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Glossary of Terms

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Lasted updated Feb 02, 2002

The following is a list of words and phrases that appear in music industry ads, spec sheets, and publications. Each is accompanied by a short explanation that is designed to aid in your understanding of how the term is used.

Acoustics - The sound characteristics (or ambience) of a particular environment. For example, the term "live acoustics" would be used to describe a room in which the sound waves reverberate off the walls and ceiling, while "dead acoustics" would describe a room in which the sound waves are absorbed by the surroundings.

ACTIVE: Describes a circuit containing transistors, ICs, tubes and other devices, that require power to operate and are capable of amplification.

ACTIVE SENSING: A system used to verify that a MIDI connection is working, that involves the sending device sending frequent short messages to the receiving device to reassure it that all is well. If these active sensing messages stop for any reason, the receiving device will recognise a fault condition and switch off all notes. Not all MIDI devices support active sensing.

ADAT - An eight track digital recorder developed and manufactured by the Alesis Corporation, employing modified videotape recording technology. The ADAT uses a standard VHS video cassette for information storage.

A/D - An abbreviation of "analog to digital," which refers to the process of converting a signal from an analog to a digital medium.

A to D (A/D) Converter or Filter - A device used to convert analog signal to digital information (A/D), or, conversely, digital information to analog (D/A). This filter circuitry lies at the heart of digital recording technology.

ADDITIVE SYNTHESIS: A system for generating waveforms or sounds by combining basic waveforms or sampled sounds prior to further processing with filters and envelope shapers.

ADSR: Envelope generator with Attack, Sustain, Decay and Release parameters. This is a simple type of envelope generator and was first used on early analogue synthesizers. This form of envelope generator continues to be popular on modern instruments. See [Decay](#) for more details.

AES/EBU format - The digital audio format established by the AES (Audio Engineering Society) and EBU (European Broadcasting Union) that is used to transfer digital audio data between professional equipment. Two channels of digital audio (left/odd and right/even) are carried in one connection, usually an XLR-type connection.

AFL (After Fader Listen) - A mixer function that allows monitoring of a signal after the channel fader. Contrast with PFL.

AFTERTOUCH: A means of generating a control signal based on how much pressure is applied to the keys of a MIDI keyboard. Most instruments that support this do not have independent pressure sensing for all keys, but rather detect the overall pressure by means of a sensing strip running beneath the keys. Aftertouch may be used to control such functions as vibrato depth, filter brightness, loudness and so on.

ALGORITHM: A computer program designed to perform a specific task. In the context of effects units, algorithms usually describe a software building block designed to create a specific effect or combination of effects.

Aliasing - A type of signal distortion that occurs during A/D conversion if the sampling rate is less than twice that of the highest audio frequency. A/D converters employ aliasing filters to remove audio frequencies higher than half the sampling rate. See also [Nyquist Sampling Theorem](#).

Anti-aliasing - In digital audio, a technique used to prevent aliasing in the form of an anti-aliasing filter before A/D conversion. This filter removes audio frequencies that are higher than half the sampling frequency (e.g., for a 32 kHz sampling rate, audio frequencies above 16 kHz are filtered).

AMBIENCE: The result of sound reflections in a confined space being added to the original sound. Ambience may also be created electronically by some digital reverb units. The main difference between ambience and reverberation is that ambience doesn't have the characteristic long delay time of reverberation - the reflections mainly give the sound a sense of space.

AMP: (Ampere) Unit of electrical current.

AMPLIFIER: Device that increases the level of an electrical signal.

AMPLITUDE: Another word for level. Can refer to sound levels or electrical signal levels.

Analog - An "analog" is a close but not perfectly accurate copy of (in this case) a signal or sound. For instance, a signal recorded on tape is an analog of the original sound, and although it may be a nearly perfect duplicate, it will not have exactly the same characteristics as the original.

ARPEGGIATOR: Device (or software), that allows a MIDI instrument to sequence around any notes currently being played. Most arpeggiators also allows the sound to be sequenced over several octaves, so that holding down a simple chord can result in an impressive repeating sequence of notes.

Attack - This is the initial, sharply delineated portion of a signal. For example, the attack of a drum would be the portion of the signal that is generated by the drum stick at the point of impact.

ASCII: American Standard Code for Information Interchange. A standard code for representing computer keyboard characters by binary data.

Attack Time - The amount of time it takes an effect, such as compression, to begin affecting the signal.

Attenuation - This refers to the weakening of a signal or sound wave. It can be used either in the context of a sound wave's natural loss of strength over distance, or it can be used to describe the electronic process of reducing signal strength.

AUDIO FREQUENCY: Signals in the human audio range: nominally 20Hz to 20kHz.

AUTOLOCATOR: Feature of a tape machine or other recording device that enables specific locations to be stored, then at some later time, these locations within the recording may be recalled. For example, you may store the start of a verse as a locate point so that you can get the tape machine to wind back the start of the verse after you've recorded an overdub.

