A

***aa* auxiliary switch** *See: aa* contact; auxiliary switch.

AAAC Concentric-lay-stranded all aluminum alloy conductor. (T&D/PE) 524-1992r

AAC Concentric-lay-stranded all aluminum conductor. (T&D/PE) 524-1992r

***aa* contact** A contact that is open when the operating mechanism of the main device is in the standard reference position and that is closed when the operating mechanism is in the opposite position. *See also:* standard reference position. (SWG/PE) C37.100-1992

AACSR *See:* aluminum alloy conductor, steel reinforced.

***A* and *R* display (radar)** An *A*-display, any portion of which may be expanded. *See also:* navigation. (AES/RS) 686-1982s

AAU *See:* alternate access unit.

***a* auxiliary switch** *See: a* contact; auxiliary switch.

abampere The unit of current in the centimeter-gram-second (cgs) electromagnetic system. The abampere is 10 A. (Std100) 270-1966w

abandoned call (telephone switching systems) A call during which the calling station goes on-hook prior to its being answered. (COM) 312-1977w

ABASIC A dialect of the BASIC programming language. (C) 610.13-1993w

***A* battery** A battery designed or employed to furnish current to heat the filaments of the tubes in a vacuum-tube circuit. *See also:* battery. (EEC/PE) [119]

ABBET application An end-use program constructed using one or more ABBET components. (ATLAS) 1226-1993s

ABBET component An implementation of the services defined in an IEEE ABBET component standard. (ATLAS) 1226-1993s

ABBET implementation The installation and utilization of one or more ABBET applications. (ATLAS) 1226-1993s

ABBET layer A natural grouping to the ABBET services that is recognized by the ABBET layer model. (ATLAS) 1226-1993s

abbreviated dialing (telephone switching systems) A feature permitting the establishment of a call with an input of fewer digits than required under the numbering plan. (COM) 312-1977w

abbreviated ringing A short, variable burst of power ringing that is required to establish a temporary communications path in certain types of network pair-gain equipment. The switch is instructed, via trunk signals, to output this abbreviated ringing on the end user's line. (SCC31/AMR) 1390.3-1999, 1390.2-1999, 1390-1995

Abbreviated Test Language for All Systems (ATLAS) (1) A standard abbreviated English language used in the preparation and documentation of test procedures or test programs that can be implemented either manually or with automatic or semiautomatic test equipment. (ATLAS/SCC20) 1232-1995, 1226-1998, 771-1984s, 993-1997

(2) A test language used by test engineers in controlling automatic test equipment. (C) 610.13-1993w

A Broad-Based Environment for Test (ABBET) A set of international standards that define language-independent interfaces to industry standards regarding automatic testing and integrated diagnositcs. (SCC20) 993-1997

abbreviation A shortened form of a word or expression. *See also:* reference designation; symbol for a unit; letter combination; graphic symbol; mathematical symbol; symbol for a quantity; functional designation. (GSD) 267-1966

abend *See:* abnormal end.

ability A mode that a device can advertise using Auto-Negotiation. For modes that represent a type of data service, a device shall be able to operate that data service before it may advertise this ability. A device may support multiple abilities. (C/LM) 802.3-1998

abnormal decay The dynamic decay of multiply written, superimposed (integrated) signals whose total output amplitude changes at a rate distinctly different from that of an equivalent singly written signal. *Note:* Abnormal decay is usually very much slower than normal decay and is observed in bombardment-induced conductivity type of tubes. *See also:* charge-storage tube. (ED) 158-1962w

abnormal end Termination of a process prior to completion. *Synonym:* abend. *See also:* exception; abort. (C) 610.12-1990

abnormal glow discharge (gas tube) The glow discharge characterized by the fact that the working voltage increases as the current increases. *See also:* discharge. (Std100) [31]

abnormality Any deviation from the pre-established test conditions, including the tolerance limits, that may affect the outcome of the test. (PE/IC) 1407-1998

abnormal preamble A preamble that does not match the synchronization pattern resulting in a packet error. (C) 610.7-1995

abort (1) (software) To terminate a process prior to completion. *See also:* abend; exception. (C) 610.12-1990

(2) To terminate the transmission of a frame before it has been completely transmitted. (EMB/MIB) 1073.4.1-2000

abort completion point A point at which the execution of an aborted construct must complete. (C) 1003.5-1999

abort deferred operation An operation that always continues to completion without being affected by an abort. Certain operations are required by the Ada language to be abort deferred. (C) 1003.5-1999

abortive release An abrupt termination of a network connection that may result in the loss of data. (C) 1003.5-1999

abort sequence A sequence transmitted by an originating ring station that terminates the transmission of a frame prematurely. It also causes the ring station receiving this frame to terminate the frame's reception. (C/LM) 8802-5-1998

above threshold firing time (microwave switching tubes) (nonlinear, active, and nonreciprocal waveguide components) The time to establish an above-threshold discharge in the gas tube after the application of radio frequency power. This time delay is responsible for the spike in the leading edge of the output leakage waveform. *See also:* duplexer; gas tube. (MTT) 457-1982w

abrupt junction (nonlinear, active, and nonreciprocal waveguide components) (semiconductor) A semiconductor crystal having an *n*-region containing a near-constant net concentration of donor impurities adjoining a *p*-region with a near-constant net concentration of acceptors; used primarily in microwave frequency multipliers, dividers, and parametric circuits. (MTT) 457-1982w

ABS (cable systems in power generating stations) Conduit fabricated from acrylonitrile-butadiene-styrene. (PE/SUB/EDPG) 422-1977, 525-1992r

ABSBH load *See:* average busy season busy-hour load.

absolute accuracy Accuracy as measured from a reference that must be specified. (IA/EEC) [61], [74]

absolute address (software) An address that is permanently assigned to a device or storage location and that identifies the device or location without the need for translation or calculation. *Synonyms:* specific address; explicit address. *Contrast:* symbolic address; relative address; relocatable address. *See also:* absolute assembler; absolute code; absolute loader; absolute instruction. (C) 610.12-1990

(2) (A) (computers) An address that is assigned by the machine designer to a physical storage location. **(B) (computers)** A pattern of characters that identifies a unique storage loca-

tion without further modification. *See also:* machine address. (C) [20], [85]

(3) (A) An address that is permanently assigned to a device or storage location and that identifies the device or location without the need for translation or calculation. **(B)** The actual complete address of a device or storage location. *Synonyms:* specific address; address reference; machine address; explicit address. *See also:* relocatable address; virtual address; symbolic address; base address; relative address. (C) 610.10-1994

absolute altimeter (1) (electronic navigation) A device that measures altitude above local terrain. (AES/RS) 686-1982s, [42]

(2) (navigation aid terms) A device that measures altitude above local terrain. In its usual form, it does this by measuring the time interval between transmission of a signal and the return of its echo, or by measuring the phase difference between the transmitting signal and the echo. (AES/GCS) 172-1983w

absolute assembler An assembler that produces absolute code. *Contrast:* relocating assembler. (C) 610.12-1990

absolute block (automatic train control) A block governed by the principle that no train shall be permitted to enter the block while it is occupied by another train. (EEC/PE) [119]

absolute code (1) (microprocessor object modules) Data or executable machine code in memory or an image thereof. *Contrast:* relocatable code. (MM/C) 695-1985s

(2) (software) Code in which all addresses are absolute addresses. *Synonym:* specific code. *Contrast:* relocatable code. (C) 610.12-1990

absolute delay (1) (loran) The interval of time between the transmission of a signal from the master station and transmission of the next signal from the slave station. *See also:* navigation. (AES/RS/GCS) 686-1982s, 172-1983w, [42]

(2) (telecommunications) The interval of time between the transmission of a signal and the reception of the same signal at a different point in the circuit. (COM/TA) 1007-1991r

(3) The interval of time between the transmission of a signal and the reception of the same signal (or its associated signal, if in a different domain) at a different point in a circuit. *Synonym:* transmission delay or propagation delay. (COM/TA) 743-1995

(4) The time elapsed between transmission of a signal and reception of the same signal. (COM/TA) 1007-1991r

absolute deviation integral (automatic control) The time integral of the absolute value of the system deviation following a stimulus specified as to location, magnitude, and time pattern. *Note:* The stimulus commonly employed is a step input. (PE/EDPG) [3]

absolute dimension A dimension expressed with respect to the initial zero point of a coordinate axis. *See also:* coordinate dimension word. (IA/EEC) [61], [74]

absolute error (A) The amount of error expressed in the same units as the quantity containing the error. *Contrast:* relative error. **(B)** Loosely, the absolute value of the error; i.e., the magnitude of the error without regard to its algebraic sign. (C) 1084-1986

absolute gain *See:* gain.

absolute instruction A computer instruction in which all addresses are absolute addresses. *See also:* indirect instruction; effective instruction; direct instruction; immediate instruction. (C) 610.12-1990, 610.10-1994w

absolute loader (1) (microprocessor object modules) A process that can load one or more sections of absolute code only at the locations specified by the sections. *See also:* relocating loader. (C/MM) 695-1985s

(2) (software) A loader that reads absolute machine code into main memory, beginning at the initial address assigned to the code by the assembler or compiler, and performs no address adjustments on the code. *Contrast:* relocating loader. (C) 610.12-1990

absolute luminance threshold (illuminating engineering) Luminance threshold for a bright object like a disk on a totally dark background. (ED) [127]

absolute machine code (software) Machine language code that must be loaded into fixed storage locations at each use and may not be relocated. *See also:* relocatable machine code. (C/SE) 729-1983s

absolute path If the underlying system is based upon a conforming implementation of POSIX.1; then a pathname that begins with /; otherwise, *absolute path* is implementation defined. (C/PA) 1387.2-1995

absolute permissive block (automatic train control) A term used for an automatic block signal system on a track signaled in both directions. For opposing movements, the block is from siding to siding and the signals governing entrance to this block indicate stop. For following movements, the section between sidings is divided into two or more blocks, and train movements into these blocks, except the first one, are governed by intermediate signals usually displaying stop; then the trains proceed at restricted speed, as their most restrictive indication. (EEC/PE) [119]

absolute photocathode spectral response (diode-type camera tube) The ratio of the photocathode current, measured in amperes, to the radiant power incident on the photocathode face, measured in watts, as a function of the photon energy, frequency, or wavelength. Units: amperes/watt^{-1} (A/W^{-1}). (ED) 503-1978w

absolute refractory state (medical electronics) The portion of the electrical recovery cycle during which a biological system will not respond to an electric stimulus. (EMB) [47]

absolute Seebeck coefficient The integral, from absolute zero to the given temperature, of the quotient of the Thomson coefficient of the material by the absolute temperature. *See also:* thermoelectric device. (ED) [46]

absolute stability Global asymptotic stability maintained for all nonlinearities within a given class. *Note:* A typical problem to which the concept of absolute stability has been applied consists of a system with dynamics described by the vector differential equation

$$\dot{x} = Ax + bf(\sigma)$$

$$\sigma = c^{\tau}x$$

with a nonlinearity class defined by the conditions

$$f(0) = 0$$

$$k_1 \leq f(\sigma)/\sigma \leq k_2$$

The solution $x(t) = 0$ is said to be absolutely stable if it is globally asymptotically stable for all nonlinear functions $f(\sigma)$ in the above class. *See also:* control system. (CS/IM) [120]

absolute steady-state deviation (control) The numerical difference between the ideal value and the final value of the directly controlled variable (or another variable, if specified). *See also:* deviation; percent steady-state deviation. (IA/IAC) [60]

absolute system deviation (control) At any given point on the time response, the numerical difference between the ideal value and the instantaneous value of the directly controlled variable (or another variable, if specified). *See also:* deviation. (IA/IAC) [60]

absolute threshold The luminance threshold or minimum perceptible luminance (photometric brightness) when the eye is completely dark-adapted. *See also:* visual field. (ED) [127]

absolute transient deviation (control) The numerical difference between the instantaneous value and the final value of the directly controlled variable (or another variable, if specified). *See also:* percent transient deviation; deviation. (IA/IAC) [60]

absolute value The magnitude of a quantity without regard to its algebraic sign. (C) 1084-1986w

absolute-value circuit A transducer or circuit employed in analog computers that produces an output signal equal in magnitude to the input signal but always of one polarity. (C) 610.10-1994w, 165-1977w

absolute-value device A transducer that produces an output signal equal in magnitude to the input signal but always of one polarity. *See also:* electronic analog computer. (C) 165-1977w

absorbed dose The energy imparted to the material by the incident radiation (usually abbreviated to "dose"). It is dependent on the magnitude of the radiation field and on the degree of interaction between the radiation and the material. The SI unit of absorbed dose is the gray (Gy), which equals one joule per kilogram. A special unit of absorbed dose, the rad (rd), is also widely used. One gray equals 100 rd (10 Gy = 1 Mrd). (DEI/RE) 775-1993w

absorbed dose rate The increment of absorbed dose in a given time interval (usually abbreviated to "dose rate"). The SI unit is grays per second. Special units of rads per second or per hour are also widely used at present. (DEI/RE) 775-1993w

absorbed electrolyte Electrolyte in a VRLA cell that has been immobilized in absorbent separators. (SB) 1189-1996

absorbed electrolyte cell A valve-regulated lead-acid (VRLA) cell whose electrolyte has been immobilized in absorbent separator (normally, glass or polymeric fiber). *Synonyms:* absorbed glass mat cell; starved electrolyte cell. (IA/PSE) 446-1995

absorbed glass mat cell *See:* absorbed electrolyte cell.

