital to analog, binary number system, sample rate, bit rate, digital recording (divots, CD, DVD, Blu-ray), audio compression, lossless, lossy, MPEG3, AM, FM, digital, distortion (amplitude, harmonic, frequency, phase), MIDI.

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[3.17.1.1: Microphones](#)

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