AUX: Control on a mixing console designed to route a proportion of the channel signal to the effects or cue mix outputs (Aux Send).

AUX SEND: Physical output from a mixer Aux Send buss.

Audio Spectrum - The range of frequencies that can be heard by the human ear.

AUX RETURN: Mixer inputs used to add effects to the mix.

AZIMUTH: Alignment coordinate of a tape head which references the head gap to the true vertical relative to the tape path.

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Balanced Inputs - Low impedance inputs that are wired with two lines plus a ground and are specifically designed to accept a signal from a balanced source.

Bias - An electrical current that is sent through the tape heads during recording in order to insure that a minimum level of magnetization is going on at all times. This increases the frequency response of the recording by making it easier for high frequency portions of a signal to reach tape. Yet it also increases tape hiss, because it produces a chaotic non pattern" on the surface of the tape, which reproduces as noise.

Bit - A unit of data recorded as digital information. Eight bits make up a byte. In digital audio a sample is made up of the sum of bits of information.

Block Diagram - A schematic representation of the optional paths a signal can take through a piece of electronic gear.

Bounce - The process of moving a recorded signal from one track to another. An "internal bounce" is one that moves the signal to a different track, or tracks, on the same tape machine. An external bounce" is one that transfers the signal to a new track, or tracks, on a second machine.

Bulk Dump - A MIDI function that allows data transfer between MIDI devices. Data is transmitted as MIDI System Exclusive.

Bundle File - A librarian software file that is custom created by the user. It usually includes sound parameters for several synthesizers on a MIDI network. The bundle allows the user to create a "setup" which with one command can be downloaded to several synthesizers at one time.

Buss - A console output channel. It can best be described as a means of outbound transport for the signal. A common conductor used to collect and distribute audio signals.

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Cans - Headphones.

CH - Abbreviation for channel.

Channel - A channel is an electronic circuit (or set of circuits) used to process a signal. For instance, on a tape recorder you have record channels (one for each track) and playback channels, and on a console you have input channels and buss channels. On

your home stereo, you have speaker channels, and so forth.

Clear Signal - The clean, non-noise portion of a signal. It represents the "pure sound" you would hear if you could eliminate all electronic hiss.

Clipping Level - The point at which a signal begins to distort.

Coaxial format - The consumer digital audio format developed by Sony and Philips that is used to transfer digital audio data between consumer-type digital audio equipment, such as CD players, consumer DAT decks, DCC, and MiniDisc decks. Two channels of digital audio (left & right) are carried in one connection, usually a phono connection. This format is also referred to as 1EC958 and S/PDIF.

Control Change - A type of MIDI message that offers real-time control. Typical Control Changes include Modulation, Volume, Pan, and Portamento.

Compression Ratio - This is a representation of the amount of compression that is applied to a signal that has passed the unit's threshold and triggered the compression circuits. For example, a compression ratio of two to one (2:1) would mean that once the signal has passed the threshold, enough compression would be applied so that a signal surge of two decibels at input would only result in a one-decibel increase at output.

Crosstalk - Crosstalk occurs when the signal being recorded onto one tape track bleeds over onto the next. This can sometimes occur when you are using tape saturation to compress the signal.

Cue System - A monitor system used to generate the musicians' headphone mix. Basically, the cue send on the console feeds an amplifier, which in turn provides a signal source for the headphones.

Cycles (per second) - The frequency rate of a sound wave. It is interchangeable with the term "Hertz."

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DA-88 - An eight-track digital tape recorder developed by the TASCAM Corporation, employing Hi-8 video tape as its storage medium. The DA-88 is essentially four DATs stacked vertically. It uses the helical scanning method to imprint information.

D/A converter - An electronic device that converts digital signals into analog signals.

Damping - The process of deadening the sound of an instrument by limiting its ability to resonate. For example, you damp a drumhead in order to limit the amount of ringing you hear in the drum.

DAT (Digital Audio tape Recorder) - A stereo cassette deck employing digital technology. Its A/D filter converts an analog input to digital information. Using technology similar that used in video cassette recording, helical scan heads imprint the digital information onto special DAT cassettes.

dB - The abbreviation for "decibels," which is the recognized standard for determining volume level of sound.

De-emphasis - [See Emphasis](#).

Decay - The decay of a note, or instrument, is the process whereby the note, having been struck, fades out. This can be a slow, gradual process, which would mean there would be a long decay time involved, or it can be very brief.

De-esser - A special limiter, or limiter circuit, that is used to cut high-end frequencies. It is called a "de-esser" because it is often used to eliminate the vocal distortion created when pronouncing words that include the letter "s".

Defeat Switch - A control that can be used to mute a signal.

Digital - An electronic format that is designed to duplicate sound, while affording extremely accurate control over any changes you might wish to make in the copy. In simple terms, the digital circuitry analyzes (samples) the signal and then reproduces what it has seen (the quality of the copy being dependent upon the sampling rate of the device). And it does so without adding the tape hiss present in analog copies.