absorber-lined chamber (ALC) A room or enclosure (either shielded or unshielded) with all of its surfaces lined with radio-frequency (RF) absorber material. Commonly referred to as an anechoic chamber. (EMC) 1128-1998

absorber-lined open-area test site (ATS) An open-area test site (OATS) in which the ground plane is covered with radio-frequency (RF) absorber to suppress ground reflections. *See also:* open-area test site. (EMC) 1128-1998

absorbing clamp A portable testing device that is effective at detecting electromagnetic radiation. The absorbing clamp has a great capacity for electromagnetic compatibility cable measurements in the frequency range of 30–1000 MHz, and is non-destructive to the specimen. The test fixture clamps over the sample cable and inductively detects signal leakage. (PE/IC) 1143-1994r

absorbing Markov chain model A Markov chain model that has at least one absorbing state and in which from every state it is possible to get to at least one absorbing state. (C) 610.3-1989w

absorbing state In a Markov chain model, a state that cannot be left once it is entered. *Contrast:* nonabsorbing state. (C) 610.3-1989w

absorptance (illuminating engineering) The ratio of the absorbed flux to the incident flux. *Note:* The sum of the hemispherical reflectance, the hemispherical transmittance, and the absorptance is one. (ED) [127]

absorption (1) (fiber optics) In an optical waveguide, that portion of attenuation resulting from conversion of optical power into heat. *Note:* Intrinsic components consist of tails of the ultraviolet and infrared absorption bands. Extrinsic components include impurities, for example, the OH^- ion and transition metal ions and, defects; for example, results of thermal history and exposure to nuclear radiation. *See also:* attenuation. (Std100) 812-1984w

(2) (illuminating engineering) A general term for the process by which incident flux is converted to another form of energy, usually and ultimately to heat. *Note:* All of the incident flux is accounted for by the processes of reflection, transmission, and absorption. (ED) [127]

(3) (laser maser) The transfer of energy from a radiation field to matter. (LEO) 586-1980w

(4) The process of converting electromagnetic energy to heat. (AP/PROP) 211-1997

absorption band A band of frequencies for which a medium is considered to be absorbing. (AP/PROP) 211-1997

absorption coefficient (κ_a) (1) (power station noise control) The ratio of the energy absorbed by the surface to the energy incident upon it. (PE/EDPG) 640-1985w

(2) (of a medium) The rate of decrease of power density of a wave per unit distance, due to absorption. For a homogeneous medium with relative complex permittivity ε_r and the permeability of free space μ_0:

$$\kappa_a = -4\pi \mathrm{Im}\{\sqrt{\varepsilon_r}\}/\lambda_0$$

where

λ_0 = the free-space wavelength
$\exp(+j\omega t)$ = the time factor

For inhomogeneous media. *See also:* extinction coefficient. (AP/PROP) 211-1997

absorption cross-section (σ_a) (of a lossy body) The ratio of power absorbed by the body, P_a, to the power density of an incident plane wave, S_i:

$$\sigma_a = P_a/S_i$$

See also: extinction cross-section. (AP/PROP) 211-1997

absorption current (1) (rotating machinery) (or component) A reversible component of the measured current, which changes with time of voltage application, resulting from the phenomenon of "dielectric absorption" within the insulation when stressed by direct voltage. (PE/EM) 95-1977r

(2) (electric submersible pump cable) Current resulting from charge absorbed in the dielectric as a result of polarization. (IA/PE/PC/IC/TR) 1017-1985s, 400-1991, C57.19.03-1996

(3) A current resulting from molecular polarizing and electron drift, which decays with time of voltage application at a decreasing rate from a comparatively high initial value to nearly zero, and depends on the type and condition of the bonding material used in the insulation system. (PE/EM) 43-2000

absorption, deviative *See:* deviative absorption.

absorption frequency meter (reaction frequency meter) (waveguide) A one-port cavity frequency meter that, when tuned, absorbs electromagnetic energy from a waveguide. *See also:* waveguide. (AP/ANT) [35]

absorption loss (data transmission) The loss of signal energy in a communication circuit that results from coupling to a neighboring circuit or conductor. (PE) 599-1985w

absorption modulation A method for producing amplitude modulation of the output of a radio transmitter by means of a variable-impedance (principally resistive) device inserted in or coupled to the output circuit. (BT) 182A-1964w

absorptive attenuator *See:* resistive attenuator.

absorptive loss *See:* arc loss.

abstract class (1) An OM class of OM objects of which instances are forbidden. (C/PA) 1328.2-1993w, 1326.2-1993w, 1224.2-1993w, 1327.2-1993w

(2) A class, instances of which are forbidden unless they belong to one of its concrete subclasses. (C/PA) 1328-1993w, 1224.1-1993w, 1327-1993w, 1238.1-1994w, 1224-1993w

(3) A class that cannot be instantiated independently, i.e., instantiation must be accomplished via a subclass. A class for which every instance must also be an instance of a subclass in the cluster (i.e., a total cluster) is called an abstract class with respect to that cluster. (C/SE) 1320.2-1998

abstract data type (1) A data type for which only the properties of the data and the operations to be performed on the data are specified, without concern for how the data will be represented or how the operations will be implemented. (C) 610.12-1990

(2) A data type for which the user can create instances and operate on those instances, but the range of valid operations available to the user does not depend in any way on the internal representation of the instances or the way in which the

operations are realized. The data is "abstract" in the sense that values in the extent, i.e., the concrete values that represent the instances, are any set of values that support the operations and are irrelevant to the user. An abstract data type defines the operations on the data as part of the definition of the data and separates what can be done (interface) from how it is done (realization). (C/SE) 1320.2-1998

abstraction (A) A view of an object that focuses on the information relevant to a particular purpose and ignores the remainder of the information. *See also:* data abstraction. **(B)** The process of formulating a view as in (A). (C) 610.12-1990

abstract machine (A) (software) A representation of the characteristics of a process or machine. **(B) (software)** A module that processes inputs as though it were a machine. *See also:* module; process. (C/SE) 729-1983

abstract quantity *See:* mathematico-physical quantity.

abstract symbol A symbol whose meaning and use have not been determined by a general agreement but have to be defined for each application of the symbol. (C) 1084-1986w

Abstract Syntax Notation One (ASN.1) A notation that both enables complicated types to be defined and also enables values of these types to be specified. (C/PA) 1328.2-1993w, 1224.2-1993w, 1327.2-1993w, 1326.2-1993w

ac (alternating current) *See:* alternating current.

AC *See:* acoustic coupler.

ACA *See:* adjacent-channel attenuation.

academic simulation *See:* instructional simulation.

ac analog computer An analog computer in which electrical signals are of the form of carrier signals where the absolute value of a mathematical variable is represented by the amplitude of the carrier and the sign of the mathematical variable is represented by the phase (0 or 180 degrees) of the carrier relative to the computer. (C) 610.10-1994w, 165-1977w

ACAR *See:* aluminum conductor, aluminum alloy reinforced.

ac breakdown voltage (gas tube surge-protective device) The minimum root-mean-square value of sinusodial voltage at frequencies between 15 Hz and 62 Hz that results in arrester sparkover. (SPD/PE) C62.31-1981s

ac cable (armored cable) A fabricated assembly of insulated conductors in a flexible metallic enclosure. (NESC/NEC) [86]

accelerated aging The application of intensified aging stress or stresses in order to increase the degradation rate above that expected in service. (DEI/RE) 775-1993w

accelerated life test (test, measurement, and diagnostic equipment) A test in which certain factors, such as voltage, temperature, and so forth, are increased or decreased beyond normal operating values to obtain observable deterioration in a reasonable period of time, and thereby afford some measure of the probable life under normal operating conditions or some measure of the durability of the equipment when exposed to the factors being aggravated. (MIL) [2]

accelerated test (evaluation of thermal capability) (thermal classification of electric equipment and electrical insulation) A functional test in which one or more factors of influence are increased in magnitude or frequency of application so as to decrease the time needed for the test. (EI) 1-1986r

accelerating (rotating machinery) The process of running a motor up to speed after breakaway. *See also:* asynchronous machine. (PE) [9]

accelerating device (power system device function numbers) A device that is used to close or to cause the closing of circuits that are used to increase the speed of a machine. (PE/SUB) C37.2-1979s

accelerating electrode An electrode to which a potential is applied to increase the velocity of the electrons or ions in the beam. (NPS) 61-1971w, 398-1972r

accelerating grid *See:* accelerating electrode.

accelerating relay A programming relay whose function is to control the acceleration of rotating electrical equipment. (SWG/PE) C37.100-1992

accelerating time (control) The time in seconds for a change of speed from one specified speed to a higher specified speed while accelerating under specified conditions. *See also:* electric drive. (IA/ICTL/APP/IAC) [69], [60]

accelerating torque (rotating machinery) Difference between the input torque to the rotor (electromagnetic for a motor or mechanical for a generator) and the sum of the load and loss torques; the net torque available for accelerating the rotating parts. *See also:* rotor. (PE) [9]

accelerating voltage (oscilloscopes) The cathode-to-viewing-area voltage applied to a cathode-ray tube for the purpose of accelerating the electron beam. *See also:* oscillograph. (IM/HFIM) [40]

acceleration (electric drive) Operation of raising the motor speed from zero or a low level to a higher level. *See also:* electric drive. (IA/IAC) [60]

acceleration factor The ratio between the times necessary to obtain the same stated proportion of failures in two equal samples under two different sets of stress conditions involving the same failure modes and mechanisms. (R) [29]

acceleration-forced response (automatic control) The total (transient plus steady-state) time response resulting from a sudden increase in the rate of the rate of change of input from zero to some finite value. (PE/EDPG) [3]

acceleration-insensitive drift rate (gyros) The component of systematic drift rate that has no correlation with acceleration. *See also:* systematic drift rate. (AES/GYAC) 528-1994

acceleration, programmed *See:* programmed acceleration.

