

Digital Audio Terms

A/D Converter

An electronic circuit that transforms an analog signal into a digital form that can be used by a computer or other digital circuits.

Aliasing

An undesirable effect that is produced by the generation of frequency components during the sampling process of converting an analog signal into digital form: an effect that is caused by improperly filtering the analog signal prior to sampling or by using a sampling frequency that is too low.

Analog Signal

A continuously varying signal that provides an exact representation of the signal level at any instant in time.

Anti-Aliasing Filter

A low pass filter used to pre-filter the analog signal prior to A/D conversion to minimize any effects due to aliasing.

Anti-Imaging Filter

A low pass filter used to filter the signal after a D/A conversion to eliminate any frequency components, which might have been generated by the A/D conversion process.

Bandwidth (Frequency Response)

The description of the low frequency capability and the upper frequency capability of an audio system: usually these frequency limits being defined by the points where the signal levels have been reduced by 3 dB.

BCD (Binary Coded Decimal)

A binary number system with a specific binary code assigned to each of the ten digits in the decimal number system.

Binary

A number system consisting of only two digit values (0 and 1): a counting number system using base 2 arithmetic.

Bit

A binary digit having the value of 0 or 1: a unit of counting in binary arithmetic: represented in circuitry as any of the following: 0-off 1-on 0-false 1-true 0-low 1-high 0-+0 V 1-+5 V

Byte

A binary computer word or number consisting of 8 bits.

Code

A predefined digital binary representation of a number chosen for some reason other than its numerical value.

Computer

A circuit or group of circuits which are configured for the sole purpose of manipulating numerical or digital data in an efficient way and under the control of a user defined program.

D/A Converter

An electronic circuit used to transform a digital signal into analog form so that it can be processed in analog or linear circuitry.

Data Numbers

Values which are used in digital systems to represent signals or characterize processing functions.

DECATM (Digital Energy Conversion Amplification)

A method of realizing audio power amplification by using very high-speed digital switches as energy transfer control devices.

Decimal

A number system consisting of ten digit values (0 through 9): a counting number system using base 10 arithmetic.

Delta Modulation

A method of describing the differences (or delta) between two analog or digital values.

Digital Audio

An audio signal, which is stored, recorded, processed or amplified in digital or numerical form.

Digital Memory

A digital circuit, which retains a bit or many bits of digital data for a period of time without degradation.

Digital Pulse

A single digital bit representation characterized by a binary value changing for a finite amount of time.

Digital Signal

A signal that is represented with a predefined set of numbers or digits: a discrete representation of a signal with a stepped (not continuous) characteristic dependent on the numerical resolution of the digital system.

DPCM (Differential Pulse Code Modulation)

The process of representing the difference between two successive analog values with a digital code.

ECC (Error Correction Coding)

Creating a digital binary code representation of a numerical value, which has the ability to correct a small number of, bit errors in the binary value.

Encode

The process of converting a digital numerical value to a specific binary value representation. Imaging the replication of frequency components throughout the frequency spectrum as a result of the A/D conversion process.

Microcomputer

A small computer consisting of a single circuit or group of circuits usually configured around a microprocessor, a program storage device and some limited input/output capability and dedicated to a more specific set of tasks.

Microprocessor

A single integrated circuit, which can be commanded to perform any one of several predefined operations by using predefined instructions.

MIDI (Musical Instrument Digital Interface)

A standard format and protocol set up for musical instrument systems, allowing them to communicate with each other through a set of predefined commands and directions sent through a "serial data" link.

PCM (Pulse Code Modulation)

A method of representing predefined analog signal levels in a digital code form.

Processor

Any circuit or group of circuits tasked to manipulate a signal or collection of data in a specific way.

Program (noun)

The ordered group of internal directions or set of external commands which direct a computer or other circuits to react as desired.

Program (verb)

To direct a computer or other digital circuit to perform a specific task or to react in a certain way to a given command.

Programmable

A digital circuit which can be directed by the user to perform certain tasks upon command.

PWM (Pulse Width Modulation)

A method of representing analog signal levels in digital form by varying the width of the digital pulse.

Quantization

The process of sampling an analog signal value and converting the sample into a predefined numerical or digital value.

Quantization Noise

The noise resulting from the error introduced by the imperfection in the A/D conversion process: the level of noise created by trying to represent an analog signal of infinite resolution with a digital value of discrete and finite resolution.

Sample

A single measurement of an analog signal for the purpose of changing it into digital form.

Sample/Hold

A process of measuring the value of an analog signal and holding that value during the A/D conversion to prevent the analog value from changing during the conversion.

Sample Rate

The rate of frequency at which the analog-to-digital conversion or quantization of the analog signal is performed: the rate at which the analog signal is measured for conversion to its digital form.

Signal-to-Noise

The ratio of the maximum signal level to the maximum noise level in any analog or digital system.

Signal-to-Quantization Noise

The ratio of the maximum signal level to the quantization error introduced by the imperfect analog-to-digital conversion process.

SMPTE (Society of Motion Picture and Television Engineers) Organization, similar to the AES (Audio Engineering Society), responsible for defining standards and specifications for the motion picture and broadcast industry including: SMPTE Time Code, NTSC, HDTV, etc.

Sync (noun)

A signal which is used to cause two or more events to occur simultaneously or at the same rate.

Sync (verb)

To create a situation where two or more events occur simultaneously or at the same rate.