



AVIXA® Glossary of Audiovisual Terms 2023

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edited by
Andy Ciddor

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AVIXA PDF edition created by Andy Ciddor

CONTENTS

Select an alphabetical section to browse, or use PDF search (Ctrl-F or ⌘-F)

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

#

1/3 octave equalizer

An audio equalizer that provides 30 or 31 slider adjustments corresponding to specific fixed frequencies with fixed bandwidths, with the frequencies centered at every one-third of an octave. The adjustment points shape the overall frequency response of the system.

1/4-inch phone connector

See 6.35mm phone connector.

1/8-inch phone connector

See 3.5mm phone connector

3.5mm phone connector

A connector typically used to transport unbalanced line-level audio signals from portable devices and computers. Also known as a 1/8-inch phone connector.

4K

An ultra-high-resolution video format with a minimum resolution of 3840×2160 pixels in a 16:9 (1.77:1) aspect ratio, approximately four times that of full HD (1920×1080 pixels). 4K formats include 3840×2160 pixels (UHDTV-1) and 4096×2160 pixels (digital cinema, DCI).

4K ecosystem

The video cameras, recorders, editors, processors, servers, distribution networks, and display technologies used for the production, distribution, and display of 4K ultra-high-resolution video.

6.35mm phone connector

A connector typically used to transport unbalanced line-level audio signals from musical instruments and between processing devices. Also known as a 1/4-inch phone connector.

8K

An ultra-high-resolution video format with a minimum resolution of 7680×4320 pixels, which is 16 times the resolution of full HD (1920×1080 pixels). The related consumer television format is known as 7680p, 8K Ultra HD, and UHDTV-2.

8K ecosystem

The video cameras, recorders, editors, processors, servers, distribution networks, and display technologies used for the production, distribution, and display of 8K ultra-high-resolution video.

8P8C connector

An eight-pin (eight position, eight conductor) modular connector typically used for the termination of multipair cables. Often used in Ethernet data networks. It is commonly incorrectly referred to as an RJ-45 connector, which is actually an 8P2C telephone connector.

A

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

acceptable viewing area

The viewing range for a screen, suggested as a 60-degree arc off the far vertical edge of the screen being viewed.

access

The ability to access and use a system or resource. This ability may allow a user to handle information and control system components and functions.

access point

A network device that allows other devices to connect to a data network.

acoustic echo canceller

An echo cancelling device used in conferencing systems that attempts to remove environmental echoes that are created at the far site from sound reflected off hard surfaces and returned to conferencing microphones.

acoustics

The properties or qualities of a room or building that determine how sound is transmitted and reflected. The study of the properties of sound.

AES

Audio Engineering Society.

allied trade

A business that collaborates with AV professionals to complete a project.

alternating current (AC)

An electric current that reverses its direction periodically.

ambient light

The sum of all lighting in an area.

ambient noise

The sum of all sounds in an area.

amperage

The amount of electric current flowing in a circuit. Current is measured in amperes (amps), abbreviated as A. The preferred term is “current.”

amplifier

A device for increasing the strength of signals.

amplitude

The height of the waveform of a signal.

analog (analogue)

A continuously variable signal.

analog-to-digital/digital-to-analog (AD/DA or A to D/D to A) converters

Devices that convert signals from analog to digital or from digital to analog.

angularly reflective screen

A screen that reflects light at the same angle at which it arrived.

ANSI

American National Standards Institute.

anthropometrics

Results of the study of the measurements and proportions of the human body.

aperture

The opening in an optical train that controls the amount of light passing through.

arc-fault circuit interrupter (AFCI)

Also known as an arc-fault detection device (AFDD), a type of circuit breaker that triggers on detecting an electrical-arc fault in its load circuit.

arrayed loudspeaker system

A loudspeaker arrangement that delivers sound from a single point in space.

artifact

An element introduced into a signal during processing. Not always a good thing.

aspect ratio

The ratio of image width to image height.

attack time

The time taken for an action to complete its effect once triggered.

attenuate

To reduce the amplitude of a signal.

Audio Coverage Uniformity measurement locations (ACUMLs)

The test points within a venue that have been determined to carry out the measurements for the AVIXA Audio Coverage Uniformity test.

Audio Coverage Uniformity Plan (ACUP)

A stand-alone document that identifies the Audio Coverage Uniformity measurement locations for a particular venue, using the AVIXA indication symbol.

audio processor

A device used to manipulate audio signals.

Audio Return Channel (ARC)

Introduced to the HDMI standard with version 1.4. ARC allows a display to send audio data upstream to a receiver or surround-sound controller, eliminating the need for a separate audio connection.

audio signal

An electrical representation of sound.

audio transduction

The process of converting acoustical energy into electrical energy or electrical energy back into acoustical energy.

Audio Video Bridging (AVB)

A standards-based audiovisual Data Link-layer (layer 2) protocol defined under IEEE 802.1-AVB. It runs across a standard Ethernet network but requires AVB-enabled switches and network components that handle QoS prioritization of data. AVB has been renamed Time-Sensitive Networking to reflect the standard's applicability to communication among different types of devices, such as network sensors.

audiovisual infrastructure

The physical building components that make up the pathways, supports, and architectural elements required for audiovisual technical equipment installations.

audiovisual rack

A housing unit for electronic equipment. The inside of a typical AV industry rack is 19in. (482.6mm) wide. Many of the technical specifications for a rack, including size and equipment height, are determined by standards that have been established by numerous standards-setting organizations. The outside width of the rack varies from approximately 530mm to 630mm (21in. to 25in.).

authentication

The ability or process of verifying the identity of an entity, such as a user, process, or device, for providing access to resources such as AV systems.

authority having jurisdiction (AHJ)

An organization, office, or individual responsible for enforcing the requirements of a code or standard or for approving equipment, materials, installation, or procedures. In some places the authority having jurisdiction may be known as the regional regulatory authority.

authorization

The process used to determine whether a user is granted access to a specific resource by evaluating relevant access control information.

automatic gain control (AGC)

A circuit or process that maintains a constant output gain in response to input variables such as signal strength or ambient noise level.

Automatic Private IP Addressing (APIPA)

A Windows function that assigns locally routable addresses from the reserved network 169.254.0.0/16 to devices that do not have or cannot obtain an IP address. This allows devices to communicate with other devices on the same LAN. APIPA operates at the Network layer (layer 3) of the OSI Model and the Internet layer of the TCP/IP protocol stack.

B

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

balanced circuit

A two-conductor circuit in which both conductors and all circuits connected to them have the same impedance with respect to ground.

balun

A contraction of balanced-to-unbalanced. A device used to connect a balanced circuit to an unbalanced circuit. For example, a transformer used to connect a 300-ohm television antenna cable (balanced) to a 75-ohm antenna cable (unbalanced).

band

A grouping or range of frequencies.

bandwidth

1. A range of frequencies. 2. A measure of the amount of data or signal that can pass through a system during a given time interval.

bandwidth limiting

The process of limiting the bandwidth of a signal, usually to allow the signal to be transmitted over a lower-bandwidth path.

bandwidth (networking)

The available or consumed data communication resources of a communication path, measured in bits per second (bps). It is also called data throughput or bit rate.

baseband

A signal that has not been modulated onto a higher-frequency carrier.

bass trap

An acoustic energy absorber designed to dampen low-frequency sound energy.

benchmarking

The process of examining methods, techniques, and principles to establish a standard to which comparisons can be made.

bend radius

The radial measure of a curve in a cable, conductor, waveguide, or interconnect that defines the physical limit beyond which further bending has a measurable effect on the signal being transported.

bi-directional polar pattern

The shape of the region where some microphones will be most sensitive to sound from the front and rear, while rejecting sound from the top, bottom, and sides.

bill of materials (BOM)

A complete equipment list of components that must be procured in order to build the system as specified. The BOM also lists the costs associated with each aspect of designing and implementing the system.

bit

A contraction of the words binary digit. The smallest unit of binary digital information. May have the value 1 or 0.

bit depth

The number of bits used to specify a parameter.

bit error rate (BER)

The number of error bits present in a signal stream per unit of time.

bit rate

The measurement of the quantity of data transmitted over a digital signal stream. It is measured in bits per second (bps).

block diagram

A diagram of a system or device in which the principal parts are represented by suitably annotated geometrical figures to show both the functions of the parts and their functional relationships.

Bluetooth

A wireless technology for low-cost, short-range radio links between devices. It operates in the 2.402GHz to 2.480GHz industrial, scientific, and medical (ISM) frequency band.

BNC connector

A type of connector featuring a two-pin bayonet-type lock. Available in 75Ω and 50Ω impedances. The most common professional coaxial cable connector because of its reliability and ruggedness. It is used to

terminate cables transporting signals such as SDI, RF, video, and time code. Originally named Bayonet Neill-Concelman after its inventors Paul Neill and Carl Concelman.

bonding

Joining conductive material by a low-impedance connection, thus ensuring that they are at the same electrical potential.

boundary microphone

A microphone design where the diaphragm is placed close to a sonic “boundary” such as a wall, ceiling, or other flat surface. This arrangement prevents the acoustic reflections from the surface from mixing with the direct waveform and causing phase distortions. It is used in conference and telepresence systems. Also known as a pressure zone microphone (PZM).

branch circuit

The circuit conductors between the final overcurrent device protecting the circuit and the load connection.

breaker box

Another name for an electrical load distribution panel. See *panelboard*.

bring-your-own-device (BYOD)

An approach that allows users to access resources such as a network with personal devices.

broadcast domain

A set of devices that can send Data Link-layer (layer 2) frames to each other directly, without passing through a Network-layer (layer 3) device. Broadcast traffic sent by one device in a broadcast domain is received by all devices in the domain.

buffer amplifier

An electronic device that provides isolation and some load independence between circuit components.

building information modeling (BIM)

A data repository for building design, construction, and maintenance data shared by multiple disciplines on a single project.

bus

A wiring system that links multiple devices.

busbar

An electrically conductive path that serves as a common connection for two or more circuits.

buzz

A noise generated by the higher-order harmonics of the hum (50Hz or 60Hz) generated by the electrical mains.

byte

A data word containing 8 bits, also known as an octet. The symbol for byte is B.

C

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

cable

An assembly of more than one signal carrier (wire or optical fiber).

cable tray

A structure to provide rigid continuous support for cables.

campus area network (CAN)

A type of network linking multiple LANs in a limited geographical area such as a university campus or a cluster of buildings.

candela

The unit of luminous intensity. A candela is the luminous intensity emitted by a reference point light source in a given direction. The symbol for candela is cd. By sheer “coincidence,” the luminous intensity of a common wax candle is approximately 1 candela.

cannon connector

An alternative name for the XLR family of latching, low-voltage connectors used in professional audiovisual systems. The three-pin version is the standard audio signal cable for the production and AV in-

dustries. The four-pin version is widely used for communication headsets, and the five-pin version is the standard connector for the DMX512 digital lighting protocol.

capacitance

The ability of a material to store an electrical charge. Capacitance is measured in farads (F). The symbol for capacitance is C.

capacitive reactance (X_C)

The opposition a capacitive device offers to alternating current flow. It is measured in ohms (Ω). The symbol for capacitive reactance is X_C . Capacitive reactance is inversely proportional to the frequency of the current in a circuit.

capacitor

A passive electrical component used to store electric charge. Constructed from electrodes of conductive material separated by a dielectric.

captive screw connector

Also known as a Euroblock or Phoenix connector. A termination method where a stripped wire is inserted into the connector and secured by a set screw that pushes down a gate to form the electrical bond and clamp the wire in place.

cardioid polar pattern

A heart-shaped region where some microphones will be most sensitive to sound predominately from the front of the microphone diaphragm and reject sound coming from the sides and rear.

carrier

Modulated frequency that carries a communication signal.

Category 5 (Cat 5)

The designation for 100 Ω unshielded twisted-pair (UTP) cables and associated connecting hardware whose characteristics are specified for data transmission up to 100Mbps (part of the EIA/TIA 568A standard).

Category 5e (Cat 5e)

An enhanced version of the Cat 5 UTP cable standard that adds specifications to reduce far-end crosstalk for data transmission up to 1Gbps (part of the EIA/TIA 568A standard).