acceleration-sensitive drift rate (gyros) Those components of systematic drift rates that are correlated with the first power of linear acceleration applied to the gyro case. The relationship of these components of drift rate to acceleration can be stated by means of coefficients having dimensions of angular displacement per unit time per unit acceleration for accelerations along each of the principal axes of the gyro (for example, drift rate caused by mass unbalance). *See also:* systematic drift rate. (AES/GYAC) 528-1994

acceleration space (velocity-modulated tube) The part of the tube following the electron run in which the emitted electrons are accelerated to reach a determined velocity. *See also:* velocity-modulated tube. (ED) [45], [84]

acceleration-squared-sensitive drift rate (gyros) Those components of systematic drift rates that are correlated with the second power or product of linear accelerations applied to the gyro case. The relationship of these components of drift rate to acceleration can be stated by means of coefficients having dimensions of angular displacement per unit time per unit acceleration squared for accelerations along each of the principal axes of the gyro and angular displacement per unit time per the product of accelerations along combinations of two principal axes of the gyro (for example, drift rate caused by anisoelasticity). (AES/GYAC) 528-1994

acceleration time The part of access time that is required to bring a storage device, typically a tape or disk drive, to the speed at which data can be read or written. *Synonym:* start time. *Contrast:* deceleration time. (C) 610.10-1994w

acceleration, timed *See:* timed acceleration.

accelerator (1) An Xt Intrinsics facility that allows the binding of a widget event to a keyboard action or a series of actions. (C) 1295-1993w

(2) A circuit or device that accelerates some unit in a computer, as in an accelerator board. *See also:* hardware accelerator. (C) 610.10-1994w

accelerator board A printed circuit board that replaces or augments the computer's main processor with a faster processor. (C) 610.10-1994w

accelerometer A device that senses the inertial reaction of a proof mass for the purpose of measuring linear or angular acceleration. *Note:* In its simplest form, an accelerometer con-

sists of a case-mounted spring and mass arrangement in which displacement of the mass from its rest position, relative to the case, is proportional to the total nongravitational acceleration experienced along the instrument's sensitive axes.
(AES/GYAC/GCS) 528-1994, 172-1983w

accent lighting (illuminating engineering) Directional lighting to emphasize a particular object or draw attention to a part of the field of view. (ED) [127]

accept The condition assumed by an LLC upon accepting a correctly received PDU for processing.
(C/LM/CC) 8802-2-1998

acceptability criteria A set of standards, established by the modeling and simulation (M&S) application sponsor or accreditation authority, that a particular model or simulation must meet to be accredited for a given use. The criteria will be unique to each problem and will give key insights to potential solutions. (C/DIS) 1278.4-1997

acceptable (1) (diesel-generator unit) Demonstrated to be adequate by the safety analysis of the plant.
(PE/NP) 387-1995

(2) Demonstrated to be adequate by the safety analysis of the station. (PE/NP) 603-1998

acceptable deviation In the context of evaluating specific test-case post conditions, a deviation is permitted based on an informed decision to specify that deviation as noncritical.
(C/PA) 2000.2-1999

acceptable energized background noise level (1) (A) Energized background noise level present during test that is considered acceptable. **(B)** (partial discharge measurement in liquid-filled power transformers and shunt reactors) Energized background noise level present during test that is considered acceptable. It should not exceed 50% of the acceptable terminal discharge level and in any case should be below 100 pC. (PE/TR) C57.113-1988

(2) (dry-type transformers) The acceptable energized background noise level present during test should not exceed 50% of the acceptable terminal discharge level, and in any case should be below 100 pC (5 pC if an acceptable terminal discharge level of 10 pC is required.).
(PE/TR) C57.124-1991r

(3) Energized background noise level present during test that does not exceed 50% of the acceptable partial discharge level of the test specimen. Spurious noise, however, can exceed this level if identified as not emanating from the specimen. This may require extending the period of voltage application.
(SWG/PE) 1291-1993r

acceptable terminal partial discharge level (1) (dry-type transformers) The acceptable terminal partial discharge level is that specified maximum terminal partial discharge value for which measured terminal partial discharge values exceeding said value are considered unacceptable. The method of measurement and the test voltage for a given test object must be specified with the acceptable terminal partial discharge level. (PE/TR) C57.124-1991r

(2) The specified maximum terminal partial discharge level for which measured terminal partial discharge values exceeding this value are considered unacceptable. This level may be defined by the appropriate apparatus test standard or may be a level agreed to by the user and manufacturer. The method of measurement and the test voltage for a given test object must be specified with respect to the acceptable terminal partial discharge level. (SWG/PE) 1291-1993r

(3) That specified maximum terminal partial discharge value for which measured terminal partial discharge values exceeding said value are considered unacceptable. The method of measurement and the test voltage for a given test object should be specified with the acceptable terminal partial discharge level. (PE/TR) C57.113-1988s

acceptance An action by an authorized representative of the acquirer by which the acquirer assumes ownership of software products as partial or complete performance of a contract. (C/SE) J-STD-016-1995

acceptance angle (fiber optics) Half the vertex angle of that cone within which optical power may be coupled into bound modes of an optical waveguide. *Notes:* 1. Acceptance angle is a function of position on the entrance face of the core when the refractive index is a function of radius in the core. In that case, the local acceptance angle is

$$\arcsin \sqrt{n^2(r) - n^2{}_2}$$

where $n(r)$ is the local refractive index and n_2 is the minimum refractive index of the cladding. The sine of the local acceptance angle is sometimes referred to as the local numerical aperture. 2. Power may be coupled into leaky modes at angles exceeding the acceptance angle. *See also:* launch numerical aperture; power-law index profile. (Std100) 812-1984w

acceptance criteria (1) (nuclear power quality assurance) Specified limits placed on characteristics of an item, process, or service defined in codes, standards, or other requirement documents. (PE/NP) [124]

(2) (software) The criteria that a system or component must satisfy in order to be accepted by a user, customer, or other authorized entity. *See also:* requirement; test criteria.
(C) 610.12-1990

acceptance proof test (rotating machinery) A test applied to new insulated winding before commercial use. It may be performed at the factory or after installation, or both.
(PE/EM) 95-1977r

acceptance quality level (aql) The maximum percent defective (maximum number of defects per 100 units) that, for the purpose of a sampling inspection, can be considered satisfactory as a process average. (PE/T&D) C135.61-1997

acceptance test (1) (A) (general) A test to demonstrate the degree of compliance of a device with purchaser's requirements. **(B) (general)** A test demonstrating the quality of the units of a consignment, without implication of contractual relations between buyer and seller. *Note:* American National Standards should use the term "conformance test" as directed by the Standards Council of ANSI, rather than the term acceptance test. Use of the term "conformance test" avoids the implication of contractual relations between buyer and seller. *See also:* test; acceptance testing; routine test; conformance tests. (SWG/SPD/PE) 32-1972, C37.100-1981

(2) (power cable systems) A test made after installation but before the cable system is placed in normal service. This test is intended to detect shipping or installation damage and to show any gross defects or errors in workmanship or splicing and terminating. (PE/IC) 400-1991

(3) A constant current or power capacity test made on a new battery to determine that it meets specifications or manufacturer's ratings.
(PE/EDPG/NP) 1106-1995, 450-1995, 380-1975w

(4) (electric submersible pump cable) Test intended to detect damage prior to the initial installation of new cable.
(IA/PC) 1017-1985s

(5) (battery) Capacity test made on a new battery to determine that it meets specifications or manufacturer's ratings.
(SB) 1188-1996

acceptance testing (1) (A) (software) Formal testing conducted to determine whether or not a system satisfies its acceptance criteria and to enable the customer to determine whether or not to accept the system. **(B) (software)** Formal testing conducted to enable a user, customer, or other authorized entity to determine whether to accept a system or component. *Contrast:* development testing. *See also:* operational testing; qualification testing. (C) 610.12-1990

(2) (nuclear power plants) Evaluation or measurement of performance characteristics to verify that certain stated specifications and contractual requirements are met.
(NI) N42.17B-1989r, N42.20-1995

(3) Testing conducted in an operational environment to determine whether a system satisfies its acceptance criteria (i.e., initial requirements and current needs of its user) and to enable the customer to determine whether to accept the system.
(C/SE) 1012-1998

Acceptance Test or Launch Language A test language used to test applications on the Apollo launch vehicle. (C) 610.13-1993w

acceptance tests *See:* conformance tests.

accepted test A test on a system or model system that simulates the electrical, thermal, and mechanical stresses occurring in service. (IA/PC) 1068-1996

acceptor *See:* semiconductor.

access (1) (A) The process of obtaining data from or placing data into a storage device. *Synonym:* storage access. *See also:* access method; access mode. **(B)** To obtain data from or place data into a storage device as in definition (A). *See also:* random access; partitioned access; direct access; indexed sequential access; serial access; sequential access; indexed access. (C) 610.5-1990, 610.10-1994

(2) (A) Any means of establishing logical or physical communication with a computer or communications system. **(B)** Any means of obtaining the use of such a system. **(C)** Any actions that result in a flow of information involving such a system. **(D)** That part of a public network connecting the customer premises to the public network switching system (central office). (C) 610.7-1995

(3) To obtain data from or plate data into a storage device as in definition (A). *Synonym:* storage access. (C) 610.10-1994w

access arm In a magnetic disk device, an arm that supports and positions one or more magnetic heads. *See also:* voice-coil actuator. (C) 610.10-1994w

access code (telephone switching systems) One or more digits required in certain situations in lieu of or preceding an area or office code. (COM) 312-1977w

access control (1) The prevention of unauthorized use of a resource, including the prevention of use of a resource in an unauthorized manner. (LM/C) 802.10-1992

(2) The means to allow authorized entry and prevent unauthorized entry of persons, vehicles, and materials into an area. (PE/NP) 692-1997

(3) The prevention of unauthorized usage of resources. (C/LM) 8802-11-1999

access control field The *protocol control information* in a *slot,* which is used to support the *access control function.* (LM/C) 8802-6-1994

access control function The generic name for the *Queued Arbitrated (QA) Access* and *Pre-Arbitrated (PA) Access functions* in the *DQDB Layer* that control access to the medium in this part of ISO/IEC 8802. (LM/C) 8802-6-1994

access-control mechanism (software) Hardware or software features, operating procedures, or management procedures designed to permit authorized access to a computer system. *See also:* hardware; computer system; procedure; software. (C/SE) 729-1983s

access coupler (fiber optics) A device placed between two waveguide ends to allow signals to be withdrawn from or entered into one of the waveguides. *See also:* optical waveguide coupler. (Std100) 812-1984w

access credentials Data that are transferred to establish the claimed identity of a roadside equipment (RSE) application. (SCC32) 1455-1999

access fitting A fitting permitting access to the conductors in a raceway at locations other than at a box. *See also:* raceway. (EEC/PE) [119]

accessibility (1) (software) The extent to which software facilitates selective use or maintenance of its components. *See also:* software; maintenance; components. (C/SE) 729-1983s

(2) (telephone switching systems) The ability of a given inlet to reach the available outlets. (COM) 312-1977w

(3) (A) (As applied to equipment). Admitting close approach; not guarded by locked doors, elevation, or other effective means. *See also:* readily accessible. **(B)** (As applied to wiring methods.) Capable of being removed or exposed without damaging the building structure or finish or not permanently closed in by the structure or finish of the building. *See also:* exposed; concealed. (NESC/NEC) [86]

(4) (power and distribution transformers) Admitting close approach because not guarded by locked doors, elevation, or other effective means. (PE/TR) C57.12.80-1978r

(5) (wiring methods) Not permanently closed in by the structure or finish of the building; capable of being removed without disturbing the building structure or finish. (PE/EEC) [119]

(6) Admitting close approach to contact by persons due to lack of locked doors, elevation, or other effective safeguards. (PE/TR) C57.12.80-1978r

accessible object An object for which the client possesses a valid designator or handle. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

accessible, readily *See:* readily accessible.

accessible voltage drop Voltage difference between any two points accessible to workers at the work site. (T&D/PE) 1048-1990

access list A list of user IDs and group IDs of those users and groups authorized to place jobs in a queue. An access list is associated with a queue. A batch server uses the access list of a queue as one of the criteria in deciding to put a job in a queue. (C/PA) 1003.2d-1994

access mechanism A mechanism that is responsible for moving an access arm. *Synonym:* actuator. (C) 610.10-1994w

access method (1) (LANs) A communication technique where data is allowed or disallowed access to a communication system. (LM/C) 802.7-1989r

