

## Audio Glossary

### **Acoustics**

The physical science dealing with how sound is produced, manipulated and perceived.

### **Algorithm**

A step-by-step procedure for solving a problem or accomplishing a task, usually by using a microprocessor. In digital audio, algorithms are often used for sound processing.

### **Ambience**

In audio this refers to the reflected and reverberant sound characteristics of an acoustic space. All rooms can be acoustically “live” or “dead.” Large rooms can be flattering to musical performances (a concert hall) or hostile (a gymnasium).

### **Amplifier**

A device that increases the strength of signals that pass through it. In audio systems, preamplifiers and surround processors amplify voltages. Power amplifiers amplify both voltage and current, providing more power output in order to drive loudspeakers.

### **Anechoic**

Without echoes, reflections or reverberation.

### **Audio Frequency Range**

The range of human hearing, commonly accepted as 20 Hertz to 20,000 Hertz (cycles per second).

### **Audiophile**

Anyone who is deeply interested in the reproduction of sound.

### **Balance Control**

In stereo systems, a control to adjust relative sound levels in the left and right loudspeakers.

### **Bass**

Low-frequency audio signals – below approximately 300 Hz.

### **Bass Control**

A tone control allowing the user to boost or cut the low frequency portion of the audio signal.

### **Breakup**

When a loudspeaker diaphragm fails to move in a piston-like fashion, and flexes or breaks up, distorting the sound.

### **Bright, Brightness**

In describing sound quality, it refers to an excess of high frequency sound. It can be caused by electronics or loudspeakers with excess output at high frequencies, or by rooms that are too reflective, or “live,” at high frequencies.

### **Center channel**

A channel driving a loudspeaker located midway between the left front and right front loudspeakers. In multichannel music, the primary artist is usually heard in this channel. In automobiles it is especially important to solidly anchor the center portion of the soundstage for both the driver and the passenger.

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### **Channel**

A signal path. Stereo consists of two channels, starting from the signal source, and ending at the loudspeakers. Multichannel audio can have 5, 6 or 7 channels, plus a so-called .1 channel for low bass sounds.

### **Class D Amplifiers**

A switching amplifier that significantly reduces power losses in the output devices. Efficiencies of 90-95% are possible. By comparison, Class A amplifiers are the least efficient – about 20%. Class B or Class A/B amplifiers (one of the most common types) can be up to 50% efficient.

### **Coaxial Loudspeakers**

A smaller speaker mounted concentrically with a larger speaker, with the two combined in a single structural unit.

### **Coloration**

A perceived characteristic of a sound that was not in the original recording. Coloration modifies the timbre of voices and musical instruments, and is therefore not desirable.

### **Compression**

A reduction in the dynamic range of a system or signal.

### **Crossover**

Electrical filters that direct the appropriate frequencies to each type of speaker (woofer, midrange, tweeter, etc.) in a loudspeaker system. The crossover frequency is the frequency at which one loudspeaker driver is turned off while another is turned on.

### **Decibel**

A logarithmic measure of relative loudness. A decibel is one-tenth of a bel, abbreviated dB. In terms of perceived loudness, 1 dB is just audible. A 10 dB sound-level change represents double or half loudness.

### **Discrete**

In audio, discrete refers to sound recordings in which all channels are stored separately. Each channel is completely independent of each other channel.

### **Digital Signal Processing (DSP)**

Any form of manipulation performed on an audio or video signal while it is in digital form. The quality of DSP processing is limited only by the competence of the programmers.

### **Distortion**

Unwanted, inaccurate sound reproduction.

### **Dynamic Volume Control (DVC)**

In car audio systems, DVC adjusts the volume and frequency response of the playback to compensate for the auditory masking effects of road, aerodynamic and mechanical noises in a moving vehicle.

### **Dynamic Range**

The difference between the loudest and softest sounds that can be reproduced by a device or format. Usually expressed in dB.

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### **Dual Voice Coil Subwoofer**

A dual voice coil subwoofer is a powerful and compact design that can better handle higher volumes for deep bass notes that you can feel as well as hear. A dual voice coil makes the subwoofer robust enough to perform consistently even with the high power levels driving it.

### **Efficiency**

The measure of a device's ability to convert input power to work. Expressed as a percentage.

### **Equalization**

The process of using an equalizer to correct for problems in an audio system and achieve the desired sound quality.

### **Fader**

In car audio, the front-to-back sound level adjustment.

### **Frequency**

The number of vibrations or cycles completed by a signal in one second. Frequency is expressed in cycles, or more commonly, Hertz (Hz).

### **Flat Response**

Refers to a flat, or linear, frequency response, meaning that an audio component can reproduce all audio frequencies at the same, correct, level.

### **Frequency Response**

The range of frequencies that a speaker can reproduce (lowest frequency to the highest). A perfect electronic device should have a flat, or linear, frequency response over its useful frequency range, indicating that it reproduces all frequencies at the correct level.

### **Flux**

The flow of magnetic energy in a circuit.

### **GreenEdge™**

A suite of HARMAN technologies that deliver greater sonic performance while using less energy.

### **Head Unit**

The central control unit for the audio system, located in the instrument panel.

### **Hertz**

The basic unit of frequency, also called cycles per second. The number of full cycles completed by an alternating signal in one second.

### **High Frequency**

Audio frequencies over about 5,000 Hz.

### **Imaging**

The listener's perceived spatial locations of the individual instruments and voices in a recording, and of the acoustical environment in which they are performing.

### **Loudspeaker**

A transducer that converts an electrical signal into sound.

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### **Low Frequency**

Generally refers to sounds below about 300 Hz.