Category 6 (Cat 6)

A UTP cable standard for Gigabit Ethernet and other interconnections that is backward-compatible with Cat 5, Cat 5e, and Cat 3 cable (part of the EIA/TIA 568A standard). Cat 6 features more stringent specifications for crosstalk and system noise.

Category 6A (Cat 6A)

A twisted-pair cable standard for 10 Gigabit Ethernet and other interconnections that is backward-compatible with Cat 5, Cat 5e, and Cat 6 cable. Constructed using a mechanism to physically separate the twisted-pairs, Cat 6A features more stringent specifications for alien and near-end crosstalk.

Category 7 (Cat 7)

A twisted-pair cable standard for 10 Gigabit Ethernet and other interconnections that is backward-compatible with Cat 5e and Cat 6A cable. To further reduce crosstalk, in Cat 7 cables, each twisted-pair is shielded and the entire cable is shielded.

Category 8 (Cat 8)

A twisted-pair cable standard for 40 Gigabit Ethernet and other interconnections that is backward-compatible with Cat 5e, Cat 6, and Cat 6A cable (part of the EIA/TIA 568A standard). Cat 8 features a shield around each twisted-pair and a further shield enclosing all twisted-pairs. It is only specified at 40Gbps for runs up to 30m (100ft).

cathode ray tube (CRT)

A high-vacuum glass tube containing an electron gun to produce the images seen on the phosphor-coated face of the tube. This video display technology was used in early-generation video monitors, television receivers, radar displays, and oscilloscopes.

CATV

Community antenna television. A system where broadcast television signals are received by a single central antenna and distributed to multiple end users.

center tap

A connection point located halfway along the track or winding of an electronic device such as an inductor or resistor.

central cluster

A single-source configuration of loudspeakers. In a central cluster, the sound is perceived as coming from one point in the room. The central cluster is normally located directly above (on the proscenium) and slightly in front of the primary microphone location.

central processing unit (CPU)

The portion of a computer system that reads and executes commands.

charged-coupled device (CCD)

A light-sensitive semiconductor device, commonly used in video and digital cameras, that converts optical images into electronic signals.

chassis

Also called a *cabinet* or *frame*, an enclosure that houses electronic equipment and is frequently electrically conductive (metal). The conductive enclosure acts as a Faraday cage/shield and is connected to the safety-grounding conductor of the AC power supply to provide protection against electric shock.

chassis ground

A 0V (zero volt) connection point of any electrically conductive chassis or enclosure surrounding an electronic device. This connection point may be extended to the earth/ground.

chroma

The saturation, or intensity, of a specific color. It is one of the three attributes that define a color; the other two are hue and value or luminance.

chrominance

The color component of a composite or S-video signal.

Classless Inter-Domain Routing (CIDR) notation

A compact representation of an IP address and its subnet mask using a slash and a decimal number to indicate how many leading 1 bits are in the network mask, with the remaining bits being the network host identifiers (e.g., 192.168.220.16/24). The subnet mask of 255.255.255.0 (24 mask bits) is represented as /24 in CIDR notation. CIDR replaces the class designations (A, B, and C) for IP address ranges.

cliff effect

The sudden loss of digital signal reception. When a digital signal is attenuated to the point where signal for a digital 1 is indistinguishable from the signal for a digital 0.

clipping

The distortion of a signal when a device's peak amplitude is exceeded.

clock adjustment

The process used to align the timing of digital signals between devices.

CMOS

Complementary metal oxide semiconductor is a semiconductor fabrication process that uses symmetrical pairs of complementary p-type and n-type field effect transistors (FETs) for logic functions. CMOS devices have high noise immunity and draw low current in a static state. This technology is extensively used in the production of digital electronic devices, including camera pickup chips.

coaxial (coax) cable

A cable consisting of a center conductor surrounded by insulating material, concentric outer conductor, and optional protective covering, all of circular cross section.

CobraNet

CobraNet is a proprietary digital audio Data Link-layer (layer 2) protocol designed by Cirrus Logic. It uses standard Fast Ethernet cabling, switches, and other components. CobraNet signals are nonroutable.

codec

A contraction of the term *coder/decoder*. An electronic device or software process that encodes or decodes a data stream for transmission and reception over a communications medium.

collision domain

A set of devices on a carrier-sense multiple access (CSMA) local area network whose packets may collide with one another if they transmit data at the same time. Only found in nonswitched Ethernet networks.

color difference signal

A signal that conveys color information such as hue and saturation in a composite format. Two such signals are needed. These color difference signals are R-Y and B-Y. Sometimes referred to as Pr and Pb or Cr and Cb.

color rendering index (CRI)

The effect a light source has on the perceived color of objects indexed against an incandescent source (CRI 100) of the same correlated color temperature.

color space

A color space is the range of spectral colors that can be interpreted or displayed by a device. The range is usually identified by being mapped against an area on the CIE chromaticity diagram. A range of well-known color spaces is used in imaging and display.

color temperature

The quantification of the color of “white” light in reference to the light emitted by a standardized object at a specified temperature on the Kelvin scale. Measured in kelvins (K). Low color temperature light (~2,000K) has a warm (reddish) look, while light with a high color temperature (>4,000K) has a colder (bluish) appearance.

combiner

A device or process that combines signals of different frequencies together in a single medium. Used to combine multiple RF television signals into one cable for use in broadband cable television distribution.

common mode

1. Voltage fed in phase to both inputs of a differential amplifier. 2. The signal voltage that appears equally and in phase from each current carrying conductor to ground.

common-mode rejection ratio (CMRR)

The ratio of the differential voltage gain to the common-mode voltage gain; expressed in decibels.

compander

An audio processing device that combines compression and expansion.

component video

Color video in which the brightness (luminance), color hue, and saturation (chrominance) are handled independently. The red, green, and blue signals—or, more commonly, the Y, R-Y, and B-Y signals—are encoded onto three wires.

composite video signal

A single video signal that carries the complete color picture information and all synchronization signals.

compression

1. An increase in density and pressure in a compressible medium such as air. 2. A process that reduces data size.

compression ratio

1. How much the volume on an audio compressor reduces depending on how far above the threshold the signal is. 2. The ratio in size between the original signal and its compressed form.

compressor (audio)

A device that controls the overall amplitude of a signal by reducing the part of the signal that exceeds an adjustable threshold level set by the user. When the signal exceeds the threshold level, the overall amplitude is reduced by a ratio, also usually adjustable by the user.

compressor threshold

Sets the point at which the automatic volume reduction kicks in. When the input goes above the threshold, an audio compressor automatically reduces the volume to keep the signal from getting too loud.

condenser microphone

Also called a *capacitor microphone*, a microphone that transduces sound into an electric current using capacitive principles.

conductor

In electronics, a material that easily conducts an electric current because some electrons in the material are easy to move.

conduit

A circular tube that houses cable.

cone

A lightweight, semi-rigid, conical diaphragm structure attached to the voice coil of a loudspeaker.

constant voltage distribution

25V, 70V, 100V; a method of distributing signals to loudspeakers over a large area with lower losses than typical direct-coupled connections. Also known as a high-impedance distribution system.

Consumer Electronic Control (CEC)

A single-wire, bi-directional serial bus that uses AV link protocols to perform remote-control functions. It is an optional feature of the HDMI specification that allows for system-level automation when all devices in an AV system support it.

contact closure

A simple signaling system based on whether a contact or switch is open or closed. The conventional protocol is to interpret a closed contact (on) as a binary 1 and an open contact (off) as a binary 0.

contactor

An electrically controlled switch used for switching a power circuit, similar to a relay, but with higher switched-current ratings. May be single-pole or multipole.

content delivery network (CDN)

A distributed network of caching servers that can provide hosted unicast distribution of media for an organization. They are most often utilized by organizations whose content is in high demand.

contrast

The difference in luminance between dark and light elements of an image.

contrast ratio

Describes the dynamic video range of a display device as a numeric relationship between the brightest color (typically white) and the darkest color (typically black) that the system is capable of producing. Two methods are used to specify contrast ratio; the full on/full off method describes the dynamic contrast ratio, and the ANSI method measures the static contrast ratio.

control system

A system that controls subsystems such as audio, video, winches, drapes, mechanical devices, lighting, and atmospheric effects.

correlated color temperature (CCT)

The color appearance of a light source as compared with a standardized object heated to a temperature measured on the Kelvin scale. CCT is measured kelvins (K).

coverage pattern

The pattern of sound energy that a loudspeaker emits. The coverage pattern is dependent on the frequency of the sounds and the dimensions of the loudspeaker.

critical distance (d_c)

The point where the sound pressure level of the direct and reverberant sound fields is equal.

critical path schedule

A scheduling methodology that reveals the interdependence of activities and assesses resource and time requirements and trade-offs. It also determines the project's completion date and provides the capability to evaluate activity performance.

crossover

An electronic device that separates the frequency bands of an audio signal so that each driver in a multidriver loudspeaker system is sent only those frequencies that it will transduce accurately.

crosspoint

A matrix-based switching device with multiple inputs and outputs wherein any input may be connected to any, many, or all outputs.

crosstalk

Any phenomenon by which a signal transmitted on one circuit or channel of a transmission system creates an undesired effect in another circuit or channel.

current

The quantity of electrical charge flowing in a circuit, measured in amperes (A). The symbol for current is I.

curvature of field

A blurry appearance around the edge of an otherwise in-focus object (or the reverse) when the angle of incidence of light passing through the edges of a lens is different from the angle of incidence at the center of the surface. Curvature of field is due to the shape of the lens.

cybersecurity

A process or capability intended to protect information and communications systems against unauthorized use or modification, as well as against damage and exploitation. This includes policies, strategies, and standards regarding the security and operations of these systems.

D

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

Dante

A proprietary digital audio Network-layer (layer 3) protocol created by Audinate. Dante sends audio and video information as Internet Protocol (IP) packets. It is fully routable over IP networks using standard Ethernet switches, routers, and other components. Dante controller software manages data prioritization and signal routes.

dB SPL

A measure of sound pressure level with reference to 0dB SPL (a sound pressure of 20 micropascal [μPa]).

decay time

The time taken for an effect to diminish.

decibel (dB)

A base-10 logarithmic representation of the ratio between two numbers. This ratio is used for quantifying differences in voltage, distance, sound pressure, and power.

decryption

The process of translating encrypted communications or data into its original form.

DECT

Digital enhanced cordless telecommunications (DECT). A wireless communications protocol widely used for cordless telephone systems and some other portable devices.

delay

A signal-processing device or circuit used to delay the delivery of a signal.

demodulator

A device or process that extracts the information from a modulated signal.

depth of field

The area in front of a lens that is in focus. The distance from the closest focused item to the focused item farthest away.

detail drawing

A detail drawing which shows small details at a larger scale than the main drawing.

dielectric constant (relative permittivity)

The ratio of the permittivity of a material compared to the permittivity of a vacuum. A measure of the dielectric strength of a material.

dielectric strength

The ability of a material to act as an insulator: how much potential difference it can withstand before breaking down and becoming a conductor.

differential mode

A signaling mode where two wires carry the same signal but one is in reverse polarity.

differentiated service (DiffServ)

A network quality-of-service (QoS) strategy wherein data from specific applications or protocols is assigned a class of service. Flows assigned a high priority are given preferential treatment at the router, but delivery is not guaranteed.

diffusion

The scattering or random reflection or transmission of a wave from a surface.

digital media player

Device or software application that replays recorded or streamed audio and video content.

digital signage

Digital video displays used for signage. Sometimes referred to as dynamic signage to differentiate it from conventional static signage.

digital signage media player

A specialized media player used to store and forward or play back digital signage content.

digital signage template

Customizable layout and content templates used for the content of digital signage. Used to simplify the design and maintenance of standardized content.

digital signal processor (DSP)

A digital device designed to process signal streams such as audio, video, and RF data.

digital-to-analog converter

A device that converts a digital signal into an analog form.

direct coupled

A loudspeaker signal distribution system in which the amplifier is connected directly to the loudspeaker(s).

direct current (DC)

Electric current that does not reverse direction, unlike alternating current (AC). DC may vary in amplitude but not direction.

direct sound

Also known as *near-field*. Sound that is received directly from the source and not colored by the acoustics of its surroundings.

direct view display

A display such as an LCD, LED, OLED, vacuum fluorescent, or plasma screen where the viewer is looking directly at the image source, not at a projection screen.

directivity

The coverage pattern of loudspeakers.

dispersion

The separation of light into different frequencies/wavelengths, such as when a white light beam passes through a triangular prism. The different wavelengths of light refract at different angles, dispersing the light into its individual wavelengths.