(2) (data management) A method for logically structuring data so that the storage location of any specific data item is well-defined. *Synonym:* access technique. *See also:* direct access method; basic access method. (C) 610.5-1990w

access mode (1) A technique that is used to access logical records within a file. *See also:* indexed sequential access mode; sequential access mode; file access mode; direct access mode. (C) 610.5-1990w

(2) A form of access permitted to a file. (PA/C) 9945-1-1996

(3) A form of access to a file or an attribute of a file indicating the kind of operations that may be performed on the file. (C) 1003.5-1999

accessories (1) (power and distribution transformers) (general) Devices that perform a secondary or minor duty as an adjunct or refinement to the primary or major duty of a unit of equipment. (SWG/PE/TR) C37.100-1992, C57.12.80-1978r

(2) (raceway) (raceway systems for Class 1E circuits for nuclear power generating stations) Devices that are used to supplement the functions of raceway systems. These include such items as dropouts, covers, conduit adapters, fastening devices (items such as conduit clamps, support connections, and cable tray cover clamps), adjustable connectors, and dividers. (PE/NP) 628-1987r

accessory (1) (test, measurement, and diagnostic equipment) An assembly of a group of parts or a unit that is not always required for the operation of a test set or unit as originally designed, but serves to extend the functions or capabilities of the test set; similarly, as headphones for a radio set supplied with a loudspeaker; a vibrator power unit for use with a set having a built-in power supply, or a remote control unit for use with a set having integral controls. (MIL) [2]

(2) (electric and electronics parts and equipment) A basic part, subassembly, or assembly designed for use in conjunction with or to supplement another assembly, unit, or set, contributing to the effectiveness thereof without extending or varying the basic function of the assembly or set. An accessory may be used for testing, adjusting, or calibrating purposes. Typical examples: test instrument, recording camera for radar set, headphones, emergency power supply. (GSD) 200-1975w

(3) (power line maintenance) A removable device attached to a major or primary operating tool allowing diversified operations. Example: universal tool. (T&D/PE) 516-1987s

accessory equipment (Class 1E motor) (nuclear power generating station) Devices other than the principal motor components that are furnished with or built as a part of the motor structure and are necessary for the operation of the motor. (PE/NP) 334-1974s

access path The manner in which related data items are linked to one another to permit access. (C) 610.5-1990w

access point (AP) (1) The point at which an abstract service is obtained. (C/PA) 1327.2-1993w, 1224.2-1993w, 1326.2-1993w, 1328.2-1993w

(2) Any entity that has station functionality and provides access to the distribution services, via the wireless medium (WM) for associated stations. (C/LM) 8802-11-1999

access technique *See:* access method.

access time (1) A time interval that is characteristic of a storage device, and is essentially a measure of the time required to communicate with that device. *Note:* Many definitions of the beginning and ending of this interval are in common use. (C) 162-1963w

(2) The elapsed time required to read from or write to a storage device after the proper controls and address have been applied. *See also:* latency; seek time; acceleration time; mean access time; transfer time. (C) 610.10-1994w

(3) (A) The time interval between the instant at which data are called for from a storage device and the instant delivery is completed, that is, the read time. **(B)** The time interval between the instant at which data are requested to be stored and the instant at which storage is completed; that is, the write time. (C) [85]

(4) (A) (acousto-optic deflector) The minimum time to randomly deflect the light beam from one spot position to another. It is given by the time it takes the acoustic beam to cross the optical beam; viz, $\tau = S/V$, with τ the access time, S the optical beam dimension, and V the acoustic velocity. **(B) (acoustically tunable optical filter)** The minimum time to randomly tune the filter from one wavelength to another. It is given by the time it takes the acoustic beam to cross the optical beam; namely: $\tau = S \cdot V$, with S the length of the optical beam along the acoustic beam direction and V the acoustic velocity. (UFFC) [17]

access tools (relaying) (switchgear assembly) (tamper-resistant switchgear assembly) Keys or other special accessories with unique characteristics that make them suitable for gaining access to the tamper-resistant switchgear assembly. (SWG/PE) C37.100-1981s, C37.20-1968w

access type *See:* file access mode.

access unit (AU) (1) The abstraction of the device that provides the IEEE 802.9 functionality, i.e., the integrated set of services, to stations connected across the IEEE 802.9 interface. (LM/C/COM) 8802-9-1996

(2) The functional unit in a *node* that performs the *DQDB Layer* functions to control access to both *buses.* Access units attach to each bus via a *write* connection and a *read* tap placed *upstream* of the write connection. (LM/C) 8802-6-1994

accident An unplanned event or series of events that results in death, injury, illness, environmental damage, or damage to or loss of equipment or property. (C/SE) 1228-1994

accommodation (1) (general) (illuminating engineering) The process by which the eye changes focus from one distance to another. *See also:* visual field. (ED) [127]

(2) (laser maser) The ability of the eye to change its power and thus focus for different object distances. (LEO) 586-1980w

accommodation, electrical *See:* electrical accomodation.

accommodation spaces Spaces provided for passengers and crew members that are used for berthing, dining rooms, mess spaces, offices, private baths, toilets and showers, lounges, and similar spaces. (IA/MT) 45-1998

accompanying documents Documents accompanying equipment or an accessory and containing all important documentation for the user, operator, installer, or assembler of equipment, particularly regarding safety. (EMB/MIB) 1073.4.1-2000

ac converter (self-commutated converters) A converter for changing alternating current (ac) power of a given voltage, frequency, and phase number to ac power in which one or more of these parameters are different. (IA/SPC) 936-1987w

accounting machine A device that reads data from external storage media, such as cards or tapes, and automatically produces accounting records or tabulation, usually on continuous forms. (C) 610.10-1994w

accounting management In networking, a management function defined for collecting and processing of data to evaluate resource consumption. (C) 610.7-1995

accreditation (1) The systematic and objective determination of a laboratory's competence to perform its services according to specific test methods/standards, by a qualified accreditation body, and issuance of a certificate attesting to that competence by the body. (NI) N42.23-1995

(2) *See also:* distributed simulation accreditation; model accreditation. (DIS/C) 1278.3-1996

(3) (A) Model/simulation accreditation is the official certification that a model or simulation is acceptable for use for a specific purpose. **(B)** Distributed simulation accreditation is the official certification that a distributed simulation is acceptable for use for a specific purpose. (C/DIS) 1278.4-1997

accredited standards committee A standards developing committee whose procedures have been determined to meet ANSI's requirements for fairness, openness, and other attributes necessary for developing a consensus position on a proposed ANSI standard relating to a specific technology area. (C) 610.7-1995

accredited standards development organization An organization recognized as a standards development organization by ISO, IEC, ITU-T, or recognized as a standards development organization by one of the member bodies of one of these three organizations. (C/PA) 14252-1996

accredited testing laboratory A testing laboratory that has been accredited by an authoritative body with respect to its qualifications to perform verification tests on the type of instruments covered by this standard. (NI) N42.20-1995

accumulated jitter The jitter at a PHY entity in the ring measured against the transmit clock of the active monitor. It is the total jitter accumulated by all the stations from the active monitor to the measurement point. It is typically used to determine the required size of the elastic buffer. (C/LM) 8802-5-1998

accumulated service years The length of time the transformer is operating from its in-service date until it is retired from service. It is suggested that de-energized time of three months or more not be considered in-service time. (PE/TR) C57.117-1986r

accumulating stimulus (electrotherapy) A current that increases so gradually in intensity as to be less effective than it would have been if the final intensity had been abruptly attained. *See also:* electrotherapy. (EMB) [47]

accumulator (1) (A) A device that retains a number (the augend), adds to it another number (the addend), and replaces the augend with the sum. **(B)** Sometimes only the part of definition (A) that retains the sum. *Note:* The term is also applied to devices that function as described but that also have other properties. (C) 162-1963

(2) Container that stores hydraulic oil under pressure as a source of fluid energy. (PE/EDPG) 1020-1988r

(3) A register or storage location in which the result of an operation is formed. (C) 610.10-1994w

accumulator function *See:* supervisory control functions.

accumulator point interfaces Master station or RTU (or both) element(s) that accept(s) a pulsing digital input signal to accumulate a total of pulse counts. (SUB/PE) C37.1-1994

accumulator SCADA function The capability of a supervisory system to accept and totalize digital pulses and make them available for display or recording, or both. (SUB/PE) C37.1-1994

accuracy (1) The quality of freedom from mistake or error, that is, of conformity to truth or to a rule. *Notes:* 1. Accuracy is distinguished from precision as in the following example: A six-place table is more precise than a four-place table. However, if there are errors in the six-place table, it may be more or less accurate than the four-place table. 2. The accuracy of an indicated or recorded value is expressed by the ratio of the error of the indicated value to the true value. It is usually expressed in percent. Since the true value cannot be determined exactly, the measured or calculated value of highest available accuracy is taken to be the true value or reference value. Hence, when a meter is calibrated in a given echelon, the measurement made on a meter of a higher-accuracy echelon usually will be used as the reference value. Comparison of results obtained by different measurement procedures is often useful in establishing the true value. *See also:* static accuracy; dynamic accuracy; measurement system; electronic analog computer. (IM) [38]

(2) (A) (analog computer) Conformity of a measured value to an accepted standard value. **(B) (analog computer)** A measure of the degree by which the actual output of a device approximates the output of an ideal device nominally performing the same function. *See also:* electronic analog computer. (C) 165-1977

(3) (power supply) Used as a specification for the output voltage of power supplies, accuracy refers to the absolute voltage tolerance with respect to the stated nominal output. (AES) [41]

(4) (numerically controlled machines) Conformity of an indicated value to the true value, that is, an actual or an accepted standard value. *Note:* Quantitatively, it should be expressed as an error or an uncertainty. The property is the joint effect of method, observer, apparatus, and environment. Accuracy is impaired by mistakes, by systematic bias such as abnormal ambient temperature, or by random errors (imprecision). The accuracy of a control system is expressed as the system deviation (the difference between the ultimately controlled variable and its ideal value), usually in the steady state or at sampled instants. *See also:* reproducibility; precision. (IA) [61]

(5) (electronic navigation) Generally, the quality of freedom from mistake or error; that is, of conformity to truth or a rule. Specifically, the difference between the mean value of a number of observations and the true value. *Note:* Often refers to a composite character including both accuracy and precision. *See also:* precision; navigation. (AES/RS) 686-1982s, [42]

(6) (signal-transmission system) Conformity of an indicated value to an accepted standard value or true value. *Note:* Quantitatively, it should be expressed as an error or uncertainty. The accuracy of a determination is affected by the method, observer, environment, and apparatus, including the working standard used for the determination. *See also:* signal. (IE) [43]

(7) (indicated or recorded value) The accuracy of an indicated or recorded value is expressed by the ratio of the error of the indicated value to the true value. It is usually expressed in percent. (EEC/PE) [119]

(8) (instrument transformers) The extent to which the current or voltage in the secondary circuit reproduces the current or voltage of the primary circuit in the proportion stated by the marked ratio, and represents the phase relationship of the primary current or voltage. (PE/TR) C57.12.80-1978r

(9) The extent to which the current in the secondary circuit reproduces the current in the primary circuit in the proportion stated by the marked ratio, and represents the phase relationship of the primary current. (PE/PSR) C37.110-1996

(10) (test, measurement, and diagnostic equipment) The degree of correctness with which a measured value agrees with the true value. *See also:* precision. (MIL) [2]

(11) (electrothermic power meters) The degree of correctness with which a measurement device yields the true value of a measured quantity; quantitatively expressed by uncertainty. *See also:* uncertainty. (IM) 544-1975w

(12) (nuclear power generating station) The quality of freedom from mistake or error. (PE/NP) 498-1985s

