Technical Glossary for Musicians

Alternating Current (AC)
The flow of electrical current which reaches maximum in one direction, decreases to zero, reverses and reaches maximum in the opposite direction, (called a "Cycle") this cycle is repeated continuously.

Acoustics
Pertaining to sound – or the science of sound. Acoustics is sound energy transmitted by air (the part of the audio signal that you hear, such as the sound coming out of a speaker).

Active Electronics
Refers to a type of circuitry that requires a power source (battery or power supply). Active circuits are used to decrease or increase the amplitude or gain of a signal. Acoustic Electric guitars will most likely have "active electronics" and will use a battery for power.

Ampere (A)
A unit of measurement for electrical current – designated by the letter A, and also referred to as Amps.

Amplifier
Any device that is capable of increasing the "magnitude" of a voltage, current, or "volume" of an audio signal without distorting the signal (or wave form) can be associated with amplification. Audio amplifiers can increase a "weaker" audio signal to a much "stronger" level that will operate PA speakers with minimal distortion.

Attenuate (Attenuators)
In audio – attenuate means to "decrease" or "reduce" signal strength. Attenuators are often used to decrease a line level signal to microphone level (so a CD player +4dBu can be plugged into a Microphone Mixer at -60dBu).

Balanced Connection
Balanced connections use 3 wires (2 conductors and 1 shield wire at ground potential). The 2 conductors carry the signal - high (+) and low (–), which are both at different polarity. The shield wire is connected to a ground. A balanced input amplifies only the "difference" between the different polarities, and will reject any part of a signal (noise) that is the same in each of the 2 conductors (+ and –).

Bass Speaker (Woofer)
Type of speaker that reproduces frequencies in the low audio frequency range, usually below 500 Hz (Hertz). Bass guitar speaker cabinets can have different size woofers – there are 8 inch, 10 inch, 12 inch, 15 inch, and 18 inch speakers available.

Bridge (Bridging Signal Circuits)
Basically refers to connecting one signal circuit in parallel with another signal circuit. In stereo amplifiers you can bridge (parallel) the inputs so that a signal connected to channel 1 will also go to channel 2 – one input goes to both channels (just by flipping a switch). This is a very common practice, and is usually a standard feature on newer audio amplifiers.

Bridge (Bridging Amplifier Outputs)

Bridging also refers to running two amplifier channels in parallel to make one stronger output channel (this is done to increase the output wattage of the amp – if you have an amp that is 200 watts per side, and need 400 watts, bridge the amp outputs to get the 400 watts – wattages add).

Clipping

Refers to the distortion caused by "overloading" the input of an amplifier (or mixer, or any signal processor).

Condenser Microphone

A type of microphone that uses utilizes a "sound sensitive" capacitor as the pickup element. A condenser microphone uses active electronics, and requires a power source to operate (usually uses phantom power off a mixing board). Condenser microphones have low noise levels, and a very wide dynamic range (which means the output levels are usually higher than other types or microphones).

Crossover

A circuit that separates an audio signal into two, three (or more) frequency ranges – horns will receive the higher frequencies, mid-range the mid frequencies, and low end speakers the lower frequencies.

Crossovers can be active or passive.

***Active crossovers are powered, and are used just before an audio amplifier.**

***Passive crossovers are non powered circuit boards (usually located inside speaker cabinets), and are used after the audio amplifier.**

Current

The movement (or rate of flow) of electricity through a conductor. Current is measured in amperes – and uses the symbol (I).

dB (Decibel)

The unit of measurement for describing the ratio between two Sound Pressure levels. The decibel system eliminates the use of large numbers, and is used only when referenced to a known value (such as a sound pressure level). Example: In Acoustic Watts a whisper could measure anywhere around .00000000001, but when measured in decibels could be anywhere from 20-30dB.

dBu

The unit of measurement for electrical power (Watts). Example: In technical terms 0 dBu is equal to 1/1000 of a watt, which is the same as .775 volts. One example of using dBu would be – the Line output level of a CD player is +4dBu.

Direct Current (DC)

The flow of electrical current in one direction. For example a 9-volt battery is DC, the power outlet in your house is AC (alternating current) which alternates direction and polarity. Referred to as "DC power" a battery will usually have a "positive" (+) and a "negative" (–) terminal on it.

Directional
Usually refers to a directional microphone (but the term is also used with speaker cabinets) that exhibits sensitivity mainly in the front of the microphone (you need to talk or sing directly into the front of the microphone to get the best signal out of the microphone).

Distortion
Refers to the undesired change in the waveform of an audio signal that causes the wave form to appear differently (overdriven, does not sound clear, does not sound the same as the input at the output). There are several types of distortion, and all distortion is undesirable (the only exception is guitar players that use distortion as an effect, etc).

Dynamic Microphone
A dynamic microphone uses a voice coil (similar to a speaker voice coil) which converts acoustic energy (sound) into electrical energy through a moving coil around a fixed magnet (the voice coil). Dynamic microphones are the most widely used in sound reinforcement.