Display Data Channel (DDC)

A data channel used between video sources and video displays to carry information about display capabilities and video formats. The channel used for exchanging EDID and HDCP data.

DisplayID

A standard developed by VESA outlining how video display data is structured to describe the display's performance and capabilities when communicating with other devices. By structuring data in a flexible, modular way, DisplayID enables devices to identify new display resolutions, refresh rates, audio standards, and other formats as they become available. For example, the standard can support a single image segmented across tiled displays using multiple video processors.

DisplayPort

A VESA-developed, high-speed digital data transport protocol used to connect a video source to display devices. It can also carry audio, USB, and other data.

distributed sound system

A sound system using multiple distributed loudspeakers to provide sound coverage across an area at a constant sound pressure level.

distribution amplifier (DA)

An active device used to split one input signal into multiple isolated output signals at a constant amplitude.

diversity receiver

An RF receiver that uses multiple antennas to receive a single RF transmission. The receiver calculates phase differences between the received signals to dynamically shift between antennas to avoid multipath signal cancellation.

DLP

Digital Light Processing. A projection technology based on the MEMS digital micromirror device (DMD) chip family. It uses a matrix of thousands of movable microscopic mirrors on a chip to display images on a screen.

Domain Name System (DNS)

A hierarchical, distributed database that maps names to data such as IP addresses, name server addresses, and mail exchange addresses.

dome

A type of loudspeaker driver construction. Fabric, thin metallic, or woven materials are used to create a dome-shaped diaphragm. The voice coil is attached to the edge of the dome-shaped diaphragm.

dotted-decimal/dotted-quad notation

A format commonly used for expressing 32-bit IPv4 addresses using four decimal numbers in the range 0 to 255, separated by decimal points (dots) (e.g., 192.168.12.254).

driver

1. In audio, an individual loudspeaker unit. **2.** In electronics, a piece of software or firmware that takes a high-level command set and implements the commands in a specific format for the actual hardware or software present in the system.

dual channel

In test equipment, refers to a test device with two independent input channels.

DVD

Digital Video Disc or Digital Versatile Disc. An optical storage medium for digital data or video. Widely used for video content distribution from the late 1990s to approximately 2015.

DVI

Digital Visual Interface. A digital interface to connect an uncompressed video source to a display device. DVI has largely been replaced by HDMI, DisplayPort, and other formats.

Dynamic Host Configuration Protocol (DHCP)

An IP address management process that automates the assignment of IP addresses and networking parameters to devices on an IP network.

dynamic microphone

A microphone with a diaphragm attached to a moveable coil of wire located in a magnetic field. Sound pressure waves cause the diaphragm to move the coil in the magnetic field, inducing a small electric current in the coil.

dynamic range

The difference between the highest and lowest levels of a signal. Usually expressed in decibels (dB).

early reflected sound

The sound waves that arrive at the listener's ear closely following (<30ms) the direct sound wave. These are the sound waves that are reflected off surfaces between the source and the listener.

E

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

earthing conductor

A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding/earthing electrode (planet Earth).

echo

A reflected or duplicated version of a signal that arrives at the listener with sufficient delay and separation from the original signal to allow the delayed signal to be perceived distinctly and later in time from the original signal.

echo cancellation

A means of eliminating echo from a signal path.

eggcrate

A light baffle with rectangular cells that direct, block, and diffuse light.

electret microphone

A type of condenser microphone using a prepolarized material, called an electret, which is applied to the microphone's diaphragm or backplate.

electrical service

The conductors and equipment for delivering energy from the electricity supply system to the wiring system of the site served.

electromagnetic interference (EMI)

Interference signals produced by electromagnetic fields.

elevation drawing

A side view of an object or surface taken in the vertical plane from outside the object or surface.

emissive technology

Any display technology that emits light to create an image.

encoded

A signal that has been converted into another format.

encryption

The process of transforming communications or data into a form that cannot easily be understood by recipients who have not been granted access to it.

energy management plan (EMP)

A document that details a systematic approach to implementing the most effective power consumption methods and procedures to achieve and maintain optimum energy usage.

equalizer

Electronic equipment that modifies the frequency characteristics of a signal.

equipment grounding

The connection to ground (planet Earth) from the conductive, user-accessible parts of equipment.

equipment grounding conductor (EGC)

North American term for the safety earth, the conductive path installed to connect normally noncurrent-carrying conductive parts of equipment to the grounding/earthing electrode (planet Earth).

equipment rack

An equipment housing unit that protects and organizes electronic equipment.

equivalent acoustic distance (EAD)

The farthest distance one can go from the source without the need for sound amplification or reinforcement to maintain good speech intelligibility. The distance is dependent on the level of the presenter and the noise level in the room.

ergonomics

Also known as human factors or human factors engineering. This is the scientific study of the way people interact with a system. It focuses on effectiveness, efficiency, reducing errors, increasing productivity, improving safety, reducing fatigue and stress, increasing comfort, increasing user acceptance, increasing job satisfaction, and improving quality of life.

Ethernet

A set of network cabling, signaling, and network access protocol standards. Before the introduction of switch-based networks, Ethernet was based on carrier-sense multiple access technology with collision detection (CSMA/CD).

EtherSound

A proprietary digital audio Data Link-layer (layer 2) protocol designed by Digigram. It uses standard 100Mbps or 1Gbps Ethernet cabling, switches, and other components. It requires a separate network with dedicated bandwidth. EtherSound signals are nonroutable.

expander

An audio processor that increases the dynamic range of an audio signal. It comes in two types: a downward expander and as part of a compander.

exploit

An attack technique intended to take advantage of a vulnerability to breach the security of a network or gain information.

extended display identification data (EDID)

A data structure within a video sink device that is used to describe the sink's characteristics to a video source. The characteristics described include the sink's native resolution, color space information, and audio type (mono or stereo).

external configuration

Refers to the ability of one device to configure other devices and subsystems.

F

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

Faraday cage

A conductive solid or mesh enclosure used to block electromagnetic fields. Also known as a Faraday shield. Named after its inventor Michael Faraday.

far field

The sound field distant enough from the sound source that the SPL decreases by 6dB for each doubling of the distance from the source.

farthest viewer

The viewer positioned at the farthest distance from the screen as defined by the viewing area.

feedback

1. In audio, unwanted noise caused by the loop of an audio system's output back to its input. 2. In a control system, data supplied to give an indication of system performance or status.

feedback stability margin (FSM)

The extra margin added (usually 6dB) into the needed acoustic gain (NAG) formula that represents extra gain that a sound system may have available before the onset of feedback.

fiber-optic

A technology that uses total internal reflection of light along a transparent fiber to transmit information.

field

In interlaced video, one-half of a video frame containing every other line of information. Each interlaced video frame contains two fields.

filter

A device or process that blocks or passes certain elements of a signal.

firewall

Any technology, hardware, or software that regulates the traffic permitted to enter or exit a network. Firewalls control access across network boundaries.

firewall traversal

Any firewall or Application-layer gateway (ALG) is expected to provide mechanisms that allows traffic to traverse through the firewall/ALG to reach an intended destination. Firewall traversal is provided in multiple ways, including NAT traversal, IPSec tunnels, IP ACLs (access control lists), or port-based ACLs.

firmware

A type of software that is stored in nonvolatile memory in a piece of hardware.

fixture

A luminaire that is mounted or fixed in place.

flex life

The number of times a cable can be bent before it breaks. A wire with more strands or twists per meter will have a greater flex life than one with a lower number of strands or fewer twists per meter.

focal length

The distance between the center of a lens and the point where the image comes into focus. The shorter the focal length, the wider the angle of the image will be.

foot-candle

The U.S. customary unit of illuminance. The incident light measured when 1 lumen of light is spread over an area of 1 square foot. Its symbol is fc. 1 foot-candle = 10.76 lux.

footlambert

The footlambert is the U.S. customary unit for luminance. It is equal to $1/\pi$ candela per square foot. Its symbol is fl. 1 footlambert = 3.43 candela per square meter.

frame rate

The number of frames per second sent from a source.

frequency

The number of complete cycles in a specified period of time. It is measured in hertz (Hz). 1 Hz = 1 cycle per second.

frequency domain

A signal viewed as frequency versus amplitude is in the frequency domain. This allows you to view the amount of energy present at different frequencies.

frequency response

The amplitude response versus frequency for a given device.

Fresnel lens

A flat lens in which the curvature of a normal lens surface has been collapsed in such a way that concentric circles are impressed on the lens surface. A Fresnel lens is often used for the condenser lens in overhead projectors, in rear-screen projection systems, and in Fresnel spotlights.

front-screen projection

An image projection system where the image is projected from a source on the viewer's side of the screen.

full-duplex communication

A form of bi-directional data transmission in which messages may simultaneously travel in both directions.

full HD

A high-definition video mode with a resolution of 1920×1080 pixels.

fundamental frequency

Known as *pure tone*, the lowest frequency in a harmonic series.

G

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

gain

The change in the amplitude of a signal.

gain control

A gain control is an electronic adjustment through which the amplitude of a signal can be increased or decreased.

gain-sharing automatic mixers

A gain-sharing automatic mixer is an audio mixer that automatically increases the gain for microphone channels that are in use and attenuates the microphone channels that are not in use.

gate

An audio processor that allows signals to pass only above a certain setting or threshold.

gated automatic mixer

An audio mixer that turns microphone channels either “on” or “off” automatically, based on the amplitude of their signal.

gateway

A router device that connects a local network to an external network. All outgoing network traffic must travel through it. A gateway will pass incoming traffic to the routers below. The routers below look to the gateway to resolve DNS addresses not found on the local network.

gauge

The thickness or diameter of a wire or plate.

genlock

To lock the synchronization signals of multiple devices to a single synchronization source.

graphic equalizer

An audio equalizer with an interface that has a graph comparing amplitude on the vertical axis with frequency on the horizontal axis.

graphical user interface (GUI)

Often pronounced “gooey,” provides a graphical (image-based) interface for a user to view a system’s elements and functions.

graphics adapter

Commonly referred to as a *video card*, a device that generates and outputs video signals from a computer.

graphics processing unit (GPU)

A specialized circuit designed for processing display functions. The processor is optimized to render and manipulate images in a video frame buffer.

grayscale

The luminance (brightness and darkness) of a color. It is sometimes called value. It is one of the three attributes of color; the other two are hue and chroma.

grayscale test pattern

A test pattern that displays a range of known gray values between black and white.

ground

1. The earth. **2.** In the context of an electrical circuit, the earth or some conductive body that extends the ground (earth) connection. **3.** In the context of electronics, the 0V (zero volt) circuit reference point. This electronic circuit reference point may or may not have a connection to the earth.

ground fault

An unintentional electrical connection between any ungrounded conductor of the electrical system and any noncurrent-carrying metal object.

ground loop

An electrically conductive loop that has two or more ground reference connections. The loop can be detrimental when the reference connections are at different potentials, which causes current flow within the loop.

ground plane

A continuous conductive area. The fundamental property of a ground plane is that every point on its surface is at the same potential (low impedance) at all frequencies of concern.

ground potential

A point in a circuit that is at the same potential as the earth/ground.

ground reference

The 0V (zero volt) reference point for a circuit.

grounded conductor

A system or circuit conductor that is connected to the earth/ground.

ground-fault circuit interrupter (GFCI)

A safety device that de-energizes a circuit within an established period of time when a current to ground exceeds a specified level. Triggered by an imbalance between the supply and return currents. Similar in

function to an earth leakage circuit breaker (ELCB), a residual current device (RCD), or a core balance relay (CBR).

ground-fault current path

An electrically conductive path from the point of a ground fault on a wiring system through normally noncurrent-carrying conductors, equipment, or earth to the electrical supply source.

grounding

Connecting to ground or to a conductive body that extends the ground connection. The connection is referred to as *grounded*.

grounding conductor

A conductor used to connect equipment or the grounding circuit of a wiring system to a grounding/earth electrode or electrodes.

grounding electrode

A conducting object through which a direct connection to earth (planet Earth) is established.

grounding electrode conductor

The conductor used to connect the system grounded conductor or the equipment to a grounding electrode or to a point on the grounding electrode system.