(13) (pulse measurement) The degree of agreement between the result of the application of a pulse measurement process and the true magnitude of the pulse characteristic, property, or attribute being measured. (IM/WM&A) 181-1977w

(14) (metric practice) The degree of conformity of a measured or calculated value to some recognized standard or specified value. This concept involves the systematic error of an operation, which is seldom negligible. *See also:* precision. (QUL) 268-1982s

(15) (measuring and test equipment) (nuclear power generating station) A measure of the degree by which the actual output of a device approximates the output of an ideal device nominally performing the same function. (PE/NP) 498-1985s

(16) (excitation systems for synchronous machines) The degree of correspondence between the controlled variable and the desired value under specified conditions such as load changes, ambient temperature, humidity, frequency, and supply voltage variations. Quantitatively, it is expressed as the ratio of difference between the controlled variable and the desired value to the desired value. (PE/EDPG) 421.1-1986r

(17) (A) (software) A qualitative assessment of correctness, or freedom from error. **(B) (software)** A quantitative measure of the magnitude of error. *See also:* precision. (C) 610.12-1990, 1084-1986

(18) ("dose calibrator" ionization chambers) Usually described in terms of overall uncertainty, accuracy is the estimate of the overall possible deviation from the stated value. The overall uncertainty is a total of the estimated error plus the random uncertainty of the measurement. (NI) N42.13-1986

(19) The extent to which a given measurement agrees with the defined value. (ELM) C12.1-1988

(20) (mathematics of computing) A qualitative assessment of correctness, or freedom from error. Contrast with precision. (C) 1084-1986w

(21) The degree of agreement of the measured value with the true value of the quantity being measured. (NI) N42.12-1994, N317-1980r, N323-1978r, N42.18-1980r

(22) (nuclear power generating station) A measure of the degree by which the actual output of a device approximates the output of an ideal device nominally performing the same function. (PE/NP) 498-1985s

(23) The degree of agreement of the observed value with the conventionally true value of the quantity being measured. (NI) N42.17B-1989r

(24) The degree of agreement between a measured value and the true value. (PE/PSIM) 4-1995

(25) The degree of agreement of the observed value with the conventionally true value of the quantity being measured. This degree of agreement can be quantified by computing the difference between the indicated value of a quantity and the correct (conventionally true) value of the quantity at the point of measurement. In the case of dose equivalent, it is expressed as $H_i - H_t$, where H_i is the indicated value and H_t is the conventionally true value. (NI) N42.20-1995

(26) The degree of exactness of an approximation or measurement. *Note:* Accuracy denotes the absolute quality of computed results; precision refers to the amount of detail used in representing those results. *See also:* precision. (C) 610.10-1994w

(27) A concept employed to describe the dispersion of measurements with respect to a known value. A measurement with small systematic uncertainties is said to have high accuracy. (NI) N42.23-1995

(28) The degree of conformity of a measured or calculated value to some reference value, which may be specified or unknown. This concept includes the systematic error of an operation, which is seldom negligible or known exactly. *See also:* precision. (SCC14) SI 10-1997

accuracy class The limits of transformer correction factor, in terms of percent error, that have been established to cover specific performance ranges for line power factors between 1.0 and 0.6 lag. (ELM) C12.11-1987

accuracy classes for metering (instrument transformers) Limits of a transformer correction factor, in terms of percent error, that have been established to cover specific performance ranges for line power-factor conditions between 1.0 and 0.6 lag. (PE/TR) [57], [117]

accuracy classes for relaying (instrument transformers) Limits, in terms of percent ratio error, that have been established. (PE/TR/PSR) [117], C37.110-1996

accuracy control character A control character used to indicate whether the data with which it is associated are in error, are to be disregarded, or cannot be represented on a particular device. *Synonym:* error control character. (C) 610.5-1990w

accuracy rating (1) (general) (electric instruments) The accuracy classification of the instrument. It is given as the limit, usually expressed as a percentage of full-scale value, that errors will not exceed when the instrument is used under reference conditions. *Notes:* 1. The accuracy rating is intended to represent the tolerance applicable to an instrument in an "as-received condition." Additional tolerances for the various influences are permitted when applicable. It is required that the accuracy, as received, be directly in terms of the indications on the scale and without the application of corrections from a curve, chart, or tabulation. Over that portion of the scale where the accuracy tolerance applies, all marked division points shall conform to the stated accuracy class. 2. Generally, the accuracy of electrical indicating instruments is stated in terms of the electrical quantities to which the instrument responds. In instruments with the zero at a point other than one end of the scale, the arithmetic sum of the end-scale readings to the right and to the left of the zero point shall be used as the full-scale value. *Exceptions:*

— The accuracy of frequency meters shall be expressed on the basis of the percentage of actual scale range. Thus, an instrument having a scale range of 55 Hz to 65 Hz would have its error expressed as a percentage of 10 Hz.
— The accuracy of a power-factor meter shall be expressed as a percentage of scale length.
— The accuracy of instruments that indicate derived quantities, such as series type ohmmeters, shall be expressed as a percentage of scale length.

3. In the case of instruments having nonlinear scales, the stated accuracy only applies to those portions of the scale where the divisions are equal to or greater than two-thirds the width they would be if the scale were even divided. The limit of the range at which this accuracy applies may be marked with a small isosceles triangle whose base marks the limit and whose point is directed toward the portion of the scale having the specified accuracy. 4. Instruments having an accuracy rating of 0.1% are frequently referred to as laboratory standards. Portable instruments having an accuracy rating of 0.25% are frequently referred to as portable standards. (EEC/AII) [102]

(2) (automatic control system) The limit that the system deviation will not exceed under specified operating conditions. (PE/EDPG) [3]

accuracy ratings for relaying The relay accuracy class is described by a letter denoting whether the accuracy can be obtained by calculation or must be obtained by test, followed by the minimum secondary terminal voltage that the transformer will produce at 20 times rated secondary current with one of the standard burdens without exceeding the relay accuracy class limit. (This is usually taken as 10%.) (PE/PSR) C37.110-1996

accuracy ratings of instrument transformers Means of classifying transformers in terms of percent error limits under specified conditions of operation. (PE/TR) C57.13-1978s

accuracy, synchronous-machine regulating system The degree of correspondence (or ratio) between the actual and the ideal values of a controlled variable of the synchronous-machine regulating system under specified conditions, such as load changes, drift, ambient temperature, humidity, frequency, and supply voltage. (PE) [9]

accuracy test (instrument transformers) A test to determine the degree to which the value of the quantity obtained from the secondary reflects the value of the quantity applied to the primary. (PE/TR) [57]

ACD *See:* automatic call distribution.

ac-dc general-use snap switch A form of general-use snap switch suitable for use on either ac or dc circuits for controlling the following:

a) Resistive loads not exceeding the ampere rating of the switch at the voltage applied.
b) Inductive loads not exceeding 50% of the ampere rating of the switch at the applied voltage. Switches rated in horsepower are suitable for controlling motor loads within their rating at voltage applied.
c) Tungsten-filament lamp loads not exceeding the ampere rating of the switch at the applied voltage if "T" rated. (NESC/NEC) [86]

ACE (area control error) *See:* area control error.

ac electric field strength The electric field strength produced by ac power systems as defined by its space components along three orthogonal axes. For steady-state sinusoidal fields, each component can be represented by a complex number or phasor. The magnitudes of the components are expressed by their rms values in volts per meter, and their phases need not be the same. *Notes:* 1. A phasor is a complex number expressing the magnitude and phase of a time-varying quantity. Unless otherwise specified, it is used only within the context of linear systems driven by steady-state sinusoidal sources. In polar coordinates, it can be written as $Ae^{j\phi}$ where A is the amplitude or magnitude (usually rms but sometimes indicated as peak value) and ϕ is the phase angle. The phase angle should not be confused with the space angle of a vector. 2. The space components (phasors) are not vectors. The space components have a time-dependent angle while vectors have space angles. For example, the sinusoidal electric field strength, $\vec{E}$, can be expressed in rectangular coordinates as

$$\vec{E} = \vec{a}_x E_x + \vec{a}_y E_y + \vec{a}_z E_z$$

where, for example, the x component is

$$E_x = \mathrm{Re}\,(E_{x0}\, e^{j\phi x}\, e^{j\omega t}) = E_{x0} \cos(\phi_x + \omega t)$$

The magnitude, phase, and time-dependent angle are given by E_{x0}, ϕ_x, and $(\phi_x + \omega t)$, respectively. In this representation, the space angle of the x component is specified by the unit vector $\vec{a}_x$. An alternative general representation of a steady-state sinusoidal electric field can be derived algebraically from equation 1 above and is perhaps more useful in characterizing power-line fields because the fields along the direction of the line are small and can usually be neglected. It is a vector rotating in a plane where it describes an ellipse whose major semi-axis represents the magnitude and direction of the maximum value of the electric field, and whose minor semi-axis represents the magnitude and direction of the field a quarter-cycle later. As mentioned above, the electric field in the direction perpendicular to the plane of the ellipse

is assumed to be zero. *See also:* single-phase ac fields; polyphase ac fields. (T&D/PE) 539-1990

ac electric field strength meter (1) A meter designed to measure the power-frequency electric field. Two types of electric field strength meters are in common use. (T&D/PE) 539-1990

(2) A meter designed to measure ac electric fields. Three types of electric field strength meters are available—free-body meter, ground-reference meter, and electro-optic meter. (T&D/PE) 1308-1994

acetate disks Mechanical recording disks, either solid or laminated, that are made of various acetate compounds. (SP) [32]

ACF (access control field) *See:* access control field.

ac filter Resistor-capacitor circuits connected in three-phase wye or delta on the ac terminals of a converter. (IA/ID) 995-1987w

ac general-use snap switch A form of general-use snap switch suitable only for use on alternating-current circuits for controlling the following:

a) Resistive and inductive loads, including electric-discharge lamps, not exceeding the ampere rating of the switch at the voltage involved.
b) Tungsten-filament lamp loads not exceeding the ampere rating of the switch at 120 V.
c) Motor loads not exceeding 80% of the ampere rating of the switch at its rated voltage.

(NESC/NEC) [86]

achromatic locus (television) (achromatic region) A region including those points in a chromaticity diagram that represent, by common acceptance, arbitrarily chosen white points (white references). *Note:* The boundaries of the achromatic locus are indefinite, depending on the tolerances in any specific application. Acceptable reference standards of illumination (commonly referred to as white light) are usually represented by points close to the locus of Planckian radiators having temperatures higher than about 2000°K. While any point in the achromatic locus may be chosen as the reference point for the determination of dominant wavelength, complementary wavelength, and purity for specification of object colors, it is usually advisable to adopt the point representing the chromaticity of the illuminator. Mixed qualities of illumination and luminators with chromaticities represented very far from the Planckian locus require special consideration. After a suitable reference point is selected, dominant wavelength may be determined by noting the wavelength corresponding to the intersection of the spectrum locus with the straight line drawn from the reference point through the point representing the sample. When the reference point lies between the sample point and the intersection, the intersection indicates the complementary wavelength. Any point within the achromatic locus chosen as a reference point may be called an achromatic point. Such points have also been called white points. (BT/AV) 201-1979w

acid-resistant So constructed that it will not be injured readily by exposure to acid fumes. (IA/ICTL/IAC/APP) [60], [75]

ACK (acknowledge character) *See:* acknowledge character.

ack cycle A cycle in which a slave responds to a master and terminates a transaction. (C/MM) 1196-1987w

acknowledge (1) An acknowledge packet. (C/MM) 1394-1995

(2) Operator action to indicate awareness of an event or alarm. (PE/NP) 692-1997

acknowledge bit A bit used by IEEE 802.3 Auto-Negotiation to indicate that a station has successfully received multiple identical copies of the Link Code Word. This bit is only set after an identical Link Code Word has been received three times in succession. (C/LM) 802.3-1998

acknowledge character (A) A transmission control character transmitted by a station as an affirmative response to the station with which the connection has been set up. **(B)** A transmission control character transmitted by a receiver as an affirmative response to a sender. An acknowledge character may also be used as an accuracy control character. *See also:* negative acknowledge character. (C) 610.5-1990

acknowledge gap The period of idle bus between the end of a packet and the start of an acknowledge. (C/MM) 1394-1995

acknowledge packet (1) A link-layer packet returned by a destination node back to a source node in response to most primary packets. An acknowledge packet is always exactly 8 bits long. (C/MM) 1394-1995