DIO - Abbreviation of digital input and output.

Direct Box (DI) - A transformer that is used to alter a signal's impedance level (from high impedance to low impedance or vice versa). It can also be used to split a signal if it has two outputs.

Dither - The process of adding low-level random noise to audio signals in order to reduce quantization noise in A/D converters. Dither is also applied during digital audio wordlength reduction (e.g., 20 to 16 bit conversion).

Discrete Output - A direct output from a channel, which services only that one channel.

Doubling - The process of recording an instrumental part twice and blending the two takes together in order to achieve a fuller sound.

Drop-Out - The sudden loss of signal in the middle of a track. You would say the signal "drops out" of the track.

DSP (Digital Signal Processor) - A chip designed specifically for processing large amounts of data at high speed and in real time. This type of processor is ideal for handling digital audio data.

Dynamics - The decibel level produced by any given instrument or sound source.

Dynamic mix automation - Mixdown automation where mix settings are adjusted in real time.

Dynamic range - The difference between the loudest and quietest signal levels in a system. In an audio device, usually the difference between the maximum output level and the residual noise floor. In a digital system, the available dynamic range is determined by the data resolution, about 6 dB per digital bit. Hence, a 16-bit system theoretically provides a 96 dB dynamic range.

Dynamic Range (**Acoustic**) - The difference in decibel level between the loudest and the quietest sound produced by an instrument or sound source.

Dynamic Range (**Electronic**) - The difference in decibel level between the noise floor of a signal and the clip ping level. When applied to a piece of gear, it refers to the amount of clear signal the unit is capable of processing.

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Edit buffer - The internal RAM area that stores the current mix settings (i.e. the current mix scene). When a mix scene is stored, the Edit Buffer data is copied to the selected scene memory. When a mix scene is recalled, the data of the selected scene memory is copied back to the Edit Buffer.

Effects-Loop Circuitry - A mixing console circuit that is used to add an effect to a signal or a group of signals. When the effect unit is plugged into the circuit (via effects send and effects return jacks), it literally functions as a loop, splitting the signal off from the mixer and sending it to the effect, then returning it to the mixer, where it is blended with the original signal.

EFX - A popular abbreviation for "effects." It is used when referring to an outboard effects unit or a console's effects send circuitry.

Emphasis - A technique that was used to improve the noise performance of the first generation of AD/DA converters. Although not used today, it is often provided for compatibility with older recordings. The emphasis technique consisted of boosting signals above 3.5 khz by 6 dB/octave before AID conversion. The playback device sensed the Emphasis flag in the digital audio signal and de-emphasized the signal after DIA conversion.

Envelope - A representation, over time, of the volume of the signal generated by an instrument. In a sense, this represents the "life" of the signal, from the point of attack to the point of decay.

EQ snapshot - A set of EQ settings.

ESAM II (Edit Suite Audio Mixer 11) - A remote control protocol, developed by Graham-Patten Systems, that allows video editors in a post-production environment to control audio mixers, providing audio-follow mixing with fader control and cross-fading capabilities.

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Fade time - The time it takes a fader to move to its new position when a mix scene is recalled. Used for cross fade.

Fidelity - In music electronics, this term indicates how faithful a reproduced signal is to the original. For example, a "high-fidelity" signal would be a very true representation of the original sound.

Filter - A device that is capable of removing or reducing a select band of frequencies within a signal.

Flamming - An undesirable audio occurrence in which one of the instruments used on a rhythm track strikes slightly behind the others. It is caused primarily by the improper application of delay.

Flat Response (Curve) - This term refers to frequency response and is normally associated with optimum performance levels. For instance, a flat response curve on a graphic EQ unit would be one in which all faders were set in a straight line at "0". In turn, a speaker cabinet that exhibits a flat response will give equal treatment to all frequencies (it won't emphasize a particular band of high or low frequencies), and this produces the best- possible fidelity.

Flutter - A rapid fluctuation in the flow of tape across the heads of a tape recorder. It literally gives the recording a jerky, flutter-like sound and is caused by irregularities in the tape transport system.

Foldback System - "Foldback" is a term used in England to describe the mix that is being sent to the monitor speakers in the control room. However, it can also apply to the headphone mix that is being generated for the musicians.

Frequency - In general terms, "frequency" is the rate (how often) at which something repeats. In acoustic terms, it is the rate at which sound waves repeat over time. The greater the number of repeats, the higher the frequency. And the higher the frequency, the higher the pitch of the tone that is produced. Consequently, high- frequency waves are very short, and low frequency waves are very long (up to fifteen feet).

Frequency Response - When used on spec sheets, this phrase refers to the range of frequencies a unit is capable of reproducing. However, when used in terms of an instrument or a signal, it refers to the range of frequencies being produced.

Fundamental Tone - The band of frequencies (usually between 300 Hz and 800 Hz) that makes up the basic tone (or "body") of the instrument.

