

Buying guide – SPEAKERS

Introduction

The heart of any [music system](#) or [home theater system](#) or even outdoor rock concerts, speakers are the soul of audio-visual entertainment. A [speaker](#) is basically an electronic device that converts an electrical signal to sound energy. These signals are stored in various media such as CDs, tapes, and DVDs. While Alexander Graham Bell could be credited with creating the first loudspeaker in 1876, a number of engineers and scientists after him were responsible for making the version of the loudspeaker we know today. Loudspeakers are permanent fixtures in many households.

Working of a speaker

In order to understand how speakers work, we first need to understand how our brains perceive sound. Sound moves through the air in waves that create changes in the air pressure. Depending on the frequency and amplitude of these waves, we interpret the sound in different ways. The speaker could be considered as functioning in the opposite way that a microphone works. While a microphone converts sound waves into electrical signals, a speaker does just the reverse. Almost all speakers are composed of a cone, the broader end of which is covered with a tightly drawn membrane called the diaphragm. The narrower end of the coil is connected to a voice coil.

Speakers work on the principle of electromagnetism. This means that when a wire is coiled around a metal bar and a current is passed through the coil, a magnetic field is created that magnetizes the metal bar. The polarity can be reversed using an alternating current through the coil. This alternating current causes the coil to move forward and backward continuously, which in turn 'vibrates' the cone. This causes the air in front of the diaphragm to vibrate too, producing sound waves. The frequency and amplitude of these waves depend on the original sound wave. These factors also govern the rate and distance through which the voice coil moves. This determines the frequency and amplitude of the sound waves produced by the diaphragm. Thus, intelligible sound is produced.

Speakers are of three main types - tweeters, midrange, and woofers. While tweeters are concerned with high-frequency sounds, the mid-range speakers are concerned with those sound waves in the median frequencies, and woofers emit the low 'bass' frequencies.

What to look for in a speaker

Considering the many brands of speakers available in the market as well as the various types of speakers marketed by each brand, it is necessary to get an understanding of your requirements before deciding on which speaker to buy. Below we have listed the main types of speakers and speaker sets available so that you can make an informed decision:

1. 2.0 Speaker system

The 2.0 speaker system includes just 2 speakers, without the inclusion of a bass speaker. This speaker system is suited for an average music system in your living room and occupies less space too.

2. 2.1 Speaker system

The 2.1 speaker system includes the same two speakers as described in a 2.0 system with the addition of a bass speaker to emit the low frequency sounds. Music aficionados

would love this speaker system as it offers 'bass boom' without occupying too much space.

3. 4.1 Speaker system

The 4.1 speaker system includes 4 satellite speakers and one bass speaker or sub woofer. This speaker system offers a better experience than a 2.1 speaker system. The 4.1 speaker system is compatible with Dolby ProLogic and DirectSound.

4. 5.1 Speaker system

The 5.1 speaker system includes six separate speakers being targeted by sound signals from six discrete channels – the stereo left and right front, the stereo left and right surround, the center channel, and the low frequency channel. This speaker system is compatible with Digital and Dolby Digital format. The front speaker is mandatory in the Dolby Digital format as all dialogues in any video recording are transmitted through this channel. The low frequency channel utilizes one tenth of the bandwidth of the other channels because it transmits exactly that proportion of the frequencies of a full range channel. The remaining 5 channels are full range channels.

5. 6.1 Speaker system

The 6.1 speaker system includes 2 right/left channel speakers, 2 right/left rear channel speakers, 1 center channel speaker, 1 rear center channel speaker, and 1 subwoofer. This speaker system is compatible with Dolby Surround EX and DTS ES.

6. 7.1 Speaker system

The 7.1 speaker system includes 6 satellite speakers, 1 center channel speaker, and 1 sub woofer. This speaker system is compatible with Dolby Surround EX, DTS ES, and Dolby Pro LogicIIx.

Before making a purchase, analyze the speakers for the following parameters:

1. Power

The speaker's power could be the most important consideration as it is this measurement that determines sound output. Power is measured in watts. The power should be measured taking the RMS (root mean square) value, rather than the PMPO (Peak Music Power Output). For a normal home system, an RMS value of 500 would be sufficient.

2. Signal-to-Noise Ratio

Signal-to-Noise Ratio is the ratio of a certain transmitted signal to the background noise from the transmission medium. Referred to as S/N or SNR, it is measured in decibels (dB). For a home music system, an S/N ratio of around 80 dB should be enough.

3. Controls

Most of the controls for a speaker are usually located on the front-channel satellite speakers. Apart from the other controls, such as the subwoofer volume control,

surround-channel volume control, left/right balance and the mute feature, some of the most commonly used controls include the volume and the bass controls.

4. Frequency response

Expressed in hertz (Hz), the frequency response specifies the audio range the speaker is capable of. Most speakers have a frequency response of around 20 kHz towards the higher end. The lower end however provides a clearer picture of the speaker's functionality.

5. THX Certification

THX certification would mean that the speaker has passed the quality standards as specified by THX Ltd. Therefore, it makes sense to go in for a speaker system that is THX certified. A THX certified speaker system ensures that the sound emitted from the speaker is exactly the same it was when first created and mixed. Since THX Ltd. is a respected body in the audio technology arena, a speaker system with THX certification is seen as setting the standard for high quality sound.

6. Headphone Jack

A headphone jack is a handy option incorporated into your speaker system. This jack comes in use when you wish to listen to music at high volume without disturbing anyone else. As soon as the headphones are inserted into the headphone jack, the speaker outputs usually become mute. The headphone jack is usually close to the volume controls of the speakers.

Making a decision

View different speakers displayed on www.etrronics.com. Of course, if you require a speaker set for use at home, you would not be going in for powerful speakers that are usually used in the outdoors. Depending on your usage as well as budget, you could view the price-wise distribution of the speakers by clicking on the following links: [Under \\$50](#), [\\$50 - \\$100](#), [\\$100 - \\$200](#). Check speakers from reputed manufacturers such as [Pyle](#).

If you wish to have a truly cinematic experience at home, you could go in for a home theater speaker system that is composed of a minimum 5.1 speaker set. For a casual 'weekend' music listener, a 2.1 speaker system would be just about sufficient. Make the right choice and get set for years of entertainment with your speaker system.