Group Management Protocol (GMP)

A protocol that allows a host to inform its neighboring routers of its desire to start or stop receiving multicast transmissions.

group of pictures (GoP)

A set of successive frames that are required to display a complete series in a digital video signal. It includes the visible picture, timing/sync information, and compression frames.

H

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

half-duplex communication

A form of bi-directional data transmission in which messages can only travel in one direction at any time.

harmonic distortion

Signal distortion that arises when harmonics of an input signal are generated during processing and appear in the output together with the processed input signal.

harmonics

Higher frequencies that are a multiple of the fundamental frequency.

HD-15 connector

Sometimes called a VGA connector, is a video connector that is typically associated with the output of an analog computer graphics card. It has three rows of five pins, which carry analog red, green, blue, and sync signals along with display data channel information. Not to be confused with two-row DB-15 connector.

HDBaseT

A connectivity standard for the transmission of high-definition video, audio, DC power, Ethernet, and serial signaling, including USB and other protocols, over standard twisted-pair data cables such as Cat 5e and above.

HDCP

High-bandwidth digital content protection.

HDCP key

A number that a program uses to verify authenticity and encode/decode content. HDCP processes use multiple types of keys. These keys are strongly protected by Digital Content Protection, LLC.

HDCP receiver/sink

A device that can receive and decode HDCP signals. A television is an example of a receiver.

HDCP repeater

A device that can receive HDCP signals and transmit them to another device, such as a switcher or distribution amplifier.

HDCP transmitter/source

A device that can send HDCP-encoded signals and content. A Blu-ray Disc player is an example of an HDCP transmitter.

HDMI Ethernet Audio Control (HEAC)

In HDMI, the combining of HDMI Ethernet Channel (HEC) and Audio Return Channel (ARC) into one port or cable. See HDMI Ethernet Channel (HEC) and Audio Return Channel (ARC).

HDMI Ethernet Channel (HEC)

Consolidates video, audio, and data streams into a single HDMI cable. A dedicated data channel enables high-speed, bi-directional networking to support future IP solutions and allow multiple devices to share an Internet connection.

HDTV

High-definition television. Generally includes image resolutions above 1280×720.

headend

The equipment located at the start of a cable television distribution system where the signals are processed and combined prior to distribution.

headroom

The difference between the average performance level of a system and the maximum level it can produce. Usually measured in dB.

heat load

Heat load is the heat released by a device during operation. It is measured in joules (or British thermal units).

heat sink

A device that absorbs and dissipates the heat produced by an object or process.

hemispheric polar pattern

The dome shape of the region where some microphones will be most sensitive to sound. This is the pattern of boundary/pressure zone microphones.

hertz (Hz)

The unit of frequency. 1Hz = 1 cycle per second.

hextet

A group of 16 bits, usually written as four lowercase hexadecimal digits (e.g., 0fe8). The 128-bit addresses used in IPv6 are written as eight hextets separated by colons (e.g., 2006:0fe8:85a3:0000:0002:8a2e:0a77:c082).

High-Bandwidth Digital Content Protection (HDCP)

A form of encryption developed by Intel to control digital audio and video content as it travels across Digital Video Interface (DVI), DisplayPort (DP), or High-Definition Multimedia Interface (HDMI) connections. It prevents transmission or interception of unencrypted HD content. Does not work across Serial Digital Interface (SDI) streams.

High Definition Multimedia Interface (HDMI)

A point-to-point connection protocol between video devices for digital video and audio. HDMI signals include audio, control, Ethernet, and digital asset rights management information.

high dynamic range (HDR)

Digital images having a bit depth of at least 10 bits (1,024 levels) per channel. Standard dynamic range images have a bit depth of 8 bits (256 levels) per channel.

high-pass filter

A circuit that allows signals above a specified frequency to pass unaltered while simultaneously attenuating frequencies below the specified limit.

hiss

Broadband higher-frequency noise generated by random electron movement in the amplification stages of a system. In audio systems it is typically associated with poor system gain structure.

horn

A flared-shape loudspeaker that reproduces mid to high frequencies.

hot plug

1. A low-level signal sent by an EDID source that indicates whether a sink or display is connected. 2. A system that can detect and respond to devices being connected or disconnected during normal operations (e.g., USB). 3. Plugging or unplugging equipment while it is still powered up.

hue

The attribute of a color that represents its position in a defined color space or on the visible spectrum. Hue is usually described with a color name such as “red,” “blue,” “yellow,” or “purple.” It is one of the three attributes that define color; the other two are luminance and chroma.

hum

Undesirable (usually 50 to 60Hz-plus harmonics) noise emanating from an audio device or evidenced by a rolling hum bar on a display.

I

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

IEEE

The Institute of Electrical and Electronics Engineers.

illuminance

The amount of light falling on a surface, measured in lux (lx) or foot-candle (fc). 1 foot-candle = 10.76 lux.

IGBT

The insulated-gate bipolar transistor (IGBT) is a high-power, three-terminal semiconductor device similar in structure to a thyristor. It is primarily used for high-speed switching applications such as inverters for variable-speed motor control, switch mode power supplies, and reverse phase-control dimming.

image constraint token (ICT)

A digital flag signal incorporated into some high-definition digital video streams. If present, the video stream can be decoded at full resolution only on HDCP-enabled devices.

image resolution

The total number of pixels in the image. It is normally expressed as the number of horizontal pixels multiplied by the number of vertical pixels, e.g., 1920×1080.

imager

A light-sensitive electronic device behind a camera’s lens, usually made up of thousands of sensors that convert the light input into an electrical output.

impedance

The total opposition that a circuit presents to an alternating current. It includes resistance (R), inductive reactance (X_L), and capacitive reactance (X_C). Impedance is measured in ohms (Ω). Its symbol is Z.

Formula: $Z = \sqrt{R^2 + (X_L - X_C)^2}$

impedance matching

Having impedance values on an input and output that facilitate the most efficient transfer of a signal. It does not necessarily mean having comparable impedances on an input and an output.

impedance meter

Device used to measure the impedance of an electrical circuit.

incident (security)

An event that threatens or adversely affects AV and information systems or the data that resides on them.

inductance

The magnetic property of a circuit that opposes any change in current, represented by the symbol L and measured in henrys (H).

induction

The influence exerted on a conductor by a changing magnetic field.

inductive reactance (X_L)

Opposition to the current flow offered by the inductance of a circuit. Inductive reactance is measured in ohms (Ω). Its symbol is X_L . The inductive reactance in a circuit is directly proportional to the frequency of the current.

InfoFrames

Structured packets of data that carry information regarding aspects of audio and video transmission, as defined by the EIA/CEA-861 standard. Using this structure, a frame-by-frame summary is sent to the display, permitting selection of appropriate display modes automatically. InfoFrames typically include auxiliary video information, generic vendor-specific source product description, MPEG, and audio information.

infrared (IR)

The range of nonvisible light frequencies below the red end of the visible spectrum. IR signal transmission requires an uninterrupted signal path between transmitter and receiver.

input

A connection point that receives information from another piece of equipment.

insider threat

A vector of risk to an organization's AV or information systems that comes from within the organization, such as employees, contractors, or other associates. These parties generally have increased access to systems and a greater knowledge of their defenses.

insulation

A material of high dielectric strength used to isolate the flow of electric current between conductors.

Integrated Services Digital Network (ISDN)

A communications standard for transmitting data over digital telephone lines.

intellectual property (IP)

A type of property that includes the creations of the human intellect. It includes ideas; written material such as books, articles, poems, and essays; designs including plans, specifications, diagrams, sketches, and program code; images such as photographs, graphic arts, and other artworks; music and songs; and movie and video contents. Intellectual property rights are usually asserted through the use of patents, trademarks, copyrights, and trade secrets. All IP used in the design, execution, and operation of an AV installation must be correctly licensed from each of the owners of that IP.

intelligibility

A sound installation's ability to produce an accurate reproduction of sound, allowing listeners to identify words and sentence structure.

Internet Corporation for Assigned Names and Numbers (ICANN)

An organization chartered to oversee several Internet-related tasks. ICANN manages Domain Name System (DNS) policy, including the top-level domain space for the Internet.

Internet Group Management Protocol (IGMP)

The group management protocol for IPv4. IGMPv1 allowed individual clients to subscribe to a multicast channel. IGMPv2 and IGMPv3 added the ability to unsubscribe from a multicast channel.

interlaced scanning

The scanning process that alternately displays the odd and even lines of a video frame to construct a full frame of video signal.

internal configuration

Refers to the local setup and customization of management or control of a device.

Internet of Things (IoT)

Refers to a situation where network connectivity and computing capability have been extended to include objects, sensors, and other devices, allowing these devices to exchange data.

Internet Protocol (IP)

A TCP/IP protocol defined in the IETF standard RFC 791. IP defines rules for addressing, packaging, fragmenting, and routing data sent across an IP network. IP falls under the Internet layer of the TCP/IP protocol stack and the Network layer (layer 3) of the OSI Model.

Internet Protocol Television (IPTV)

A system that delivers television services over an IP network such as a LAN or the Internet.

inverse square law

The law of physics stating that a physical quantity or strength is inversely proportional to the square of the distance from the source of that physical quantity.

I/O port

Input and/or output port. A connection port on a device for handling input and/or output signals.

IoT

See Internet of Things.

IP

See *Internet Protocol (IP)* and intellectual property (IP).

IR

See *infrared*.

isolated ground (IG)

An equipment grounding method permitted by the North American NEC for reducing electrical noise (electromagnetic interference) on the grounding circuit. The isolation between IG receptacles and circuits and the normal equipment grounding is maintained up to the point of the service entrance (or a separately derived system) where the grounded (neutral) conductor, equipment grounding, and isolated equipment grounding conductor are bonded together and to earth/ground (planet Earth).

isolated grounding circuit

A circuit that allows an equipment enclosure to be isolated from the raceway containing circuits. The equipment on the circuit is grounded via an insulated earthing/grounding conductor.

isolated receptacle

A power receptacle or mains power outlet in which the grounding terminal is purposely insulated from the receptacle-mounting means. In North America isolated receptacles are identified by a triangle engraved on the face. The receptacle (and so the equipment plugged into the receptacle) is grounded via an insulated earthing/grounding conductor.

J

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

jacket

Outside covering used to protect cable conductors and their shielding.

junction box

A structure for enclosing the junction of electrical wires and cables. In North America a junction box can be used as a termination point with a custom connector plate or interface plate. A junction box can also be installed and used as a pull box for longer cable runs.

K

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

keystone error

The trapezoidal distortion of an image due to the projection device being at an angle to the plane of the screen.

L

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

lamp

The light source in some luminaires and projectors.

latency

Response time of a system. The delay between an input being received by a system and the corresponding output being generated. Measured in seconds.

lavalier

A small microphone usually worn either around the neck or attached to apparel. Derived from the name of an item of jewelry worn as a pendant.

law of conservation of energy

States that energy cannot be created or destroyed. Energy can be transformed from one form to another and transferred from one body to another, but the total amount of energy remains constant.

lenticular screen

A screen surface characterized by embossing designed to transmit or reflect maximum light over wide horizontal, but narrow vertical, angles.

lighting fixture

A lighting instrument or luminaire. Sometimes called a fixture.