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Gain - This refers to the strength (or volume level) of a signal.

General MIDI - An extension to the MIDI Standard that, among other things, states that a GM compatible tone generator must be at least 24-note polyphonic, have 16 parts, and 128 specific preset voices.

G R - Abbreviation for gain reduction.

Generation Loss - The loss of signal quality that can occur with each succeeding generation, or transfer copy, of a recording. This does not mean that a master tape will lose more and more quality every time you copy it, but that the copy itself may be of poorer quality than the master.

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Hard Drive Recorder - A digital audio recorder that stores sampled data on a computer-type hard drive rather than on magnetic tape.

Harmonics - Acoustic overtones that represent the upper and lower octaves of a note. When a note is played, the harmonics ring out along with it, and this, combined with other overtones, gives an acoustic instrument its particular sound. (See [Overtones](#).)

Headphone Mix - The monitor mix that is sent to the musician's headphones during initial tracking and over- dubs. Often, this mix will contain effects not given to the recorded signal (or to the existing tracks), in order to make the music sound more exciting in its pre-mixdown state.

Headroom - The distance (in decibels) between the nominal level of a piece of audio equipment ("0" on the meter) and the clipping level, at which point it distorts.

Hertz - A unit of frequency that is used to measure the frequency rate of a sound wave. In terms of application, it is a universal standard for frequency levels.

High-Bias Tape - A grade of recording tape that has been designed to reduce the amount of bias a recording deck needs to apply in order to achieve high-frequency reproduction. Since less bias is required, you get less noise in the recording.

High Impedance - This is one of two impedance loads. Most tape recorders, amplifiers, and electronic instruments operate at high impedance. However, a high impedance signal does not "travel well" and loses quality over long distances. (See also [Impedance](#) and [Low Impedance](#).)

Hz - An abbreviation for hertz.

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Impedance - The technical definition of impedance is an opposition to AC current flow, measured in ohms.

Indie - The term Indie is derived from the word "independent". For a record label, the term describes anything from a 13 year old pressing cd's in his basement to just short of complete stranglehold over 80% of all radio markets.

Initial settings - The settings used when a device is first turned on after leaving the factory. Also referred to as the default or factory settings.

Instance - The amount of times a plug-in can be used in a group.

IPS - The abbreviation for "inches per second." It refers to the speed of tape across the tape head.

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K - The abbreviation for "kilohertz" (1,000 hertz).

kHz - 1000Hz

kOhm - 1000 ohms

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LCD (Liquid Crystal Display) - A type of display device that uses liquid crystal to generate characters and graphics.

LED (Light Emitting Diode) - A type of diode that lights up when an electric current is applied.

LFO -Low Frequency Oscillator, often found in synths or effects using modulation.

LSB - Least Significant Byte. If a piece of data has to be conveyed as two bytes, one byte represents high value numbers and the other low value numbers, much in the same way as tens and units function in the decimal system. The high value, or most significant part of the message is called the Most Significant Byte or MSB.

Librarian Software - Allows for computerized storage and organization of MIDI information for large numbers of synthesized sounds. Information is organized to be specific to synthesizer manufacturers' protocols. Librarian software sends patch parameter

instructions to the synthesizer via MIDI cable.

LIMITER - Device that controls the gain of a signal so as to prevent it from ever exceeding a preset level. A limiter is essentially a fast acting compressor with an infinite compression ratio.

LINEAR - A device where the output is a direct multiple of the input.

Line Level - A nominal signal level which is around -10dBV for semi-pro equipment and +4dBu for professional equipment. The voltage level at which a signal is processed by electronic circuitry. The line level for most tape decks, for example, is -10 dB, which means that the device needs to see a minimum of - 10 dB of signal strength in order to process the signal properly.

Line-Level Signal- A signal in the range from - 20 dB to +20 dB. These are essentially high-level signals. Most audio equipment outputs signals at line level. Contrast with Low-Level Signal.

LOAD - Electrical circuit that draws power from another circuit or power supply. Also describes reading data into a computer.

LOCAL ON/OFF - A function to allow the keyboard and sound generating section of a keyboard synthesizer to be used independently of each other.

LOGIC - Type of electronic circuitry used for processing binary signals comprising two discrete voltage levels.

LOOP - Circuit where the output is connected back to the input.

LOW FREQUENCY OSCILLATOR (LFO) - An oscillator used as a modulation source, usually below 20Hz. The most common LFO waveshape is the sine wave, though there is often a choice of sine, square, triangular and sawtooth waveforms.

LOW PASS FILTER (LPF): A filter which attenuates frequencies above its cutoff frequency.

Librarian Software - Allows for computerized storage and organization of MIDI information for large numbers of synthesized sounds. Information is organized to be specific to synthesizer manufacturers' protocols. Librarian software sends patch parameter instructions to the synthesizer via MIDI cable.