(2) The first packet returned by an individually addressed S-module that conveys to the M-module that the appropriate S-module is responding and indicates the current status of the responding S-module. (TT/C) 1149.5-1995

(3) An 8-bit packet that may be transmitted in response to the receipt of a primary packet. The most and least significant nibbles are the one's complement of each other. *Synonym:* acknowledge. (C/MM) 1394a-2000

acknowledger (forestaller) A manually operated electric switch or pneumatic valve by means of which, on a locomotive equipped with an automatic train stop or train control device, an automatic brake application can be forestalled, or by means of which, on a locomotive equipped with an automatic cab signal device, the sounding of the cab indicator can be silenced. (PE/EEC) [119]

acknowledging (forestalling) The operating by the engineman of the acknowledger associated with the vehicle-carried equipment of an automatic speed control or cab signal system to recognize the change of the aspect of the vehicle-carried signal to a more restrictive indication. The operation stops the sounding of the warning whistle, and in a locomotive equipped with speed control, it also forestalls a brake application. (PE/EEC) [119]

acknowledging device *See:* acknowledger.

acknowledging switch *See:* acknowledger.

acknowledging whistle An air-operated whistle that is sounded when the acknowledging switch is operated. Its purpose is to inform the fireman that the engineman has recognized a more restrictive signal indication. (EEC/PE) [119]

acknowledgment (1) (of a message) A reply transmitted by a receiving station to inform the sending station that a message has arrived and the message is error-free. *Contrast:* negative acknowledgment. (C) 610.7-1995

(2) A signal that is used to reply to a message or signal originator that its message or signal was received. (IM/ST) 1451.2-1997

ACL *See:* audit command language.

***a* contact** A contact that is open when the main device is in the standard reference position and that is closed when the device is in the opposite position. *Notes:* 1. *a* contact has general application. However, this meaning for front contact is restricted to relay parlance. 2. For indication of the specific point of travel at which the contact changes position, an additional letter or percentage figure may be added to *a*. *See also:* standard reference position. (SWG/PE) C37.100-1992

acoustic absorber Material with high acoustic loss placed on any part of the substrate for acoustic absorption purposes. (UFFC) 1037-1992w

acoustical depth finder *See:* echo sounder.

acoustically tunable optical filter An optical filter that is driven by an acoustic wave and that is tunable by varying the acoustic frequency. (UFFC) [17]

acoustic coupler (1) A type of data communication equipment that has sound transducers that permit the use of a telephone handset as a connection to a voice communication system for the purpose of data transmission. (LM/COM) 168-1956w

(2) A modem that interconnects a communicating device with a telephone handset. (C) 610.7-1995

acoustic delay line (1) A delay line whose operation is based on the time of propagation of sound waves. (C) [20], [85]

(2) A delay line whose operation is based on the time of propagation of sound waves within a given medium. *Synonym:* sonic delay line. *See also:* mercury storage. (C) 610.10-1994w

acoustic echo canceller (AEC) A circuit or algorithm designed to eliminate acoustic echoes and prevent howling due to acoustic feedback from loudspeaker to microphone. (COM/TA) 1329-1999

acoustic echo path (1) In a telephone set, the coupling from the receiver to the microphone (or transmitter). (COM/TA) 269-1992

(2) In a handset or headset system, the coupling from the receiver to the microphone (or transmitter). (COM/TA) 1206-1994

acoustic-gravity wave In the atmosphere, a low-frequency wave whose restoring forces are compressional, gravitational, and buoyant. (AP/PROP) 211-1997

acoustic input (1) The free-field sound pressure level developed by an artificial mouth at the mouth reference point. *See also:* sound pressure level. (COM/TA) 269-1992, 1206-1994

(2) The free-field sound pressure level developed by a mouth simulator at the mouth reference point. *See also:* sound pressure level. (COM/TA) 1329-1999

acoustic interferometer An instrument for the measurement of wavelength and attenuation of sound. Its operation depends upon the interference between reflected and direct sound at the transducer in a standing-wave column. *See also:* instrument. (EEC/PE) [119]

acoustic memory *See:* acoustic storage.

acoustic monitoring The detection of sound patterns emitted by equipment to determine its operating condition for predictive monitoring. (PE/NP) 933-1999

acoustic noise *See:* audible noise.

acoustic output (1) The sound pressure level developed in an artificial ear. *See also:* sound pressure level. (COM/TA) 269-1992, 1206-1994

(2) The sound pressure level developed at the measuring microphone. *See also:* sound pressure level. (COM/TA) 1329-1999

acoustic propagation loss Amplitude decay of the acoustic wave due to material damping; scattering caused by defects, surface finish, or electrodes; and acoustic bulk-wave radiation into the ambient environment. Specifically, this is the ratio of the power transmitted in a surface acoustic wave (SAW) beam to the power received, expressed in dB. (UFFC) 1037-1992w

acoustic radiator A means for radiating acoustic waves. (EEC/PE) [119]

acoustic regeneration The generation of a secondary acoustic wave by the potential variations of an electrode caused by a primary surface acoustic wave passing under it. (UFFC) 1037-1992w

acoustic storage A type of storage consisting of acoustic delay lines. (C) 610.10-1994w

acoustic tablet A data tablet on which the position of the sensor or stylus is determined by acoustic sensing techniques. (C) 610.10-1994w

acoustic wave filter A filter designed to separate acoustic waves of different frequencies. *Note:* Through electroacoustic transducers, such a filter may be associated with electric circuits. *See also:* filter. (EEC/PE) [119]

acoustic waveguide A perturbation along the direction of propagation of a surface acoustic wave to produce a decreased phase velocity, and hence, transverse concentration and guiding of the surface acoustic wave. (UFFC) 1037-1992w

acousto-optic device A device that is used to modulate light in amplitude, frequency, phase, polarization, or spatial position by virtue of optical diffraction from an acoustically generated diffraction grating. (UFFC) [23]

acousto-optic effect (fiber optics) A periodic variation of refractive index caused by an acoustic wave. *Note:* The acousto-optic effect is used in devices that modulate and deflect light. *See also:* modulation. (Std100) 812-1984w

ac power-line fields Power frequency electric and magnetic fields produced by ac power lines. (T&D/PE) 539-1990

acquirer (1) An organization that procures software products for itself or another organization. (C/SE) J-STD-016-1995

(2) The individual or organization that specifies requirements for and accepts delivery of a new or modified software product and its documentation. The acquirer may be internal or external to the supplier organization. Acquisition of a software product may involve, but does not necessarily require, a legal contract or a financial transaction between acquirer and supplier. (C/SE) 1058-1998

(3) A person or organization that acquires or procures a system or software product (which may be part of a system) from a supplier. (C/SE) 1062-1998

acquisition (1) The process of establishing a stable track on a target that is designated in one or more coordinates. A search of a limited given volume of coordinate space is usually required because of errors or incompleteness of the designation. (AES) 686-1997

(2) The process of obtaining a system or software product. (C/SE) 1062-1998

acquisition phase The final phase of the arbitration operation entered after determining that an agent has the highest priority and the bus is available. *See also:* arbitration operation; agent. (C/MM) 1296-1987s

acquisition probability The probability of establishing a stable track on a designated target. (AES) 686-1997

acquisition start time The start time of the acquisition of the histogram data, as

DD/MM/YR_HH:NN:SS_

where the '_' (underscore character) is an ASCII space; DD is the day; MM is the month; YR is the year; HH is the hours; NN is the minutes; and SS is the seconds. (NPS/NID) 1214-1992r

ac reactor (thyristor converter) An inductive reactor that is inserted between the transformer and the thyristor converter for the purpose of controlling the rate of rise of current in the thyristor and possibly the magnitude of fault current. (IA/IPC) 444-1973w

acronym A contrived reduction of nomenclature yielding mnemonics (ACRONYM). (C/MM) 1394a-2000

across-the-line starter A device that connects the motor to the supply without the use of a resistance or autotransformer to reduce the voltage. It may consist of a manually operated switch or a master switch, which energizes an electromagnetically operated contactor. (IA/MT) 45-1998

across-the-line starting (rotating machinery) The process of starting a motor by connecting it directly to the supply at rated voltage. (PE) [9]

ACSE/Presentation Service (APS) Environment The collection of information, associated with a particular APS instance, necessary to initiate and maintain an association with another application entity. (C/PA) 1351-1994w

ACSL *See:* Advanced Continuous Simulation Language.

ACSR (aluminum conductor, steel reinforced, aluminum cable steel reinforced) *See:* aluminum conductor, steel reinforced; aluminum cable steel reinforced.

act Abbreviation for ACTUAL, indicating the programmed functional capabilities of an end device. (AMR/SCC31) 1377-1997

acting stress (1) (seismic design of substations) Maximum applied or expected stress in the material during normal operation of the apparatus of which it is a part, including the stresses caused by wind, seismic or short-circuit loading, acting either independently or simultaneously, as determined by the user. (PE/SUB) 693-1984s

(2) (gas-insulated substations) The maximum applied or expected stress in a material during operation of the apparatus of which it is a part and including the stresses caused by gas pressure, wind, ice or loading. (SUB/PE) C37.122-1983s
(3) (working stress) The maximum applied or expected mechanical stress in a material during operation of the apparatus of which it is a part and including the stresses caused by seismic and other loading, acting independently or simultaneously as determined by the user. (SUB/PE) C37.122.1-1993
(4) The maximum applied or expected stress in a material during operation of the apparatus of which it is a part and including the stresses caused by gas pressure, wind, ice, or seismic loading. *Synonym:* working stress. (SWG/PE) C37.100-1992

Action An instance of the class `IEEE1451_Action` or of a subclass thereof. (IM/ST) 1451.1-1999

action A step a user takes to complete a task; a step that cannot be subdivided further. A single user action may invoke one or more functions but need not invoke any. (C/SE) 1063-1987r

action potential (1) (medical electronics) The instantaneous value of the potential observed between excited and resting portions of a cell or excitable living structure. *Note:* It may be measured direct or through a volume conductor. (EMB) [47]
(2) (overhead power lines) The electrical response of an excitable membrane that leads to the propagation of a nerve impulse; a nerve impulse. (T&D/PE) 539-1990

action spike (medical electronics) The greatest in magnitude and briefest in duration of the characteristic negative waves seen during the observation of action potentials. (EMB) [47]

activate (A) The action of applying signals to a group of bus lines. **(B)** The state of a group of bus lines when they carry signals. (C/BA) 896.10-1997

activation (1) (thermionics) (cathode) The treatment applied to a cathode in order to create or increase its emission. *See also:* electron emission. (ED) [45], [84]
(2) One occurrence of a function's transformation of some subset of its inputs into some subset of its outputs. (C/SE) 1320.1-1998

activation constraint A function's requirement for the presence of a nonempty object set in a particular arrow role as a precondition for some activation of the function. (C/SE) 1320.1-1998

activation distance The distance traveled by a fall arrester or the amount of line payed out by a self-retracting lanyard from the point of onset of a fall to the activation point where the fall arrester begins to apply a braking or stopping force. This activation point is where the fall arrester engages the lifeline or, in the case of a self retracting lanyard, where an internal brake engages. Activation distance is part of the free fall distance experienced in a fall. (PE/T&D) 1307-1996

activation polarization The difference between the total polarization and the concentration polarization. *See also:* electrochemistry. (EEC/PE) [119]

activation time *See:* turn-on time.