Li-Fi

A wireless communication technology that carries data using modulated light, often using high-frequency modulation of the luminaires illuminating a space.

limiter

1. A signal processor that limits the amplitude of a signal to a preset level. **2.** An audio signal processor that functions like a compressor except that signals exceeding the threshold level are reduced at ratios of 10:1 or greater.

limiter ratio

Defines how much an audio limiter will compress signals that exceed its threshold. The limiter compresses only the portion of the signal that exceeds its threshold.

limiter threshold

Defines which portions of a signal the limiter will affect. All signals at levels below or equal to the threshold will pass through the limiter unchanged. All signals above the threshold will be compressed.

line conditioner

See power conditioner.

line driver

An amplifier used to compensate for signal attenuation created by cable impedance.

line level

The specified strength of an audio signal used to transmit analog audio between the elements of an audio system. This is generally considered to be approximately 1V at 1kHz into a 600Ω impedance.

liquid crystal display (LCD)

A video display technology that uses light transmission through polarizing liquid crystals to display an image.

liquid crystal on silicon (LCoS)

A reflective liquid crystal imaging technology. A liquid crystal layer is applied to a reflective complementary metal oxide semiconductor (CMOS) mirror substrate. The embedded CMOS circuitry controls the reflectivity of the liquid crystal pixels.

listed

Equipment, materials, or services included in a list published by a recognized testing laboratory. The term is usually applied to products or processes tested by the U.S. Underwriters Laboratories (UL).

load center

An electrical industry term used to identify a lighting and appliance electrical distribution board in residential and light-commercial applications.

local area network (LAN)

1. A computer network connecting devices within a confined geographical area, such as a building. **2.** A Data Link-layer (layer 2) network.

local monitor

A local device used to monitor the signal from a system.

logarithm

The exponent of 10 that equals the value of a number.

logic network diagram

A project management tool that aids in sequencing and ultimately scheduling a project's activities and milestones. It represents a project's critical path as well as the scope for the project.

lossless compression

A process that compresses data without losing any information.

lossy compression

A form of compression that produces an approximation of the original data by eliminating noncritical or redundant information.

loudspeaker

A transducer that converts electrical energy into acoustical energy.

loudspeaker circuit

A group of wired loudspeakers.

low-pass filter

A circuit that allows signals below a specified frequency to pass unaltered while simultaneously attenuating frequencies above the one specified.

low smoke zero halogen (LSZH) cable

A type of cable with insulation and sheathing that produces only low levels of smoke and no halogen products on combustion. Suitable for use in ventilation plenum spaces.

low voltage

An ambiguous term. It may mean less than 70V AC to an AV technician, while an electrician may use the same term to describe circuits less than 600V or 1kV AC. The meaning of the term may also be determined by the authority having jurisdiction (AHJ).

lumen

The unit of luminous flux. A measure of the total quantity of visible light emitted from light source per unit of time. Its symbol is lm.

luminaire

A lighting instrument. Consists of a light source, optical system, housing, and mounting mechanism.

luminance (Y)

Also called *luma*, the brightness component of a combined video signal that includes synchronization, color, and brightness information. Its symbol is Y.

lux

The international unit of illuminance. The incident light measured when 1 lumen of light is spread over an area of 1 square meter. Its symbol is lx. 10.76 lux = 1 foot-candle.

M

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

MAC address

The unique 48-bit hardware address of the media access controller on a network device. Usually written as six groups of two hexadecimal numbers, separated by a hyphen or colon (e.g., 01-23-45-67-89-ab or 01:23:45:67:89:ab).

mains buzz

A mixture of higher-order harmonics of the 50Hz or 60Hz noise (hum) originating from the AC mains power system and audible in a sound system.

malware

Software that threatens the operation of an AV or information system by performing an unauthorized function.

matrix decoder

A video decoder that extracts red, green, and blue signals from either composite or Y, R-Y, and B-Y signals.

matrix switcher

An electronic switching device with multiple inputs and outputs. The matrix allows any input to be connected to any one or more of the outputs.

matte-white screen

A screen that uniformly disperses light, both horizontally and vertically, creating a wide viewing cone and wide viewing angle.

maximum transmission unit (MTU)

The size in bytes of the largest frame that can pass over a Data Link-layer (layer 2) connection. Header information must be included within the MTU.

MCB

Miniature circuit breaker. Small-format circuit breakers used to protect branch loads in electrical distribution panels.

mechanical switcher

A switch that mechanically opens and closes to connect circuit elements. It functions like a wall switch, meaning there is a mechanical connection or disconnection.

MEMS

See microelectromechanical systems (MEMS).

MEMS microphone

A microphone built using MEMS technology. Generally, MEMS implementations of either condenser or piezo-electric microphones.

mesh topology

A network where each node is connected via bridges, switches, or routers to at least one other node.

metropolitan area network (MAN)

A communications network that covers a single geographic area, such as a suburb or city.

mic level

The very low-level signal from a microphone. Typically only a few millivolts.

microphone sensitivity

A specification that indicates the electrical output of a microphone when it is subjected to a known sound pressure level. Usually measured in dBV/Pa.

microelectromechanical systems (MEMS)

Mechanical devices built directly onto silicon chips using the same fabrication processes as microprocessors and memory systems. Best known as the digital micromirror devices (DMD) used for light switching in DLP projectors.

middleware

Software that provides services to applications that aren't available from the operating system. In a streaming system, for example, middleware may perform transcoding, compression, or remote access authentication.

midrange

A loudspeaker that reproduces midrange frequencies, typically 300Hz to 8kHz.

milestone

A significant or key event in a project, usually the completion of a major deliverable or the occurrence of an important event. It can often be associated with payment milestones and client approvals.

millwork

Carpentry work produced in a mill or factory. Usually refers to finished woodwork such as doors, molding, trim, flooring, cupboards, and wall paneling.

mitigation

The process of applying measures that diminish the likelihood of an undesirable occurrence or reduce the impact if it occurs.

mixer

A device for blending multiple signal sources.

mix-minus system

An audio mix with some channels omitted. Also known as a clean feed mix. Used in speech reinforcement, interruptible foldback (IFB), and conferencing systems to allow multiple participants to be heard without echoes or feedback. Each participant is provided with a submix which includes all signals except the closest microphone.

Mobile High-Definition Link (MHL)

A standard audio/video interface for connecting mobile electronics to high-definition televisions and audio receivers. SuperMHL is capable of 36Gbps with HDR and WCG video up to 8K at 120fps.

modular connector

A latching electrical connector with four, six, or eight pins. Common modular connectors are RJ-11 (6P6C) and RJ-45 (8P8C).

modulator

A device that varies one or more properties of a carrier signal (frequency, amplitude, phase) with information from another signal.

MOSFET

Metal oxide semiconductor field-effect transistor. A semiconductor device with an insulated gate capable of significantly changing its load current with a small change in gate voltage. The power MOSFET is used for controlling and switching large currents. Also known as an insulated-gate field-effect transistor (IGFET).

Multicast Listener Discovery (MLD)

The IPv6 group management protocol. Multicast is natively supported by IPv6; any IPv6 router will support MLD. MLDv1 performs roughly the same functions as IGMPv2, and MLDv2 supports roughly the same functions as IGMPv3.

multicast streaming

A one-to-many transmission, meaning one server sends out a single stream that can then be accessed by multiple clients. In IPv4, the IP address range (224.0.0.0 to 239.255.255.255) is reserved for multicast transmissions. In IPv6, multicast addresses have the prefix `ff00::/8`.

multimeter

A test instrument with multiple ranges for measuring current, voltage, and resistance. Many instruments also include a simple continuity test capability.

multiplexing

The sharing of a single communications channel for multiple signals.

multipoint

Also called *continuous presence*, videoconferencing that links many sites to a common gateway service, allowing all sites to see, hear, and interact at the same time. Multipoint requires a bridge or bridging service.

Multi-Protocol Label Switching (MPLS)

A networking protocol that allows any combination of Data Link-layer (layer 2) protocols to be transported over any type of Network layer (layer 3). MPLS routes data by examining each packet's MPLS label without examining packet contents. Implementing MPLS improves interoperability and routing speed.

Murphy's law

Also known as Sod's law. If anything can go wrong, it will go wrong. A reminder that no assumptions should ever be made about the cause of a fault in a system. If you saw the identical fault last week, it will almost certainly have an entirely different cause this week.

N

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

native resolution

The number of rows of horizontal and vertical pixels that form the picture. The native resolution describes the actual resolution of the imaging device and not the resolution of the delivery signal.

near-field

The zone close to the sound source that has not been colored by room reflections. This is also known as *direct sound*.

needed acoustic gain (NAG)

The gain the sound system requires to achieve an equivalent acoustic level at the farthest listener equal to the level at the Equivalent Acoustic Distance (EAD).

needs analysis

A needs analysis identifies the activities that the end users need to perform, then develops the functional descriptions of the systems that support those needs.

network address translation (NAT)

Any method of altering IP address information in IP packet headers as the packet traverses a routing device. NAT is typically implemented as part of a firewall strategy. The most common form of NAT is port address translation (PAT).

network bridge

A network device that connects between two networks. It may translate between different protocols on the bridged networks.

network interface card (NIC)

An interface that allows a device to be connected to a network.

network segment

A network segment is any single section of a network that is physically separated from the rest of the network by a networking device such as a switch or router. A segment may contain one or more hosts.

network switch

A networking device that connects multiple network segments by storing the data packets sent from the transmitting segment and forwarding them to the receiving segment. Hosts on the segments are identified by their MAC addresses.

network topology

The physical arrangement of the elements connected to a network.

neutral conductor

The conductor in an electrical supply system that is connected to the earth/ground for current return. This is not part of the protective earth/grounding system. See also *grounded conductor* (for U.S. usage).

nibble/nybble

A group of 4 bits. Half a byte or half an octet. Usually written as a single hexadecimal digit (values 0 to f).

nine-pin connector (DB-9)

The DB-9 is the most common type of connector used in RS-232 control systems.

nit

The nonstandard, and now-deprecated, name for the candela per square meter (cd/m^2), the unit of luminance. Formerly used to describe screen or surface brightness.

noise

Any signal present in a system other than the desired signal.

noise criterion (NC)

See noise rating.

noise rating (NR)

A rating system developed to establish satisfactory conditions for speech intelligibility and general living environments. Measurements are taken at eight center octave frequencies from 63Hz to 8kHz and plotted against a standardized curve. Very similar to the noise criterion (NC) rating system used in the United States.

noise-masking system

Also known as a sound-masking or speech privacy system. A sound system that deliberately introduces background noise into a space to raise the threshold of hearing and thus increase privacy between occupants in a shared space.

noisy ground

An electrical connection to a ground point that produces or injects spurious voltages into a system through the connection to ground (IEEE Std. 142-1991).

nominal impedance

An approximation of the typical impedance of a device or system.

nonvolatile memory

Computer memory that retains its data when not powered up. Includes flash memory; read-only memory (ROM); erasable programmable ROM (EPROM); electrically erasable programmable ROM (EEPROM); optical disks; and magnetic storage such as floppy disks, hard disks, and magnetic tape.

notch filter

A filter that notches out, or eliminates, a specific band of frequencies.

number of open microphones (NOM)

A measure that takes into account the increased possibility of feedback by adding more live microphones in a space. Each time the number of open microphones is doubled, you lose 3dB of gain before feedback.

Nyquist-Shannon sampling theorem

States that an analog signal can be reconstructed if it is encoded using a sampling rate that is greater than twice the highest frequency sampled. For example, since the range of human hearing extends to 20kHz, the minimum sampling rate for digital audio should be greater than 40kHz. The higher the sampling rate above this minimum, the more accurate the digital sample.

O

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

octave

A band, or group, of frequencies in which the highest frequency in the band is double the lowest frequency. For example, 200Hz to 400Hz is an octave, 6kHz to 12kHz is an octave, and so on.

octet

A group of eight binary digits (bits), often called a byte.

Ohm's law

A law that defines the relationship between current, voltage, and resistance in an electrical circuit. The current is proportional to the applied voltage and inversely proportional to the resistance, giving the formula $I = V \div R$, where I is the current (in amps), V is the voltage (in volts), and R is the resistance (in ohms).

omnidirectional

Receiving signals from or transmitting in all directions. Used to describe the sensitivity or radiation pattern for devices that operate equally in nearly all directions.

on-axis

Along the axis of a symmetrical pattern. In projection, the center line of a screen, perpendicular to the viewing area for a displayed image. In audio, along the central axis of a microphone's pick-up pattern or along the central axis of a loudspeaker's dispersion pattern.

open port

A sub-address in Transmission Control Protocol or User Datagram Protocol that is configured to accept packets of data in network traffic.

organic light-emitting diode (OLED)

A semiconductor light-emitting diode constructed from organic compounds. Displays built from OLEDs generally use separate layers for emitting the red, green, and blue components of an image.

oscilloscope

A device that allows the viewing and measurement of electronic signals on a visual display.