Low Impedance - This is one of two impedance loads. Professional studio gear and most microphones (600 ohms or less) operate at low impedance, and since a low- impedance signal will not deteriorate over long distances, it is useful for running signal through lengthy cables.

Low-Level Signal - A signal in the range from - 100 dB to - 20 dB. Microphone and electric guitar signals are in this range. Contrast with Line-Level

LSB (Least Significant Byte) - The byte of a digital word that represents the lowest value. Contrast with MSB.

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Masking - Masking occurs when the sound of one instrument gets blocked out by the sound of another, because both exhibit the same basic frequency response patterns. This is something that must be carefully watched for in any mix situation.

MDM (Modular Digital Multitrack) - A digital audio recorder with more than two tracks. The Alesis ADAT and TASCAM DA-88 are two examples.

MIDI (Musical Instrument Digital Interface) - An internationally agreed protocol that allows electronic musical instruments and audio equipment to communicate.

MIDI Clock - A clock signal transmitted as MIDI data. MIDI Clock refers to a timing signal and Start, Continue, and Stop commands.

MIDI Device Numbers - Identity numbers assigned to MIDI devices for transmitting System Exclusive data.

MIDI Event Controller Software - Serves as a sophisticated sequencer and MIDI event editor. It allows for the creation of a MIDI network through which the parameters of any MIDI instrument in the network can be controlled remotely and manipulated either in real time or at any specified point in a sequence.

MIDI Song Position Pointer - A type of MIDI message that is used to derive position information from a MIDI Clock signal. So no matter where you start playback in a song, your MIDI sequencer will locate to that point and then play along in synchronization.

Mix scene - A set of mixer settings at a particular point in a song. Just like a play, a piece of music consists of various scenes, each requiring different mixer settings. Mix scenes are stored in scene memories, and can be recalled using front panel buttons or MIDI Program Change messages. These messages can be sent from a computer, MIDI footswitch, keyboard, or sequencer. See also [Scene memories](#).

MMC (MIDI Machine Control) - A set of MIDI messages that can be used to control audio and video tape machines, disk recorders, and other studio equipment. Typical MMC commands include Stop, Play, Rewind, and Pause.

Modulation - In general audio, using an LFO (low frequency oscillator) to control a signal's frequency (pitch) or amplitude (level). The LFO frequency is set using modulation frequency parameters and the amount of LFO control is set using modulation depth parameters. Delay time and auto-pan speed parameters are also modulated.

Modulation Effects - Sound effect devices that use the principles of signal modulation to create an effect. Such effects would include phase, chorus, and flange.

Monophonic - This term is used to describe an instrument such as a synth, that is capable of playing only one note at a time (thus, no chords).

MSB (Most Significant Byte) - The byte of a digital word that represents the highest value. Contrast with LSB

MTC (MIDI Timecode) - An addition to the MIDI Standard that allows audio equipment to be synchronized. MIDI Timecode contains clock and position information.

Mult - The process of electronically multiplying or doubling a signal through the use of a digital delay or a harmonizer.

Multiplexing Computer Interface - an outboard device used to route and distribute MIDI information over a network from a source controller to the instruments.

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Noise Floor - The level (in decibels) where the "noise" portion of a signal ends and clear signal begins.

Noise gate - An electronic switch that opens when a trigger signal falls below a set threshold point and closes when the trigger signal exceeds that same threshold point. Used to shut off unwanted hiss and noise.

Noise Reduction - This term is commonly used to describe circuits, or pieces of electronic gear, that are specifically designed to enhance the signal-to-noise ratio of a signal. Two of the most popular noise reduction systems are manufactured by Dolby and DBX.

Nominal Level - The optimum level at which a signal is processed in a particular piece of gear. For instance, if the piece of gear has a VU meter, this level would be represented by the "0" mark, past which the meter goes into the red.

Nyquist theorem - The Nyquist theorem states that the sampling rate of a digital audio system must be at least twice that of the highest audio frequency, otherwise wave form distortion called aliasing will occur. See also [Aliasing](#).

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OMNI - The MIDI mode in which a device responds to MIDI data on all 16 channels.

Operating level - This is the signal level at which a piece of audio equipment is designed to operate. The two most common operating levels are - 10 dBV (316 mV), which is used by semiprofessional equipment, and +4 dBu (1.23 V), which is used by professional equipment.

Outboard Device - An external signal processing device (EQ, compressor, reverb, and so on) that is used in conjunction with a console. For example, if a console doesn't have enough onboard EQ, you may want to use an outboard EQ device as well.

Overdub - The process of adding additional tracks to a song. It is accomplished by monitoring the already existing tracks, along with the track that is being laid down.

Oversampling - Sampling an audio signal at a rate higher than the normal sampling rate. The net effect is that noise caused by quantization errors is reduced.

Overtones - These are sympathetic frequencies above the fundamental tone of a note, which give the instrument its particular sound characteristics. For most instruments, these overtones can be found in the frequencies above 800 Hz (the fundamental tone of most instruments is found in the 300 Hz-800 Hz range).