### **Low Frequency Effects**

The 0.1 channel in 5.1-channel digital signals. All five main channels are full range, so this additional channel, covering the frequency range 3 Hz to 120 Hz, is there to accommodate low-frequency effects. It is included in the subwoofer outputs of surround processors.

### **LOGIC7**

LOGIC 7 uses a patented surround algorithm to convert stereo sources, such as radio broadcasts and CDs, into surround sound. This dramatically increases the “sweet spot” and provides a much more realistic listening experience, even within the confines of an automobile.

### **Midrange**

Frequencies between 300Hz and 3000Hz.

### **Midrange Driver**

A speaker that is designed to reproduce middle frequencies, from about 300 Hz to 3000 Hz. This is where most speech and musical information lies.

### **Multichannel**

A sound recording/reproduction system with more than two channels and loudspeakers. Current systems have 5, 6 or 7 channels plus a low-frequency effects (LFE) channel. Multichannel sound can also be simulated from two-channel sources.

### **Magnetic Flux Density**

The measurement of magnetic flux inside the air gap in which a voice coil of a speaker operates.

### **Metal Matrix Diaphragm (MMD)**

MMD speaker material is a layered composite of very thin ceramic on a lightweight metal base—very strong, and specifically designed to issue bright, clear high notes as well as bold, natural low notes with greater accuracy and less speaker fatigue. Metal-cone or titanium-dome speakers help eliminate distortion due to speaker cone flex or fatigue during the life of the speaker system.

### **Neodymium Magnet**

Currently the strongest type of permanent magnet. Neodymium is a “rare earth” magnet that is more compact and powerful than traditional iron-based magnets. With low mass and strong magnetic fields, these lightweight powerful magnets ensure superior dynamic sound performance.

### **Psychoacoustics**

The branch of acoustics that relates the physical dimensions of sound with the perceived dimensions – the relationships between what we measure and what we hear.

### **Resolution**

In audio, a loosely defined term used to describe perceptions of small details in music.

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### **Resonance**

A “natural frequency” for an acoustical, electrical or mechanical system. The frequency over which the resonant activity exists, and the duration of ringing, are related to the amount of damping in the system.

### **Reverberation**

In a room, it is the sound that has been reflected many times from many objects and surfaces. In large rooms and concert halls the reverberation can last long enough to be heard as a gradual decaying of sound after the source has stopped radiating. So-called “live” rooms have a lot of reverberation. “Dead” rooms have little.

### **Soundstage**

The listener’s perceived total listening environment. A general term describing the perceived dimensions and direction of musicians performing in an acoustic space. Usually used in discussions of stereo and multichannel reproduction of recordings. Dimensions like width, depth, and the directional clarity and size of individual performers are matters of interest.

### **Sound**

Physically, sound consists of pressure fluctuations, at any frequency, that propagate in the air. Perceptually, sound is the human response to those physical pressure fluctuations, which are normally considered to occur in the frequency range of 20 Hz to 20,000 Hz.

### **Sound Level**

Sound pressure in decibels, usually referenced to the standard level near the hearing threshold at middle frequencies, and almost always weighted according to one of the standard frequency weighting contours, A, B or C. Such sound levels should be described as dB (A), for example.

### **Sound Pressure Level (SPL)**

A measurement in which the sound pressure is expressed as so many decibels (dB) above a standard reference pressure level, which is close to the threshold of hearing at middle frequencies. SPL is a standardized measurement.

### **Spatial**

An attribute of an audio system's playback that creates a sense of space within or different from the listening space.

### **Subwoofer**

A loudspeaker system especially designed to reproduce only bass frequencies. Generally used below 80-100 Hz.

### **Speaker**

An electro-acoustic transducer that converts an electrical audio signal into sound.

### **Stereo Sound**

Two-channel audio with discrete speakers for each channel.

### **Surround Sound**

Multi-channel audio (more than two-channels) with discrete speakers for each channel. A generic term that describes any of several systems capable of delivering multichannel audio that includes channels placed to the sides and/or rear of the listener.

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### **Sweet Spot**

The so-called "best" listening position in which the sound imaging is most pleasing.

### **Total Harmonic Distortion (THD)**

Total harmonic distortion is a measure of how much a given audio device distorts a signal through the introduction of added harmonics or overtones. Figures are usually given as percentages.

### **Timbre**

The combination of harmonic frequencies in voices or instruments that give them their characteristic quality.

### **Tone Control**

A simple filter that can boost or cut portions of the audio frequency range, used to change the tonal balance of reproduced sound.

### **Transducer**

A device that converts energy from one form to another. For example, a microphone converts acoustical energy into electrical energy, while a loudspeaker does the reverse. A sound transducers are also called a driver, speaker or loudspeaker.

### **Treble**

High-frequency audio signals.

### **Treble Control**

A tone control allowing the user to boost or cut the high frequency portion of the audio signal.

### **Tuner**

A device that tunes, or selects, radio or television stations from broadcast signals received on an antenna, by cable or satellite.

### **Tweeter**

A loudspeaker driver optimized to reproduce high frequencies, typically above about 2,000 to 4,000 Hz.

### **Voicing**

The process of using equalization and sound field alignment within the DSP to tailor the sound and correct for problems in an audio system and the environment.

### **Volume**

Loosely, the loudness of sound, and the control that allows us to vary it. In loudspeakers, it is the cubic measure of space in a speaker enclosure.

### **Watt**

The basic unit for electrical or acoustical power.

### **Wattage**

Amount of electrical power expressed in Watts.

### **Woofers**

A loudspeaker designed to reproduce bass frequencies.