Equalization (EQ)
Is best described as the manipulation of audio signals by increasing or decreasing frequencies (frequency ranges) through the use of tone controls, filters, or equalizers.

Fader
Usually a slide type potentiometer that controls the signal level on the channels of a mixing board (some faders are the "rotary" type).

Feedback (Acoustic)
Occurs when a signal from an output re-enters the input and causes a ringing or squealing sound. Caused by amplified sound from speakers (output) entering a microphone (input), and then being re-amplified again.

Fidelity
The term used to describe the accuracy and precision of audio reproduction and processing.

Frequency
The change in air pressure (sound) over a given period of time. Frequency is also used to describe musical pitch. The lower the frequency, the lower the pitch, the higher the frequency, the higher the pitch Frequency is measured in cycles per second – Hertz (Hz = cycles per second). The audio frequency range is roughly around 20Hz – 20,000 Hz.

Full Range Speaker
Type of speaker that reproduces the full audio frequency range (more or less).

Gain
Refers to the increasing of a signals strength (or amplitude), and is usually specified in dB (decibels).

Ground Loop
A ground loop can occur when two or more devices are connected in such a way (the devices have the same path to a common ground) that it creates a magnetic field which induces noise or hum into the audio system.

Hertz (Hz)
Also referred to as cycles per second – Hertz (Hz) is the unit of measurement for frequency.

Horn Speaker (Tweeter)
Type of loudspeaker that reproduces frequencies in the higher audio frequency range, usually frequencies above 1.5K Hz (1,500 Hertz) all the way up to 10K Hz (10,000 Hertz). Tweeters have driver diaphragms in them (similar to a voice coil in a regular speaker) that range anywhere from 1.5 inches up to 4 inches in diameter.

Impedance
The opposition to the flow of alternating current (measured in ohms) in an electrical device. For example a low impedance microphone can have a measured impedance of 50-600 ohms, and a high impedance microphone can have a measured impedance of 10,000 ohms or more.

***Output impedance (Source impedance) refers to the output of a microphone or amplifier, and Input impedance (Load impedance) refers to the input of a speaker (if a speaker has an input impedance of 8 ohms, the amplifier driving this speaker will see 8 ohms).**

Impedance Matching
Refers to the acceptable connection of an output device to an input device. In audio systems, output devices (which are low impedance) want to see a high impedance at the input device they are connected to. Outputs = Low Impedance, Inputs = High Impedance.

Jack
The term used for the type of receptacle used with a cable plug (connector). Ex: The XLR plug (connector) was plugged into the XLR jack. A "jack" is usually mounted permanently on a piece of equipment, audio snake, or wall.

LED (Light Emitting Diode)
A type of diode that emits light when current flows through it. Colors include Red, Green, and Amber (to name a few). LED's are often used to indicate signal level, power indication, etc.

Line Level
Audio signals operating around +4 dBu (usually measure up to 1.23 volts).

Load
Refers to what an amplifier actually "see's" at its output. Example: If you have a 500 watt amplifier and you plug a 4 ohm speaker into it, you may get the full 500 watts, but if you plug in an 8 ohm speaker to the amplifier, you may only get around 350 watts. The larger the "load" the amplifier sees, the fewer watts you will get out of the amplifier.

Loudness
A person's ear will hear different frequencies at different levels. Loudness can be described as the "Sound Level" perceived by the ear (also known as Sound Pressure Level or SPL).

Mid-Range Speaker (sometimes referred to as Squawkers)
Type of speaker that reproduces frequencies in the middle audio frequency range, usually frequencies above 500Hz all the way up to 6K Hz (6,000 Hertz). Mid-Range speakers are usually anywhere from 5 inches – 12 inches in diameter.

Mixer (Mixing Console)
Refers to the device that brings multiple signals together to be balanced and processed before being sent to processing equipment and the power amplifiers (and speakers). Mixing consoles can have anywhere from 4 to 64 input channels on them (or more).

Monitor Speaker
Type of speaker that reproduces the full audio frequency range. Monitors are pointed at the performer on stage to allow the performer to hear what's playing through the PA system so that they can stay in tune (singers that are performing harmony parts must be able to hear the other singers in order to stay in tune).

Noise
Refers to any unwanted signal in an audio mix (hiss, hum, static, RF interference).

There are types of useful noise used for Audio Calibrations:

*** Pink Noise – Is a random noise having equal energy at each octave.**
*** White Noise – Is a random noise having equal energy at equal bandwidths.**

Octave
The interval between two sounds having a basic frequency ratio of two. Example: For the frequency 2000Hz, one octave up (doubling) would be 4,000 Hz, while one octave down (halving) would be 1000Hz. Using a guitar example – using the "F" note on first fret of the sixth string – one octave up would be the "F" note on the twelfth fret of the sixth string.

Ohm (Ohm's)
The unit of measurement used for resistance. Example: If you wanted to measure a speaker – you would select "ohms" on the meter to make the measurement (since a speaker is rated in ohms). Typical speaker ratings are 2, 4, 8, and 16 ohms.