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PAM (Pulse Amplitude Modulation) - In the first part of the A/D conversion, pulses occurring at the sampling rate are modulated by an analog audio signal. See also [PCM](#).

Pan - A mixing control that gives you the ability to send a signal anywhere from the far left to the far right of the stereo spectrum.

PC - Originally, the abbreviation for personal computer. Although today it's used as the generic name for an IBM compatible personal computer, usually running a version of the Microsoft Windows operating system.

PCM (Pulse Code Modulation) - In the second part of the A/D conversion, the pulses derived using PAM are converted into binary data words using PCM. See also [PAM](#).

Peaking - A type of EQ circuit used to cut and boost a band of frequencies. It produces a mountain-peak type curve. The width of the frequency band is controlled by the Q parameter. Mid-band EQ is usually of the peaking type. Compare with Shelving.

PFL (Pre Fader Listen) - A mixer function that allows monitoring of a signal before it's fed to the channel fader. Contrast with AFL.

Phase Cancellation - The loss of signal quality, usually in the low frequencies, that occurs when two signals (or microphones) are out of phase. As a result, when each signal is played separately, the high ends and low ends may sound perfectly balanced, but when combined, either the bass, treble, or midrange tones of the signals seem to disappear.

Phase Shift - The relative movement of a pair of signals that are sweeping in and out of phase. The effect that is created sounds

like waves.

Pink noise - A type of random noise that contains an equal amount of energy per octave. The bands 100 - 200, 800 - 1600, and 3000 - 6000 all contain the same amount of energy. White noise, on the other hand, has an equal amount of energy per frequency band. That is, 100 - 200, 800 - 900, and 3000 - 3100.

Plug-in - A plug-in is a software add-on that gives enhanced capabilities to the host software with which it is being used.

Polyphonic - This term is used to describe an instrument, such as a synth or a piano, that is capable of playing more than one note at a time. Thus, it is capable of playing chords.

Pop Filter - A device that is used to reduce the "pop" made by a microphone when the singer pronounces words that begin with letters like "p" or "b".

Ports - Another term for the inputs or outputs of a unit.

Post fader - A point in the signal path after a fader. Aux send controls are often configured as post-fader sends, which means the signal for the aux. send is sourced after the channel fader. The advantage of this is that the aux send signal can be controlled at the same time as the main channel signal using the channel fader. Post-fader aux. sends are often used to feed effects processors. See also [AFL](#).

Pre fader - A point in the signal path before a fader. Aux send controls are often configured as pre-fader sends, which means the signal for the aux send is sourced before the channel fader. The advantage of this is that the aux send signal can be controlled independently of the main channel signal. Pre-fader aux sends are often used for fold- back mixes. See also [PFL](#).

Print a Track - The operation of recording (printing) a signal onto tape.

Program Change - A type of MIDI message that is used to recall programs or patches.

Proximity Effect - This term is used to describe the increase in bass response exhibited by a microphone as it moves closer to the sound source. However, it can also be used to describe the decrease in signal definition that results. For instance, a singer may hold a microphone right up to his mouth in order to give his vocals low- end strength, but in so doing, he loses much of the crisp, high-end definition of his voice.

Punch In/Punch Out - The process of inserting new material into a previously recorded track and recording over part of the track in the process (AKA "drop in" or "dub in"). This is often used to fix a weak portion of a track that would otherwise be quite acceptable.

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Q - The unit used to measure an EQ circuit's selectivity. For high values the frequency band is narrow. For low values, it is wide.

Quantize - A drum machine function that enables you to subdivide each measure into specific increments (quarter notes, eighth notes, and so on). When you create a drum pattern in real time, this allows the machine to correct for any slight mishifts.

Quantization - The PCM process where PAM pulses are approximated to the nearest binary value available.

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Release Time - This refers to the amount of time an effect, such as compression, acts on a signal before "releasing" it.

Resonant Frequency - Any particular frequency that will cause an instrument or string to resonate even though it has not been struck. For example, when a tuning fork is struck and then pressed against the body of an acoustic guitar, it will cause any strings that are tuned to its pitch to begin vibrating. The tuning fork, then, is said to produce the resonant frequency of that string.

Roll Off - The process of reducing the level of a particular band of frequencies. For instance, when applying EQ, you can be said to "roll off" the level of certain frequencies.

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S/PDIF format - See Coaxial format.

Sampling Rate - The number of times per second that an analog audio signal is sampled (measured) during A/D conversion. The value of each sample is stored as a data word. Standard sampling rates are 32 kHz, 44.1 kHz, and 48 kHz. The rate at which a particular digital circuit samples, or analyzes, a signal.

SCMS (Serial Copy Management System) - A method of imprinting DAT cassettes with an electronic "flag" to prevent copies being made from any source other than the master tape. SCMS was initially designed to thwart the pirating of commercial music from digital copies. Some professional DAT machines do not have SCMS circuitry.