OSI Model

Open Systems Interconnection Model. This is a reference model developed by ISO in 1984 as a conceptual framework of standards for communication in the data network across different equipment and applications by different vendors. Under this model network communication protocols are divided into seven categories, or layers.

overcurrent

Any current in excess of the rated current for equipment or a conductor. It may result from overload, a short circuit, or a ground fault.

overcurrent protection device

A safety device designed to disconnect a circuit if the current exceeds a predetermined value. Examples are circuit breakers and fuses.

P# [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)**packet filtering**

A network data filtering process that uses rules to determine whether a data packet will be allowed to pass through a router or gateway. The filtering rules are based on the contents of each packet.

panelboard

Another name for an electrical load-distribution board.

parallel circuit

A circuit in which the voltage is the same across each load, but the current divides and takes all the available paths and returns to the source.

parametric equalizer

An equalizer that allows discrete selection of a center frequency and adjustment of the width of the frequency range that will be affected. This can allow for precise manipulation with minimal impact of adjacent frequencies.

password

A technique used to authenticate the identity of a user by requiring the input of a predetermined set of characters, such as letters, numbers, or other symbols.

peak

The highest level of signal amplitude, determined by the height of the signal's waveform.

peaking

An adjustment method that allows compensation for high-frequency loss in cables.

peaking control

Electronic adjustments within a video component that can be used to compensate for system losses.

penetration testing

A method of assessing the security posture of an organization's security systems by searching for vulnerabilities that an attacker could exploit.

permissible area

The maximum amount of space that cables should occupy inside an electrical conduit.

personal area network (PAN)

A limited-range, usually wireless, network that serves a single person or small workgroup.

phantom power

A DC power supply delivered as an "invisible" overlay on the signal wires of a system. In audio phantom power systems, a voltage is overlaid on microphone signal lines to enable the remote powering of devices such as condenser microphones and active direct input boxes. In power over Ethernet (PoE) systems, the voltage is overlaid across both wires in a twisted-pair.

phase

A particular value of time for any periodic function. For a point on a sine wave, it is a measure of that point's distance from the most recent positive-going zero crossing of the waveform. It is measured in degrees; 0 to 360 degrees is a complete cycle.

phase-control dimming

A method of electronic dimming that progressively removes the leading edge of each half-cycle of the AC power to a lamp.

phishing

The fraudulent practice of sending messages purporting to be from a known or reputable sender in order to induce individuals to reveal confidential information.

phono connector

The international name for the type of coaxial connector known as RCA in North America.

phosphor

A substance that produces light when stimulated by radiation. Phosphors are used to produce some colors of visible light in fluorescent lamps, LED sources, some laser light sources, and CRT and plasma displays.

physical security

The practice of protecting AV and information systems from material threats such as actions and events that could damage them or compromise their data.

ping

A computer network software utility that measures the round-trip time of test messages between hosts on a computer network. Implemented on IP networks using the Internet Control Message Protocol (ICMP). The name derives from the use of sonic “pings” in sonar for underwater ranging.

pink noise

A signal with a broad spectrum of random frequencies that has equal energy in each octave band.

pink noise generator (PNG)

A device to generate pink noise. An audio PNG is commonly used in conjunction with an audio spectrum analyzer to evaluate and align a sound system in an environment.

pixel

A contraction of the words picture and element. The smallest element used to build an image.

plan view

A drawing of a space from the “top view” taken directly from above. Examples include a floor plan and site plan.

plane of screen

Identification of image position on a plan or drawing relative to other plotted locations. It is a notional plane whether in plan view or elevation, that aligns with the front surface of the screen (that is, image position) used as a datum to define viewers’ relative positions.

plasma display panel (PDP)

A direct-view display technology consisting of an array of pixels, which are composed of three subpixels, corresponding to the colors red, green, and blue. Gas in the plasma state is used to react with phosphors in each subpixel to produce colored light (red, green, or blue) from a phosphor in each subpixel.

playback system

A system designed specifically to replay recorded material.

plenum space

The plenum space is also called environmental air space. It is an area connected to air ducts that forms part of the air distribution system.

PoDL

Power over data line. See Power over Ethernet.

PoE

See Power over Ethernet.

point source

A sound system that has an apparent central location for the loudspeakers. This type of sound system is typically used in a performance venue or a large house of worship.

point-to-point

Conferencing where sites are directly linked.

polar pattern

Also known as *pickup pattern* or *transmission pattern*. The shape of the pattern covered by the pickup or transmission device.

polar plot

A polar plot is a graphical representation of the relationship between a device’s directionality and its input or output.

port

1. An input and/or output socket on an electronic device. **2.** In a TCP/IP network, a 16-bit number included in the TCP or UDP Transport-layer (layer 4) header. The port number typically indicates the Application-layer (layer 7) protocol that generated a data packet. A port may also be called by its associated service (e.g., port 80 may be called HTTP, or port 23 may be called Telnet). **3.** To relocate an application or function to a new platform.

port address translation (PAT)

A method of network address translation (NAT) whereby devices with private, unregistered IP addresses can access the Internet through a device with a registered IP address. Unregistered clients send datagrams to a NAT server with a globally routable address (typically a firewall, a gateway, or a router). The NAT server forwards the data to its destination and relays responses to the original client.

post tension type construction

A type of structure that uses metal cables embedded within a concrete slab to support a structure. The cables act as a suspension support system that allows for wider spacing of support structures within a building.

potential acoustic gain (PAG)

The potential gain that can be delivered by the sound system without ringing and before feedback occurs. It is based upon the number of open microphones and the distances between sources (like a presenter) and microphones, microphones and loudspeakers, and listeners and loudspeakers.

power

The rate at which work is done. Measured in watts (W); 1 watt = 1 joule/second. The symbol for power is P.

power amplifier

Amplifies an audio signal to a level sufficient to drive loudspeakers.

power conditioner

Also known as a line conditioner or power line conditioner. A device that conditions the quality of power being fed to equipment by regulating the voltage and eliminating line noise.

power distribution unit (PDU)

An electrical device that distributes mains power to multiple electrical devices. A PDU may contain switches, overcurrent protection, voltage and/or current monitoring, remote circuit-controllers, and power receptacles. See also power strip.

power over Ethernet (PoE)

Also known as power over data line (PoDL), PoE is DC power supply delivered as an “invisible” overlay on the data lines of an Ethernet network system. The voltage is overlaid in common mode across both wires in a twisted-pair to eliminate any effect on the data. PoE is used to power a wide range of Ethernet-connected devices.

power sequencing

The act of powering on and off equipment that requires a progressive startup or shutdown sequence for safe or convenient operations. Sequencing may help prevent tripping circuit breakers by limiting surge or inrush currents when devices are powered up.

power sourcing equipment

Power sourcing equipment (PSE) are devices that provide power into a PoE system.

power strip

A block of electrical outlets attached to a power lead, designed to enable multiple devices to be powered from a single electrical outlet. Power strips may incorporate power indicators, individual switches, overload protection, and surge protection.

powered device

A powered device (PD) is a device powered by PoE.

preamplifier

An amplifier that boosts a low-level electronic signal before it is sent to other processing equipment.

preset

1. A recallable state of settings and/or levels. 2. In lighting, a recallable state of lighting levels for one or more zones.

pressure zone microphone (PZM)

An alternative name for a boundary microphone.

primary optic

Also known as the primary lens. The major lens in an optical system. In a projector, the primary lens usually controls the focus of the image on a screen.

program report

A document that describes the client’s specific needs, the system purpose and functionality, and the designer’s best estimate of probable cost in a nontechnical format for review and approval by the owner. Also known as the AV narrative, the discovery phase report, the return brief, or the concept design report.

progressive scanning

Scanning that traces the image’s scan lines sequentially.

Protocol Independent Multicast (PIM)

Allows multicast routing over LANs, WANs, or the open Internet. Rather than routing information on their own, PIM protocols use the routing information supplied by whatever routing protocol the network is already using.

pulling tension

The maximum amount of tension that can be applied to a cable or conductor before it is damaged.

pure tone

See *fundamental frequency*.

Q

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

Q factor

The quality factor of an audio filter is the ratio of the height of the center frequency of the filter to the bandwidth of the filter at the 3dB point.

quality of service (QoS)

Any method of managing network data traffic to preserve system functionality and provide the required bandwidth for critical applications. Typically, QoS involves some combination of bandwidth allocation and data prioritization.

quiet ground

A point on a ground system that does not inject spurious voltages into the electronic system. There are no standards to measure how quiet a quiet ground is.

R

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

raceway

An enclosed channel of metal or nonmetallic materials designed for carrying wires, cables, or busbars.

rack

See *equipment rack*.

rack elevation diagram

A rack elevation diagram is a pictorial representation of the front of a rack and the location of each piece of equipment within that rack, typically labeling the number of RUs used for each piece of equipment.

rack unit (RU)

A unit of measure of the vertical space in a rack. One RU equals 1.75 inches (44.5mm).

radio frequency (RF)

The portion of the electromagnetic spectrum that is suitable for radio communications. Generally, this is considered to be from 10kHz up to 300MHz. This range extends to 300GHz if the microwave portion of the spectrum is included.

radio frequency interference (RFI)

Radiated electromagnetic energy that interferes with or disturbs an electrical circuit.

rarefaction

A decrease of density and pressure in a compressible medium such as air.

ratio

A mathematical expression that represents the relationship between the quantities of numbers of the same kind. A ratio is typically written as X:Y or X/Y.

RCA connector

The North American name for the *phono* connector, a coaxial connector most often used with line-level audio signals and consumer composite video signals.

RCBO

Residual current breaker with overcurrent protection. An electrical protection device that combines the functionality of a miniature circuit breaker (MCB) and a residual current detector/residual current circuit breaker (RCD/RCCB).

RCD

See residual current device.

reactance

Opposition to current flow in a circuit resulting from the reaction of the capacitance and inductance in the circuit. Measured in ohms (Ω). The symbol for reactance is X.

rear-screen projection

A system in which the image is projected toward the audience through a translucent screen material for viewing from the opposite side.

reference level

In the context of decibel measurements, the reference level is the established starting point represented by 0dB. The reference level varies according to unit and application.

reference point

The point of zero potential used as the voltage reference for a circuit.

reflected ceiling plan (RCP)

A plan used to illustrate elements in the ceiling with respect to the floor. It should be interpreted as though the floor is a mirrored surface, reflecting the features within the ceiling.

reflecting server

A caching server in a content delivery network (CDN). Ingests a unicast stream and broadcasts a multi-cast stream.

reflection

Electromagnetic energy (light, radio waves, etc.) or sound energy that has been redirected by a surface.

reflective technology

A display device that reflects light to create an image.

refraction

The bending or changing of the direction of a light ray when passing between transparent mediums such as air, water, glass, or a vacuum. The refractive index of a material is a measure of the speed that light travels through the medium in comparison to its speed through a vacuum.

refresh rate

The number of times per second a display device will update the display of a received image.

release time

The release time of an audio compressor determines how quickly the volume increases when an audio signal returns below the threshold.

relocatable power tap

The North American term for a cord-connected product rated 250V AC or less and 20A or less with multiple receptacles. This tap is intended only for indoor use and plugged directly into a branch circuit. It is not intended to be connected to another relocatable power tap. See power strip.

reserve DHCP

A hybrid approach to IP address allocation. Using reserve DHCP, a block of addresses is reserved for devices requiring a static IP address. The remaining IP addresses in the subnet pool are assigned dynamically using DHCP.

residual current device (RCD)

A safety device that de-energizes a circuit (or a portion of that circuit) within an established period of time when a current to ground exceeds a specified level. Also known as a residual current circuit breaker (RCCB). Similar in function to an earth leakage circuit breaker (ELCB), a ground-fault circuit interrupter (GFCI), or a core balance relay (CBR).

resistance

The property of a material to impede the flow of electrical current. Measured in ohms (Ω). The symbol for resistance is R.

resistor

A passive electrical device that produces opposition to current flow. Current passes through a resistor in direct proportion to voltage, independent of frequency. The relationship between voltage across and current through a resistor is defined in Ohm's law.

resolution

1. The amount of detail in an image. 2. The number of picture elements (pixels) in a display.

reverberant sound

Sound waves that bounce off multiple surfaces before reaching the listener but arrive at the listener's ears later than early reflected sound.

reverberation

Numerous persistent reflections of sound energy.

reverse phase-control dimming

A method of electronic dimming that progressively removes the trailing edge of each half-cycle of the AC power.