active (1) (power system measurement) (electric generating unit reliability, availability, and productivity) The state in which a unit is in the population of units being reported on. (PE/PSE) 762-1987w
(2) (696 interface devices) (signals and paths) A signal in its logically true state. (MM/C) 696-1983w
(3) (broadband local area networks) A cable plant component that consumes electrical power to perform its intended function. Examples of active devices include status monitors and amplifiers. (LM/C) 802.7-1989r
(4) Pertaining to a record or file that has been accessed by one or more transactions during a given processing cycle. *See also:* inactive; logically deleted; purged. (C) 610.2-1987
(5) When associated with a logic level (e.g., in the word active-low), this term identifies the logic level to which a signal shall be set to cause a defined action to occur. When referring to an output driver (e.g., in the phrase an active driver), this term describes the mode in which the driver is capable of determining the voltage of the network to which it is connected. (TT/C) 1149.1-1990, 1149.5-1995

active air terminal An air terminal which has been modified to lower its corona inception gradient. (PE/T&D) 1243-1997

active area (solar cells) The illuminated area normal to light incidence, usually the face area less the contact area. *Note:* For the purpose of determining efficiency, the area covered by collector grids is considered a part of the active area. *See also:* semiconductor. (AES/SS) 307-1969w

active array antenna system An array in which all or part of the elements are equipped with their own transmitter or receiver, or both. *Notes:* 1. Ideally, for the transmitting case, amplitudes and phases of the output signals of the various transmitters are controllable and can be coordinated in order to provide the desired aperture distribution. 2. Often it is only a stage of amplification or frequency conversion that is actually located at the array elements, with the other stages of the receiver or transmitter remotely located. (AP/ANT) 145-1993

active current (rotating machinery) The component of the alternating current that is in phase with the voltage. *See also:* asynchronous machine. (PE) [9]

active-current compensator (rotating machinery) A compensator that acts to modify the functioning of a voltage regulator in accordance with active current. (PE) [9]

active data dictionary A data dictionary that ensures its own consistency with a system by limiting the data items that may be used by a process to those that are defined in the data dictionary. *Synonym:* embedded data dictionary. *Contrast:* passive data dictionary. (C) 610.5-1990w

active dimension (charged-particle detectors) (of a position-sensitive detector) A dimension (length, width) of that region of a position-sensitive detector that is depleted. (NPS) 300-1988r

active electric network An electric network containing one or more sources of power. *See also:* network analysis. (EEC/PE) [119]

active electrode (A) (electrobiology) A pickup electrode that, because of its relation to the flow pattern of bioelectric currents, shows a potential difference with respect to ground or to a defined zero, or to another (reference) electrode on related tissue. **(B) (electrobiology)** Any electrode, in a system of stimulating electrodes, at which excitation is produced. **(C) (electrobiology)** A stimulating electrode (different electrode) applied to tissue for stimulation and distinguished from another (inactive, dispersive, diffuse, or indifferent) electrode by having a smaller area of contact, thus affording a higher current density. *See also:* electrobiology. (EMB) [47]

active file (A) A file that is in current use. **(B)** A file with an expiration date that has not yet been reached. (C) 610.5-1990

active filter (A) A filter network containing one or more voltage-dependent or current-dependent sources in addition to passive elements. **(B)** A filter containing energy generating elements. (CAS) [13]

active fire protection The minimizing of fire hazards in electrical systems by the use of fuses, circuit breakers, and other devices. (DEI) 1221-1993w

active-high signal A signal for which the logical-true (activated) state is represented by the high electrical state, and the logical-false (deactivated) state is represented by the low electrical state. (C/MM) 959-1988r

active homing guidance (navigation aid terms) A system of homing guidance wherein both the source of illuminating the target and the receiver for detecting the energy reflected from the target, as a result of illuminating the target, are carried within the vehicle. (AES/GCS) 172-1983w

active impedance (of an array element) The ratio of the voltage across the terminals of an array element to the current flowing at those terminals when all array elements are in place and excited. (AP/ANT) 145-1993

active laser medium (fiber optics) The material within a laser, such as crystal, gas, glass, liquid, or semiconductor, that emits coherent radiation (or exhibits gain) as the result of stimulated electronic or molecular transitions to lower energy states. *Synonym:* laser medium. *See also:* laser; optical cavity. (Std100) 812-1984w

active-low signal A signal for which the logical-false (deactivated) state is represented by the high electrical state, and the logical-true (activated) state is represented by the low electrical state. (C/MM) 959-1988r

active maintenance time The time during which maintenance actions are performed on an item, either manually or automatically. *Notes:* 1. Delays inherent in the maintenance operation (for example, those due to design or to prescribed maintenance procedures) shall be included. 2. Active maintenance may be carried out while the item is performing its intended function. (R) [29]

active materials (storage battery) The materials of the plates that react chemically to produce electric energy when the cell discharges and that are restored to their original composition, in the charged condition, by oxidation and reduction processes produced by the charging current. *See also:* battery. (PE/EEC) [119]

active monitor A station on the ring that is performing certain functions to ensure proper operation of the ring. These functions include 1) establishing clock reference for the ring; 2) assuring that a usable token is available; 3) initiating the neighbor notification cycle; 4) preventing circulating frames and priority tokens. In normal operation only one station on a ring may be the active monitor at any instance in time. (C/LM) 8802-5-1998

active package The package, if any, whose methods are accessible by name to the command interpreter, and to which newly created methods andproperties are added. (C/BA) 1275-1994

active port A connected, enabled port that observes bias and is capable of detecting all Serial Bus signal states and participating in the reset, tree identify, self-identify, and normal arbitration phases. (C/MM) 1394a-2000

active power (1) (rotating machinery) A term used for power when it is necessary to distinguish among apparent power, complex power, and its components, active and reactive power. *See also:* asynchronous machine. (PE) [9]
(2) (metering) The time average of the instantaneous power over one period of the wave. *Notes:* 1. For sinusoidal quantities in a two-wire circuit, it is the product of the voltage, the current, and the cosine of the phase angle between them. For nonsinusoidal quantities, it is the sum of all the harmonic components, each determined as above. In a polyphase circuit, it is the sum of the active powers of the individual phases. *See also:* active power. (ELM) C12.1-1982s
(3) (A) At the terminals of entry of a polyphase circuit into a delimited region, the algebraic sum of the active powers for the individual terminals of entry when the voltages are all determined with respect to the same arbitrarily selected common reference point in the boundary surface (which may be the neutral terminal of entry). *Notes:* 1. The active power for each terminal of entry is determined by considering each conductor and the common reference point as a single-phase two-wire circuit and finding the active power for each in accordance with the definition of "power, active (single-phase two-wire circuit)." If the voltages and currents are sinusoidal and of the same period, the active power P for a three-phase circuit is given by

$$P = E_a I_a \cos(\alpha_a - \beta_a) + E_b I_b \cos(\alpha_b - \beta_b) + E_c I_c \cos(\alpha_c - \beta_c)$$

where the symbols have the same meaning as in "power, instantaneous (polyphase circuit)." 2. If there is no neutral conductor and the common point for voltage measurement is selected as one of the phase terminals of entry, the expression will be changed in the same way as that for "power, instantaneous (polyphase circuit)." 3. If both the voltages and the currents in the preceding equations constitute symmetrical sets of the same phase sequences

$$P = 3E_a I_a \cos(\alpha_a - \beta_a)$$

4. In general the active power P at the $(m = 1)$ terminals of entry of a polyphase circuit of m phases to a delimited region, when one of the terminals is the neutral terminal of entry, is expressed by the equation

$$P = \sum_{s=1}^{s=m} \sum_{r=1}^{r=\infty} E_{sr} I_{sr} \cos(\alpha_{sr} - \beta_{sr})$$

where E_{sr} is the root-mean-square amplitude of the rth harmonic of the voltage e_s, from phase conductor to neutral. I_{sr} is the root-mean-square amplitude of the rth harmonic of the current i_s through terminal s. α_{sr} is the phase angle of the rth harmonic of e_s with respect to a common reference. β_{sr} is the phase angle of the rth harmonic of i_s with respect to the same reference as the voltages. The indexes s and r have the same meaning as in "power, instantaneous (polyphase circuit)." 5. The active power can also be stated in terms of the root-mean-square amplitudes of the symmetrical components of the voltages and currents as

$$P = m \sum_{k=0}^{k=m-1} \sum_{r=1}^{r=\infty} E_{kr} I_{kr} \cos(\alpha_{kr} - \beta_{kr})$$

where m is the number of phase conductors, k denotes the number of the symmetrical component, and r denotes the number of the harmonic component. 6. When the voltages and currents are quasi-periodic and the amplitudes of the voltages and currents are slowly varying, the active power for the circuit of each conductor may be determined for this condition as in "ower, active (single-phase two-wire circuit)." The active power for the polyphase circuit is the sum of the active power values for the individual conductors. The active power is also the time average of the instantaneous power for the polyphase circuit. 7. Mathematically, the active power at any time t_0 is

$$P = \frac{1}{T} \int_{t_0 - T/2}^{t_0 + T/2} p \, dt$$

where p is the instantaneous power and T is the period. This formulation may be used when the voltage and current are periodic or quasi-periodic so that the period is defined. The active power is expressed in watts when the voltages are in volts and the currents in amperes. **(B)** At the terminals of entry of a single-phase, two-wire circuit into a delimited region, when the voltage and current are periodic or quasi-periodic, the time average of the values of the instantaneous power, the average being taken over one period. *Notes:* 1. Mathematically, the active power P at a time t_0 is given by the equation

$$P = \frac{1}{T} \int_{t_0 - T/2}^{t_0 + T/2} p \, dt$$

where T is the period, and p is the instantaneous power. 2. If both the voltage and current are sinusoidal and of the same period the active power P is given by

$$P = EI \cos(\alpha - \beta)$$

in which the symbols have the same meaning as in "power, instantaneous (two-wire circuit)." 3. If both the voltage and current are sinusoidal, the active power P is also equal to the real part of the product of the phasor voltage and the conjugate of the phasor current, or to the real part of the product of the conjugate of the phasor voltage and the phasor current. Thus,

$$P = \mathrm{ReEI}^* = \mathrm{ReE}^*\mathrm{I} = \frac{1}{2}[\mathrm{EI}^* + \mathrm{E}^*\mathrm{I}]$$

in which **E** and **I** are the root-mean-square phasor voltage and root-mean-square phasor current, respectively (see "phasor quantity"), and the * denotes the conjugate of the phasor to which it is applied. 4. If the voltage is an alternating voltage and the current is an alternating current (see "alternating voltage and alternating current"), the active power is given by the equations

$$P = E_1 I_1 \cos(\alpha_1 - \beta_1) + E_2 I_2 \cos(\alpha_2 - \beta_2) + \ \ldots$$

$$= \sum_{r=1}^{r=\infty} \mathrm{E}_r \mathrm{I}_r \cos(\alpha_r - \beta_r)$$

$$= Re \sum_{r=1}^{r=\infty} E_r I_r$$

$$= \frac{1}{2} \sum_{r=1}^{r=\infty} [E_r I_r + E_r I_r]$$

in which r is the order of the harmonic component of the voltage (see "harmonic components (harmonics)") and r is also the order of the harmonic component of the current. E_r and I_r are the phasors corresponding to the rth harmonic of the voltage and current, respectively. 5. If the voltage and current are quasi-periodic functions of the form given in "power, instantaneous (two-wire circuit)," the integral over the period T will not result in the simple expressions that are obtained when E_r and I_r are constant. However, if the relative rates of change of the quantities are so small that each may be considered to be constant during any one period, but to have slightly different values in successive periods, the active power at any time t is very closely approximated by

$$P = \sum_{r=1}^{r=\infty} E_r(t) I_r(t) \cos(\alpha_r - \beta_r)$$

which is analogous to the preceding expression. When the amplitudes of voltage and current are slowly changing, the active power may be represented by this expression. 6. Active power is expressed in watts when the voltage is in volts and the current in amperes. 7. With reference to "power," when it is clear that "average power" and not "instantaneous power" is meant, "power" is often used for "active power."