Scene memories - Memory locations used to store mix scenes. See also [Mix scene](#).

Seamless Punch-In - Refers to the ability of a digital multitracker accept punch-ins without audible interruption of the decay characteristics of the original track. The recorder cross-fades the new information with the existing. It eases the execution of difficult punches, like those over cymbal crashes.

Sel-Sync - This term is short for Selective Synchronization, a tape recorder function originally introduced by Ampex that allows you to monitor an existing track off the record heads, so that any new track you add will be in sync with any existing tracks. This is generally known as the "sync" mode.

Serial mouse - A type of computer mouse that connects to a computer's serial port.

Servo Control - A particular type of tape transport system that provides an extremely steady, accurate flow of tape across the heads. It also makes variable pitch control (variable tape speed) possible.

Shelving - An EQ treatment that affects every frequency above (high-frequency shelving) or below (low-frequency shelving) a designated band of frequencies. For example, if you use shelving to boost EQ in the high end of the spectrum, the boost will affect all the frequencies from, for instance, 10K up - although the point at which shelving begins (in this case 10K) varies from one piece of gear to the next.

Sibilants - Sounds produced in the high-frequency ranges. This can include everything from whistles to cymbals to the upper harmonics of a string instrument, as well as to the sound of the letter "s."

Signal Pulse - The duration of a sound, from attack to decay, as it exists as an electronic signal.

Signal-to-Noise Ratio (S/N) - In an audio system, the difference between the operating signal level and the residual noise floor, usually expressed as a ratio in decibels. It's used as a measure of an audio system's noise performance. This describes the quality of a signal by comparing the total amount of signal (in decibels) with the amount of noise (in decibels) it contains. It is generally used to determine the processing efficiency of electronic equipment, as the higher the ratio, the more efficient the unit.

Slap Echo - An echo that, unlike "reverb" echoes, has sufficient delay time to allow the repeat to be heard as a duplicate of the original signal. In this sense, all long delay tape echoes and digital echoes are slap echoes.

Slew Rate - Basically, this is the amount of time it takes an amplifier to fully amplify a signal, relative to the amount of amplification it is capable of generating. In automotive terms, it's sort of how quick it gets from zero to sixty....

SMPTE - The electronic code system used to synchronize audio to video, video to audio, and audio to audio. Basically, the SMPTE code is one continuous electronic "word" that is twenty-four hours long but changes "characters" every 1/3,000 of a second. When this code is printed on tape, it enables you to lock up the machine with a second deck that also reads SMPTE. Pronounced "simply", SMPTE timecode is the timecode format used for television recorders by the SMPTE (Society of Motion Pictures and Television Engineers) in the United States and the EBU (European Broadcast Union) in Europe.

Snapshot - See [Mix scene](#).

Solo a Track - The process of isolating a channel on the console and sending it through the monitors totally by itself. It is used to check the quality of the signal in question and/or to set EQ levels.

Splitter - Any device that splits the output of a signal so that it can be sent to more than one location.

Spooling - The process of preparing a tape for tailcoat storage. It is performed by threading the tape directly from one reel to the other (although on some decks you need to thread it around the tape heads) and running it forward at a normal "play" tape speed. By doing so, you get a tight, flat layering of tape on the take-up reel, which will help maintain the integrity of the recording.

ST IN - stereo input channel.

ST OUT - stereo output.

Standing Wave - An undesirable acoustical phenomenon that occurs in low frequencies when a sound wave bounces back and forth between two parallel walls. As a result, the waves keep bouncing back on themselves, and they never have a chance to die out. This can create a buildup in specific frequencies or phase cancellation.

Stereo Spectrum - The three-dimensional audio field created by a stereophonic signal. Basically, it consists of a surface plane that stretches from speaker to speaker and a field of depth beyond this plane that stretches as far as you can be made to imagine.

Sustain - The process of electronically holding a note by extending the normal decay time of the instrument - sometimes indefinitely.

System Exclusive - A type of MIDI message that is used to transmit data between MIDI devices exclusively. See also [Bulk Dump](#).

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Tails Out - This refers to a reel of tape that has been stored without being rewound, so that the beginning of the song is actually at the other end of the tape. This is a normal practice in professional studios. In turn, a tape that is stored heads out" is one that has already been rewound and can be put directly onto the machine and played.

Talkback - A console circuit that allows the engineer to speak to the musicians, either via their headphones or through monitors set up in the studio.

Tape Loop - A continuously running loop of tape that can be used either in a record or a playback context. For instance, tape loops are used on analog echo units in order to provide a continuously running source of echo. However, a loop can also be used as a playback vehicle in instances when an instrument simply repeats the same part over and over.

Threshold - The point at which an effect unit "kicks in" and begins affecting the signal.