RF

See *radio frequency*.

RF control

A method of control employing RF wireless signaling. RF control systems vary in complexity from simple one-way on/off signals to high-bandwidth, multichannel, bi-directional systems with complex user interfaces and rich feedback. Wireless control may use many formats, including Wi-Fi, DECT, ISM, Bluetooth, Zigbee, UWB, or LTE frequencies and signaling protocols.

RF distribution system

A closed-circuit television distribution system with each of the composite video and audio program signals modulated onto a radio frequency carrier signal for distribution via RF cables. Receiving devices must have a demodulator capable of extracting the separate program channels.

RGBHV signal

A high-bandwidth video signal with separate conductors for the red signal, green signal, blue signal, horizontal sync, and vertical sync.

RGBS signal

A four-component video signal composed of a red signal, a green signal, a blue signal, and a composite sync signal.

rigid metal conduit

A rigid metal conduit, called just rigid in North America, is the heaviest electrical conduit and offers the best physical and EMI protection.

rigid nonmetallic tubing

Rigid nonmetallic tubing is very stiff with a thick wall but lightweight. It is similar to plumbing tubing. Because it is not flexible, it is available in preformed pieces at various angles.

ring

A network topology that connects terminals, computers, or nodes in a continuous loop.

risk

The potential for an unwanted or adverse impact on organizational operations resulting from an occurrence involving AV and information systems, given the potential impact of a specific threat and the likelihood of that threat taking place.

risk analysis

The process of collecting information regarding the risks of an AV system and assigning values to each of those risks.

risk mitigation plan

The set of steps an organization takes to evaluate and prioritize its risks and implement countermeasures intended to reduce the likelihood of a risk occurring or its impact.

risk register

A document created to record the risks an organization faces to its AV and information systems. This information includes a detailed description of each risk, including its probability, severity and impact, and steps to mitigate it.

room criteria (RC) rating

A single number rating that quantifies the tonal characteristics of background noise, including the characteristics of ventilation noise, such as rumble or hiss.

room mode

An acoustic wave-interference phenomenon that occurs between the parallel surfaces of an enclosure where the dimension between those parallel surfaces equals one-half wavelength (and the harmonics thereof) of a frequency. The wave is thus reflected on itself out of phase, creating location-specific areas of maximum and minimum pressure.

router

A network device that forwards data packets between computer networks. It operates on the OSI Network layer (layer 3).

RS-232

A point-to-point serial data protocol. The interface between data terminal equipment and data circuit-terminating equipment employing serial binary data interchange. It supports a half-duplex mode of operation with one driver and one receiver. At a cable length of 15m (50ft), RS-232 supports a data rate of up to 19.2kbps. At its maximum cable length of 900m (3,000ft), it supports a data rate of 2.4kbps.

RS-422

A multidrop serial data protocol. Provides the electrical characteristics of balanced-voltage digital interface circuits. It is a balanced signal with one driver and up to 10 receivers with multidrop capability. The maximum cable length for RS-422 is 1,220m (4,000ft) with a data rate of 10Mbps.

RS-485

A transmission line serial data protocol. Supports a differential mode of operation with 32 tri-state drivers and 32 tri-state receivers and multidrop capability. The maximum cable length for RS-485 is 1.2km (4,000ft) with a data rate of 10Mbps.

RsGsBs

A video transmission system using red, green, and blue signals with composite sync added to each color channel. This requires three cables to carry the entire signal. It is often referred to as RGB sync on all three.

RT₆₀

The time taken for the energy in an initially steady reverberant sound field to decay by 60dB after the source of the sound ceases.

RU

1. See *rack unit (RU)*. 2. A CTS renewal unit. The completion of renewal unit–accredited training is required by CTS, CTS-I, and CTS-D certification holders to maintain the currency of their certification.

S

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

sabin

An index of sound absorption efficiency. Possible values range from 1.00 (absorbs everything) to 0.00 (absorbs nothing).

sampling rate

The number of samples taken per unit of time when converting a continuous analog signal to a digital signal.

scale

The representation of a number by another number differing by a fixed ratio.

scale drawing

A drawing that shows objects in accurate proportion, with all dimensions enlarged or reduced by a fixed ratio.

scaler

A processor that changes the resolution of an image without changing its apparent content. Scaling may be required when the image resolution does not match the resolution of the display device.

scan rate

The rate at which a raster-scan image is displayed. Horizontal scan rate is the rate at which a single horizontal line is displayed. Vertical scan rate (refresh rate) is the rate at which an entire screen image is displayed.

scattering

When a wave strikes a textured surface, the incoming waves are reflected in multiple directions because the surface is uneven.

scene

A recallable preset or state of lighting levels for one or more zones.

scope statement

A written agreement between the client, the project sponsor, the key stakeholders, and the project team that defines the boundaries of the project.

SCR

The silicon-controlled rectifier (SCR) is a semiconductor from the thyristor family of four-layer power-switching devices. As it is a rectifier, it must be used in an inverse-pair to control both the positive and negative half-cycles of mains power. It was the first type of solid-state device to be used for power control and phase-control dimming.

screen gain

The ability of a projection screen to concentrate the light reflected from it. Gain is compared to the reflection of a matte-white screen, which reflects light uniformly in all directions (a gain of 1).

SDTV

Standard-definition television. It has a 4:3 aspect ratio and a resolution of 576i for PAL and SECAM and 480i for NTSC.

section drawing

A section drawing is a view of the interior of a building in the vertical plane. Section drawings show bisected features, which allows you to view what is behind them.

security policy

A set of rules that establish the acceptable use of an organization's AV and IT systems based on the risk that each system faces and the measures taken to address those risks.

sensitivity specification

The measure of a device's capacity to convert one form of energy into another form of energy. Usually stated as a ratio of input units to output units, such as mV/Pa for microphones.

serial digital interface (SDI)

A set of serial data standards to transport digital AV data over BNC-terminated 75Ω coaxial cable or over optical fiber. Variants include HD-SDI for HD video, 6G-SDI (6Gbps) for 4kp30, 12G-SDI (12Gbps) for 4kp60, and 24G-SDI (24Gbps) for 8kp30 video.

series circuit

A circuit arrangement where all the current supplied by the source will flow through the entire circuit. While all the current flows through all the circuit elements, the voltage is divided between the loads and the wires that connect them.

series/parallel loudspeaker circuit

An arrangement of loudspeakers where some are wired in parallel and some are wired in series. Typically, groups of loudspeakers are wired in parallel, then those groups are connected to the amplifier in series.

server

A computer system that shares resources and services with other connected devices.

service-level agreement (SLA)

A document used to record an agreement between a service provider and a customer. It describes the services to be provided, documents service-level targets, and specifies the roles and responsibilities of the service provider(s) and the customer(s).

session border controller (SBC)

A device used in VoIP networks to control the signaling and media streams involved in setting up, conducting, and tearing down calls. The SBC enforces security, QoS, and admission control over VoIP sessions.

shear force

The force exerted on an object in the direction of the object's cross section. In the case of a wall-mounting bolt, the shear force across the bolt caused by the gravitational load of the object it is supporting.

shield or screen

A grounded conductive partition placed between two regions of space to control the propagation of electric and magnetic fields between them. The screen or shield acts as a Faraday cage. It can be the chassis (metallic box) that houses an electronic device or the conductive enclosure (aluminum foil, conductive polymer, or copper braid) that surrounds a screened/shielded wire or cable.

shielded twisted-pair cable

A cable that contains one or more twisted-pairs of conductors inside an overall shield. Known variously as STP, or FTP when the shield is constructed of foil.

shotgun microphone

A long, cylindrical, highly sensitive microphone with a very narrow pickup pattern.

sightline

The line of sight between a viewer and an object that needs to be seen.

signal flow

The traceable path of signals through a system.

signal generator

A test instrument that produces calibrated electronic signals for the testing or alignment of electronic circuits or systems.

signal ground

1. A 0V (zero volt) point of no potential that serves as the circuit reference. 2. A low-impedance path for the current to return to the source.

single-pair Ethernet (SPE)

An Ethernet variant based on a single 100Ω twisted-pair cable rather than the more-common four-pair configuration. Originally developed for automotive and industrial control applications, it has been adopted for Internet of Things (IOT) and other remotely-located devices. Capable of full-duplex data transmission speeds of up to 1Gbps over 15m (50ft), and extending to up to 1km (3,280ft) at 10Mbps. Most commonly used connectors used are the IEC 63171-1 (Type 1) "LC" style and the IEC 63171-6 industrial style. Used in conjunction with a PoE (Power over Ethernet)/PoDL (Power over Data Line) feed of up to 50w, remote Ethernet devices such as video cameras can be powered and operated over a single-pair cable.

single-phase power

Alternating-current electrical power supplied by two current-carrying conductors. This type of supply is used for residential and many light-commercial applications.

single-point ground (SPG)

In the context of IEEE Standard 1100, refers to implementation of an isolated equipment grounding configuration for the purposes of minimizing problems caused by circulating current in ground loops.

signal-to-noise (S/N) ratio

The ratio, usually measured in decibels, between an information signal and the accompanying noninformation noise. The higher this ratio, the cleaner the signal.

Simple Network Management Protocol (SNMP)

A set of Internet Engineering Task Force (IETF) standards for network management.

socket

In a TCP/IP network, the combined port number, Transport-layer (layer 4) protocol identifier, and IP addresses of communicating end systems. A socket uniquely identifies a session of a given transport protocol.

software patch

A piece of computer code used to update an AV or IT program with the intention of fixing or improving it. The update may address known security vulnerabilities to limit their exploitation by intruders.

sound pressure level (SPL)

The effective pressure level of a sound, usually stated in relation to a reference pressure such as 20 μ Pa (the threshold of human hearing). In the context of AVIXA Standard A102.01:2017, expressed in un-weighted decibels.

sound reinforcement system

The combination of microphones, audio mixers, signal processors, power amplifiers, and loudspeakers that is used to electronically amplify and distribute sound.

source-specific multicast (SSM)

In data streaming SSM allows clients to specify the sources from which they will accept content. This has the dual benefits of reducing demands on the network while improving network security.

specification

A written, precise description of the design criteria for a device or a piece of work. Specifications define the level of qualitative and/or quantitative parameters to be met and the criteria for their acceptance. All specifications must be formulated in terms that are specific, measurable, verifiable, and unambiguous.

specular reflection

The mirror-like reflection of electromagnetic radiation, in which most of the radiation is reflected in a single direction.

speech privacy system

A sound system that adds background noise to an environment to raise the hearing threshold and thus make it more difficult to hear low-level sounds such as traffic noise, machinery, and distant human speech. Used to assist with speech privacy in open environments.

speech-reinforcement system

An audio system that reinforces or amplifies a presenter's voice.

splitter

An electronic device that splits a signal to route it to different devices.

spot photometer

Also known as a spot meter. A type of photometer used to measure illuminance over a narrow angle.

standing wave

The phenomenon that occurs between parallel reflecting surfaces (e.g., walls in a room or a loudspeaker cabinet) where the distance between those parallel surfaces equals one-half wavelength of a wave (and the harmonics thereof). The wave is thus reflected on itself out of phase, creating an interference pattern with location-specific areas of maximum and minimum amplitude.

star topology

A network topology where all network devices are connected to a central network device, usually a switch or bridge.

static IP address

A permanently assigned IP address.

stereophonic

An audio reproduction system where multiple outputs are designed to create the illusion of sound perspective.