Omni-Directional
Usually refers to a non-directional microphone (but the term is also used with speaker cabinets) that exhibits equal sensitivity in all directions (you can talk into the front, sides, and anywhere on the microphone).

Passive Electronics
Refers to a device or component that may control a signal, but does not require a power source. Passive electronics do not amplify or create any energy. Examples are tone and volume controls on a guitar.

Patch Cables
Refers to the types of cables that are used to connect audio processors together (outputs to inputs, etc). Patch cables are usually shielded since they are used for "low voltage" connections.

Peak
Refers to a momentary maximum power level of a signal. The peak indicator on a mixing console will indicate the level just before clipping occurs.

Pitch
Best described as the "perceived" frequency of a sound (pitch is a term applied to musical tones that is used as a standard for tuning or singing.

Polarity
Refers to position of the positive or hot (+) and the negative or common (-) signals in an audio system. Speakers will usually have red and black markings or connections that will designate polarity. Polarity can also refer to the positive (+) and negative (–) terminals of a battery or DC power supply.

Power
Is best described as any energy (that is rated in watts) that does some kind of work. In audio related systems – power could be the energy used to move a speaker cone.

Reverb
Reverb is caused by sound waves reflecting off (bouncing off) walls or other objects. In guitar amplifiers reverb is an effect that can be achieved "electrically" by using a spring device that allows an audio signal to hang around (linger) longer.

Snake (Audio Snake)
A multi-channel cable system used to extend cabling from a mixing console to the stage area. Comes in many sizes, configurations and lengths.

Sound Pressure Level (SPL)
SPL is a measurement of sound energy, and is usually measured in dB.

Solder Creeping
In audio this occurs after a wire has been "tinned" and then used in certain connections that press down on soldered wire – over time the wire gradually slips (slowly creeps) out of the connection. It is not recommended to tin any wires that are going to be held down by screwed in lugs, etc.

Stereo
Refers to the use of two signal processing channels that are built into the same piece of equipment, but are two separate signals. For example: A stereo power amplifier contains two built in amplifiers (left and right, or Channel 1 and Channel 2), one channel feeds one speaker, and the other channel feeds another speaker (you can turn Ch-1 up more than Ch-2, etc).

Sub-Woofer Speaker
Type of loudspeaker that is used to extend the frequency range of full range systems (usually down to 30Hz but rarely above 300 Hz). Sub-woofer speakers sizes range anywhere from 15 inches all the way up to 24 inches in diameter.

Transducer
Any device that changes (converts) one form of energy into another. For example, a microphone converts acoustical energy (sound) into electrical energy, and a speaker converts electrical energy into acoustical energy. Transducers can be put into two groups:

Input Transducers – Microphones, Pickups (there are many types), Tape heads, etc.

Output Transducers – Speakers (woofers, mids, tweeters, full range, subs, headphones, etc).

Tweeter (Horn)
Type of loudspeaker that reproduces frequencies in the higher audio frequency range, usually frequencies above 1.5K Hz (1,500 Hertz) all the way up to 10K Hz (10,000 Hertz). Tweeters have driver diaphragms in them (similar to a voice coil in a regular speaker) that range anywhere from 1.5 inches up to 4 inches in diameter.

Unbalanced Connection
These types of connections use 1 conductor as the signal carrier, and 1 conductor as a shield (the shield is at ground potential). Noise energy on the shield wire will be grounded, but any noise on the signal conductor will flow through and be amplified with the audio signal. Guitar cables and RCA (CD player cables) are good examples of cables used for unbalanced connections.

Voltage (E)
Is best described as electrical pressure – the "Force" which causes current to flow through an electrical conductor. Uses the symbol (E).

Volume
The term used to describe the level of a signal or the intensity of a sound. Volume is usually associated with turning up the faders on a mixing console.

Watt
The unit of measure for electrical or acoustic power. There are AC power ratings, amplifier ratings, and speaker ratings all measured in "Watts." When taking wattage measurements remember that "Wattages" will always add whether in series or in parallel.

Woofer Speaker (Bass Speakers)
Type of speaker that reproduces frequencies in the low audio frequency range, usually below 500 Hz (Hertz). Bass guitar speaker cabinets can have different size woofers – there are 8 inch, 10 inch, 12 inch, 15 inch, and 18 inch speakers available. PA speakers will usually utilize 12 inch, 15 inch, or 18 inch for the woofer.

Note: The name "Woofer" is sometimes improperly used to describe Sub-Woofers – this is incorrect (Sub-Woofers extend the low end frequency all the way down to 30hz, and usually never above 300hz, Woofers usually extend down to 300hz, and never above 500hz).

XLR (sometimes called “Cannon” connectors)

A type of connector used most often for microphone cables, and also for audio patch cables. Mostly used with 2 conductor / shielded cable. These connectors are very durable, and have locking capabilities (they snap in place for a very reliable fit).