THD (Total Harmonic Distortion) - The amount of distortion introduced by an audio system, usually expressed as a percentage of the actual signal. Compared to third-harmonic distortion, which is the measure of a single harmonic, total harmonic distortion is the sum of the distortions produced at all harmonics.

Track - The linear portion of tape (running the length of the reel) that is used to record the signal from one channel of the tape recorder. If the tape deck has four record channels, the tape will be electronically divided into four strips, each of which will represent one recorded track.

Tracking - A common term for the process of recording tracks and overdubs prior to the mixdown stage of recording. For example, someone might say he is doing "some initial tracking" on his material.

Transient - A sharp sound of extremely short duration, which results from the striking of an object or the hammering (picking) of a string. It is the attack of a sound that is produced percussively.

Transient Response - The ability of a circuit to respond to the transient. Poor transient response means that the equipment does not react quickly enough to capture the entire peak of the transient.

Transport System - These tape recorder components control the flow of tape across the tape heads.

Trim - Console controls that allow you to alter the strength of a signal that, depending upon the control, is either entering or leaving the unit.

Tube Mic Pre-Amplifier - An outboard mic input pre amplifier, often used to soften the harsh tonal characteristics of transistorized microphones or FET (transistorized) console mic inputs.

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Unity gain - A gain of one.

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VALVE - Vacuum tube amplification component, also known as a tube.

VELOCITY - The rate at which a key is depressed. This may be used to control loudness (to simulate the response of instruments such as pianos) or other parameters on later synthesizers.

VOCODER - Signal processor that imposes a changing spectral filter on a sound based on the frequency characteristics of a second sound. By taking the spectral content of a human voice and imposing it on a musical instrument, talking instrument effects can be created.

VOICE - The capacity of a synthesizer to play a single musical note. An instrument capable of playing 16 simultaneous notes is said to be a 16-voice instrument.

VIBRATO - Pitch modulation using an [LFO](#) to modulate a VCO.

Virtual Studio - A studio incorporating "virtual tracks," MIDI-controlled sequenced instruments that do not have to be imprinted on tape until the final mixdown, yet can play along with any conventional tracks.

VU Meter - Meter designed to interpret signal levels in roughly the same way as the human ear, which responds more closely to the average levels of sounds rather than to the peak levels.

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WAH PEDAL - Guitar effects device where a bandpass filter is varied in frequency by means of a pedal control.

WATT - Unit of electrical power.

WARMTH - Subjective term used to describe sound where the bass and low mid frequencies have depth and where the high frequencies are smooth sounding rather than being aggressive or fatiguing. Warm sounding tube equipment may also exhibit some of the aspects of compression.

Waveform - The physical shape or structure that a frequency has when in the form of a sound wave.

White Noise - A signal that contains all audible frequencies, just as the color white contains all visual colors.

Wordclock - The precise and accurate timing of digital audio samples is critical to the correct operation of interconnected digital audio equipment. The 'metronome' that governs sample timing is called the Word Clock (sometimes conjoined to 'Wordclock', or abbreviated to 'Wclk'). However, word clock does more than merely beat time; it also identifies the start and end of each digital word or sample, and which samples belong to the left or right channels. Digital interfaces such as the AES-EBU and S/PDIF embody clock signals within the data stream, but it is often necessary to convey a discrete word clock between equipment as a square wave signal running at the sampling rate. Dedicated word clock inputs and outputs on digital equipment generally use BNC connectors (the kind of terminals commonly used for video).

WRITE: To save data to a digital storage medium, such as a hard drive.

Wow - A gradual speeding up and slowing down of the flow of tape across the heads of a tape recorder. Unlike "flutter," which is a rapid fluctuation in speed, wow creates a slow, rolling inconsistency of motion and pitch.

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XG - Yamaha's alternative to Roland's GS system for enhancing the General MIDI protocol so as to provide additional banks of patches and further editing facilities.

XLR - Type of connector commonly used to carry balanced audio signals including the feeds from microphones.

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Y-Cord - A patch cord used to split an output signal so that it can be sent to two different inputs, It is called a Y-cord because it is literally shaped like a "Y".

YGDAI (Yamaha General Digital Audio Interface) - The YGDAI interface system allows Yamaha digital audio equipment to be connected directly to modular digital multitrack recorders, digital workstations, and other digital equipment, using a variety of industry standard digital audio formats and protocols.

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ZENITH: Parameter of tape head alignment relating to whether or not the head is perpendicular to the tape path, and aligned so as to be in the same plane.

ZERO CROSSING POINT: The point at which a signal waveform crosses from being positive to negative or vice versa.

Zero Locate/Auto Locate - These terms refer to a feature of most tape recorders that allows you to automatically rewind or fast forward to a specific location on the tape.

ZIPPER NOISE: Audible steps that occur when a parameter is being varied in a digital audio processor.

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[The Musicians Guide to Home Recording](#)

[Publisher:](#) G. Schirmer and Associated Music Publishers, NY, NY

Yamaha Digital Mixing Console

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