streaming video/streaming audio

Sequence of moving images or sounds sent in a continuous stream over the Internet and displayed by the viewer as they arrive. With streaming video or audio, a web user does not need to wait to download a large file before seeing the video or hearing the sound.

subnet

A logical group of hosts within a local area network (LAN). A LAN may consist of a single subnet, or it may be divided into several subnets. Additional subnets may be created by modifying the subnet mask on the network devices and hosts.

subnet mask

A number that identifies which part of an IP address corresponds to the network address and which corresponds to a host address on that network. In CIDR notation the mask is represented by a slash (/), followed by the number of bits as a decimal number (e.g., /24). In dotted-decimal notation the mask is represented by a dotted-decimal representation of the bit pattern for network and host address bits, where bits equal to 1 indicate that the corresponding bits in the IP address identify the network address, and bits equal to 0 identify the host address (e.g., 255.255.255.0, which is equivalent to /24). IP addresses with the same network identifier bits are on the same subnet.

subwoofer

A loudspeaker that reproduces lower frequencies, typically 20Hz to 100Hz.

supercardioid polar pattern

The exaggerated heart shape of the area where a highly directional microphone is most sensitive to sound.

surface-mount microphone

Also called a *boundary microphone* or pressure zone microphone. A microphone designed to be mounted directly against a hard boundary or surface, such as a conference table, a stage floor, or a wall, to pick up sound.

surround-sound system

An audio system that uses multiple channels to produce an acoustic experience where the sound appears to surround listeners.

switcher

A device used to select one of several available signals.

switch-mode power supply

A type of DC power supply that uses a switching regulator to control the output voltage.

sync

Synchronization. The timing information used to coordinate signals and events.

system

In the AV industry, a compilation of multiple individual AV components and subsystems interconnected to achieve a communication goal.

system black

The lowest level of luminance a video system is capable of producing for its operating conditions.

system ground

The point at which the safety earth/ground for an electrical system is connected to the earth, usually through a highly conductive earthing/grounding spike driven into the ground (planet Earth).

T

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

tap

A connection to a transformer winding that allows you to select a different voltage from the transformer.

task lighting

Lighting directed to a specific surface or area that provides illumination for visual tasks.

tensile strength

The maximum stress that a material can withstand before deforming or stretching while being pulled.

threat

An individual, group, circumstance, or event that may exploit vulnerabilities in AV or information systems to adversely affect them.

threat/vulnerability model

A listing of AV services and devices that may contain vulnerabilities and therefore could be threatened with exploitation. The assessment should also account for threat agents who may attempt to compromise these systems.

three-phase power

Alternating-current electrical power supplied by three current-carrying conductors, each carrying an AC voltage with a phase offset of 120 degrees from one another. A fourth conductor, a neutral, is used as the return conductor. This type of supply is used for commercial and industrial applications.

threshold

The point at which a function or effect becomes active.

throw distance

The distance between a light source, such as a projector or luminaire, and a focusing surface, such as a stage or a screen.

Thunderbolt

Interface technology that transfers audio, video, power, and data over one cable in two directions. Thunderbolt versions 1 and 2 use the same connector as Mini DisplayPort (MDP), while Thunderbolt versions 3 and 4 use USB Type-C.

time code

A sequence of numeric codes generated at fixed intervals to provide a time synchronization signal. The Society of Motion Picture and Television Engineers (SMPTE) time code used throughout the AV and production industries uses an eight-digit data scheme, representing the hour, minute, second, and frame number for each frame of a video sequence. The SMPTE time code is encoded in a wide variety of formats, including being embedded in audio, video, and data streams.

time domain

A view of a signal as amplitude versus time. The display on a time-based oscilloscope shows the input signal in the time domain.

Time-Sensitive Networking (TSN)

The IEEE working group overseeing the Audio Video Bridging standard has been renamed Time-Sensitive Networking to reflect the standard's applicability to communication among different types of devices, such as network sensors. Also known as Audio Video Bridging (AVB).

transduction

The process by which one form of energy is changed into another.

transformer

A passive electrical device that electromagnetically transfers energy between two AC circuits. Commonly constructed of at least two electrically isolated induction coils sharing a common core.

transient disturbance

A momentary variation in a signal, such as a surge, spike, sag, dropout, or spurious noise.

transition-minimized differential signaling (TMDS)

A technology for transmitting high-speed serial data. The signaling method used in the HDMI and DVI interfaces.

transmission

The passage of a wave through a medium. Examples include the transmission of soundwaves through air and the transmission of electromagnetic waves through space.

Transmission Control Protocol (TCP)

A connection-oriented, reliable Transport-layer (layer 4) protocol. TCP transport uses two-way communication to provide guaranteed delivery of information to a remote host. It is connection-oriented, meaning it creates and verifies a connection with the remote host before sending it any data. It is reliable because it tracks each packet and ensures that it arrives intact. TCP is the most common transport protocol for sending data across the Internet.

transmission loss

The attenuation that occurs as a signal moves through a medium. Usually expressed in decibels.

transmissive technology

Any display device that creates images by controlling the passage of light.

triac

A bi-directional semiconductor device from the thyristor power-switching family that can switch both half-cycles of an AC current. The equivalent of a pair of SCRs in inverse parallel. The switching device used in many commercial phase-control dimmers.

tweeter

A loudspeaker that is specifically designed to reproduce frequencies above 3kHz.

twisted-pair

A pair of wires that are twisted around each other to facilitate common-mode noise rejection.

two-factor authentication

An authentication method that combines two different validation methods to address a single authentication request.

two-way/three-way loudspeaker

A loudspeaker enclosure containing two or three separate loudspeakers, each designed to optimally reproduce a portion of the audio spectrum. The multispeaker enclosure is intended to cover the entire spectrum from a single cabinet. Each loudspeaker may be fed from a separate amplifier (bi-amplification or tri-amplification), or the entire enclosure may be fed from a single amplifier with an internal crossover filter network used to send the optimal frequency band to each of the loudspeakers.

U

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)

UHD ecosystem

The video cameras, recorders, servers, media players, displays, distribution, processing, and networking technologies used for recording, editing, producing, delivering, and displaying ultra-high-definition video.

ultra-high-definition (UHD or ultra HD)

A term used to describe video formats with a minimum resolution of 3840×2160 pixels in a 16×9 or wider aspect ratio.

ultra-wideband (UWB)

UWB is a low-power communications protocol that transmits an extremely wide bandwidth (500+MHz) signal using time modulation to encode the data. Its signals are highly immune to interference from other RF systems, yet produce very little interference with them. UWB can detect the distance between the transmitter and receiver, enabling proximity detection and triggering.

unbalanced circuit

A circuit in which one conductor carries the signal and another conductor carries the return. The return conductor is often the cable shield or drain wire and is a low-impedance connection connected to the signal ground. As the impedances of the two conductors are quite different, they are unbalanced with respect to one another.

unicast streaming

A one-to-one connection between the streaming server sending out the data and client devices listening to the stream. Each client has a direct relationship with the server. Since the server is sending out a separate stream for each client, unicast streaming of media to three clients at 100kbps actually uses 300kbps of bandwidth. IP unicast streams may use either UDP or TCP transport, although TCP transport will inevitably require some buffering.

unity gain

Derived from the number 1; refers to no change in gain.

Universal Serial Bus (USB)

A standard for connecting, communicating, and supplying power between electronic devices. Version 3.2 of USB is capable of communicating at 20Gbps and can utilize a USB Type-C (USB-C) connector, which supports DisplayPort, HDMI, VGA, power, USB 2.0, and USB3.2. USB4 includes handling the Thunderbolt protocol. USB4 version 1 communicates at up to 40Gbps, while version 2 communicates at up to 80Gbps in symmetric mode, and at up to 120/40Gbps in asymmetric mode.

unshielded twisted-pair (UTP) cable

Typically used for data transfer, UTP cable contains multiple two-conductor pairs of similar impedance, twisted at regular intervals, employing no external shielding.

UX

User experience. How a user interacts with and experiences a system or an object.

V

A B C D E F G H I J K L M N O P Q R S T U V W X Z About

vectorscope

A specialized oscilloscope-type display used in video systems to display and measure chrominance accuracy and levels. A vectorscope mode may be included in video waveform monitoring systems.

vertical scan rate

The number of complete fields a device draws in a second. This may also be called the frame rate, vertical sync rate, or refresh rate. The vertical scan rate is measured in hertz (Hz).

videowall

A video display composed of a matrix of smaller video displays linked to display a contiguous image.

viewing angle

The angle at which a viewer is located in reference to the center axis of a display.

viewing area plan

A plan-view drawing of the viewing environment that identifies five viewing locations as defined in the requirements section of the ANSI/AVIXA V201.01 Standard Image System Contrast Ratio.

viewing cone

The volume of space containing the audience viewing a display. The term *cone* is used because there are width, height, and depth to the viewing space, which emanate from the center of the display.

virtual local area network (VLAN)

A network created when network devices on separate LAN segments are linked to form a logical group.

virtual private network (VPN)

A virtual point-to-point private connection established across a network via an encrypted tunneling protocol. VPNs are used for secure remote access, monitoring, troubleshooting, and control.

visual acuity

The eye's ability to discern fine details. There are several different kinds of acuity, including resolution acuity, which is the ability to detect that there are two stimuli, rather than one, in a visual field, and recognition acuity, which is the ability to identify correctly a visual target, such as differentiating between a G and a C.

visual field

The volume of space that can be seen when a person's head and eyes are absolutely still. It is specified as an angle, usually in degrees. The visual field of a single eye is termed monocular vision, and the combined visual field where the perceived image from both eyes overlap is called binocular vision.

Voice over Internet Protocol (VoIP)

A suite of technologies and protocols that allow the transmission of telephone calls and multimedia over Internet Protocol (IP) networks.

volatile memory

Computer memory that loses its data when no longer powered. This type of memory includes the fast-access, dynamic random-access memory (DRAM) associated with most processor CPUs and GPUs.

volt

The basic international unit of potential difference (electromotive force). It is represented by the symbol V.

voltage

The electrical potential difference across a circuit.

vulnerability

A weakness in a system, such as an AV or IT service, that may be exploited to adversely affect an organization.

vulnerability testing

An assessment process that involves tools that connect to networked AV or IT systems to determine how they are configured and what vulnerabilities may exist on them.

W# [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)**watt**

The international unit of power. It is represented by the symbol W.

waveform monitor

An oscilloscope-type monitor used to display the waveforms of signals. A video waveform monitor is a specialized monitor used to display and analyze a video signal's sync, luminance, and chroma. Some waveform monitors include a vectorscope mode.

wavelength

The distance between the corresponding points on two consecutive cycles of a wave. Measured in meters.

wayfinding

The use of audiovisual guides or signage to assist with navigation to a destination.

webcasting

The broadcasting of digital media such as audio or video over the World Wide Web, which audience members can stream live or access on demand.

white noise

A signal with a broad spectrum of random frequencies at the same energy level.

wide area network (WAN)

A data communications network that links local area networks (LANs) that are distributed over large geographic areas, such as cities, states, countries, regions, and continents.

wire

A single conductive element intended to carry a current.

wireless access point

A network device that allows other devices to access a wireless network.

wireless local area network (WLAN)

A network that shares information by radio frequency (RF) wireless transmission.

woofer

A loudspeaker that produces low frequencies, typically 20Hz to 200Hz.

work breakdown structure (WBS)

A deliverable-oriented grouping of project elements that will ultimately organize and define the total scope of the project. Each descending level represents an increasingly detailed definition of a project component.

X# [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)**XLR connector**

A latching, low-voltage connector used in professional audiovisual systems. The three-pin version is the standard audio signal cable for the production and AV industries. The four-pin version is widely used for communication headsets, and the five-pin version is the standard connector for the DMX512 digital lighting protocol. Also known as a *cannon connector*.

Z# [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Z](#) [About](#)**zone**

1. A defined area within a system. **2.** In lighting, a zone is a grouping of luminaires (lighting fixtures) that are focused on the same area. **3.** In digital signage, a zone is an area where specific content may be placed. **4.** In audio, a zone is an area where the same program is delivered.

About the Book

A B C D E F G H I J K L M N O P Q R S T U V W X Z About



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