(Std100) 270-1966

(4) The average power consumed by a unit. For a two terminal device with current voltage waveforms $i(t)$ and $v(t)$, which are periodic T, the real or active power is

$$P = \frac{1}{T} \int_0^T v(t) i(t) dt$$

(PEL) 1515-2000

active-power relay (general) A power relay that responds to active power. *See also:* power relay; relay; reactive power relay. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

active preventive maintenance time That part of the active maintenance time in which preventive maintenance is carried out. *Notes:* 1. Delays inherent in the preventive maintenance operation (for example, those due to design or prescribed maintenance procedures) shall be included. 2. Active preventive maintenance time does not include any time taken to maintain an item that has been replaced. (R) [29]

active redundancy (1) (computers) In fault tolerance, the use of redundant elements operating simultaneously to prevent, or permit recovery from, failures. *Contrast:* standby redundancy. *See also:* active redundancy. (C) 610.12-1990

(2) That redundancy wherein all means for performing a given function are operating simultaneously. (R) [29]

active reflection coefficient (of an array element) The reflection coefficient at the terminals of an array element when all array elements are in place and excited. (AP/ANT) 145-1993

active region A region of a detector in which charge created by ionizing radiation contributes significantly to the output signal. (NPS) 325-1996

active repair time The time during which corrective maintenance actions are performed on an item either manually or automatically. *Notes:* 1. Delays inherent in the repair operation (for example, those due to design or to prescribed maintenance procedures) shall be included. 2. Active repair time does not include any time taken to repair an item that has been replaced as part of the corrective maintenance action under consideration. (R) [29]

active requester *See:* requester.

active retimed concentrator A type of token ring concentrator that performs an embedded repeater function in the lobe port's data path, thereby providing ring segment boundaries at the concentrator lobe port connector (CMIC). (C/LM) 8802-5-1998

active segment interconnect A segment interconnect is said to be active if it is asserting AS=1 on the far-side segment. (NID) 960-1993

active sensor (test, measurement, and diagnostic equipment) A sensor requiring a source of power other than the signal being measured. (MIL) [2]

active sounding The remote sensing of atmospheric or ionospheric parameters by transmission and reception of radio signals. (AP/PROP) 211-1997

active speech level A period of time during which speech spurt intervals are followed by speech pause intervals. (COM/TA) 743-1995

active storage Storage that holds data that is being processed. (C) 610.10-1994w

active test An on-going test that is invoked by a write to the TEST_START register. The node is in the testing state (STATE_CLEAR.state is equal to testing) while an active test is in progress. (C/MM) 1212-1991s

active testing (test, measurement, and diagnostic equipment) The process of determining equipment static and dynamic characteristics by performing a series of measurements during a series of known operating conditions. Active testing may require an interruption of normal equipment operations, and it involves measurements made over the range of equipment operation. *See also:* interference testing. (MIL) [2]

active topology At any time, the set of communication paths in a Bridged Local Area Network that can be used in transferring data between end stations on the LANs. (C/LM) 802.1G-1996

active transducer A transducer whose output waves are dependent upon sources of power, apart from that supplied by any of the actuating waves, which power is controlled by one or more of the waves. *Note:* The definition of active transducer is a restriction of the more general active network: that is, one in which there is an impressed driving force. *See also:* transducer. (Std100) 270-1966w

activities Events in the software life cycle for which effort data is collected and reported. (C/SE) 1045-1992

Activity A defined body of work to be performed, including its required Input and Output Information. *See also:* Activity Group. (C/SE) 1074-1997

activity (1) The expected number of spontaneous nuclear decays (transformations) in unit time from a specified energy state (excluding prompt decays from a lower nuclear level) for a given amount of a radionuclide. Its standard unit (SI) is the becquerel (Bq), where one Bq equals one decay per second. Activity has often been expressed in curies (Ci), where 3.7×10^{10} Bq equals 1 Ci, exactly. (NI) N42.14-1991

(2) (computers) In modeling and simulation, a task that consumes time and resources and whose performance is necessary for a system to move from one event to the next. (C) 610.3-1989w

(3) A set of tasks that relate to the performance of a specific function in a plant phase. Information is compiled throughout the Plant Information Network (PIN) at the activity level. (PE/EDPG) 1150-1991w

(4) A constituent task of a Process. *See also:* task. (C/SE) 1074-1995s

(5) *See also:* function. (C/SE) 1320.1-1998

activity-based simulation A discrete simulation that represents the components of a system as they proceed from activity to activity; for example, a simulation in which a manufactured product moves from station to station in an assembly line. (C) 610.3-1989w

activity coordinator A person who is an expert in the methodology and development of the activity documentation packages and who is responsible for coordination and development of the activity documentation packages with the activity technical contacts. (PE/EDPG) 1150-1991w

activity data list A list that itemizes the major data items used by the activity, gives a brief description of each data item, and lists other activities that provide or receive each data item. (PE/EDPG) 1150-1991w

activity dip For a vibrating beam accelerometer (VBA), the phenomenon where at certain frequencies the resonator vibration amplitude decreases due to parasitic resonances within itself or with the surrounding structure. (AES/GYAC) 1293-1998

activity documentation package A summary of the results of the activity investigation which includes the activity description, activity process diagram, activity data list, activity entity-relationship diagram, and the activity support modules. (PE/EDPG) 1150-1991w

activity description An overview of the activity that briefly describes the activity and its scope, and delineates the boundaries and major tasks of the activity. (PE/EDPG) 1150-1991w

activity entity-relationship (E-R) diagram A diagram that defines the data contents of the activity by identifying its data entities, associated data attributes, and the relationships among data entities. (PE/EDPG) 1150-1991w

activity fractioning monitor An instrument that separates airborne radioactivity into two or more specific fractions and monitors each fraction. (NI) N42.17B-1989r

Activity Group A set of related Activities. *See also:* Activity. (C/SE) 1074-1997

activity list A list containing names of activities that define the work processes of a generating plant from conception to decommissioning. There are approximately 400 such activities that comprise the power-plant life cycle and are mainline activities that are common throughout the industry. The list also separately contains brief descriptions of the activities. (PE/EDPG) 1150-1991w

activity process diagram A diagram that shows the relationships and flow of tasks within an activity and represents the process required to complete an activity. (PE/EDPG) 1150-1991w

activity ratio The ratio of active records to the total number of records in a file. (C) 610.2-1987

activity response (sodium iodide detector) The net number of counts registered by the detector system per unit of time divided by the activity of the radionuclide that is being measured during the same unit of time. (NI) N42.12-1980s

activity support modules Procedures or computer programs that operate on the data associated with the activity. (PE/EDPG) 1150-1991w

activity technical contact A person who is knowledgeable about the functions, tasks, data, and details related to an activity. (PE/EDPG) 1150-1991w

ACTOR An object-oriented language designed to facilitate development of SAA-compliant systems. (C) 610.13-1993w

Actor The local entity in a Link Aggregation Control Protocol exchange. (C/LM) 802.3ad-2000

actual address The real or designed address that is built into the computer by the manufacturer as a storage location or register. (C) 610.10-1994w

actual ESD events Non-simulated electrostatic discharges that occur in the intended environment of the electronic equipment. (EMC) C63.16-1993

actual generation (electric generating unit reliability, availability, and productivity) The energy that was generated by a unit in a given period. Actual generation can be expressed as gross actual generation (GAAG) or net actual generation (NAAG). (PE/PSE) 762-1987w

actual instruction* *See:* effective instruction.

* Deprecated.

actual key A key that directly expresses the physical location of a logical record on a storage medium. (C) 610.5-1990w

actual parameter *See:* argument.

actual time *See:* real time.

actual time to crest The time interval from the start of the transient to the time when the maximum amplitude is reached. (PE/TR) C57.12.90-1999

actual transient recovery voltage (TRV) (1) The TRV (transient recovery voltage) that actually occurs across the terminals of a pole of a switching device following current interruption. *Note:* The actual TRV may differ from the inherent TRV due to the modifying effects of device impedance and arc-circuit interaction. (SWG) C37.04E-1985w, C37.4D-1985w, C37.100B-1986w

(2) That which actually occurs across the terminals of a pole of a switching device following current interruption. *Note:* The actual TRV may differ from the inherent TRV due to the modifying effects of device impedance and arc-circuit interaction. (SWG/PE) C37.100-1992

actual weight The measured weight of a finished, ready-to-run vehicle; the tare weight. *Synonym:* empty weight. (VT) 1475-1999

actuated equipment (1) (nuclear power plants) A component or assembly of components that performs, or directly contributes to the performance of, a protective function such as reactor trip, containment isolation, or emergency coolant injection. The following are examples of actuated equipment: an entire control rod with its release or drive mechanism, a containment isolation valve with its operator, and a safety injection pump with its prime mover. (PE/NP) 380-1975w, 381-1977w

(2) The assembly of prime movers and driven equipment used to accomplish a protective action. *Note:* Examples of prime movers are: turbines, motors, and solenoids. Examples of driven equipment are: control rods, pumps, and valves. (PE/NP) 603-1998

actuating current (of an automatic line sectionalizer) The rms current that actuates a counting operating or an automatic operation. (SWG/PE) C37.100-1992

actuating device (protective signaling) A manually or automatically operated mechanical or electric device that operates electric contacts to effect signal transmission. *See also:* protective signaling. (EEC/PE) [119]

actuating signal (1) The reference input signal minus the feedback signal. *See also:* feedback control system. (IA/ICTL/APP/IAC) [69], [60]

(2) A particular input pulse in the control circuitry of a computer. (C) 610.10-1994w

actuation device (1) (nuclear power plants) A component or assembly of components (or module) that directly controls the motive power (electricity, compressed air, etc.) for actuated equipment. The following are examples of an actuation device: a circuit breaker, a relay, a valve (with its operator) used to control compressed air to the operator of a containment isolation valve, (and a module containing such equipment). (PE/NP) 381-1977w

(2) A component or assembly of components that directly controls the motive power (electricity, compressed air, hydraulic fluid, etc.) for actuated equipment. *Note:* Examples of actuation devices are: circuit breakers, relays, and pilot valves. (PE/NP) 603-1998

actuation time, relay *See:* relay actuation time.

actuator (1) (automatic train control) A mechanical or electric device used for automatic operation of a brake valve. (EEC/PE) [119]

(2) (A) A mechanism that moves an object in order to access a storage device. For example, the device that selects a laser disk in a jukebox, or an access arm in a magnetic disk drive. **(B)** In robotics, a motor or transducer that uses electrical, hydraulic, or pneumatic energy to effect motion in a robot. (C) 610.10-1994

(3) A transducer that accepts an electrical signal and converts it into a physical action. (IM/ST) 1451.2-1997

(4) A component that provides a physical output in response to a stimulating variable or signal. (IM/ST) 1451.1-1999

actuator, centrifugal *See:* centrifugal actuator.

actuator, relay *See:* relay actuator.

actuator valve An electropneumatic valve used to control the operation of a brake valve actuator. (EEC/PE) [119]

acutance A measure of the sharpness of the edges in an image. (C) 610.4-1990w

acute care Short-term care, i.e., less than 30 days. (EMB/MIB) 1073-1996

acute exposure Exposure to a large dose during a relatively short time. (T&D/PE) 539-1990

ac winding *See:* alternating-current winding.

acyclic machine (rotating machinery) A direct-current machine in which the voltage generated in the active conductors maintains the same direction with respect to those conductors. *Synonym:* homopolar machine. (PE) [9]

A/D Acronym for analog-to-digital, as in A/D converter. (C) 610.10-1994w

Ada A programming language designed, developed, and primarily used by the United States Department of Defense. The original design of Ada was based on Pascal, with more complex features such as private data types, synchronized rendezvous for multi-tasking environments, and exception handlers. *Note:* Named after Ada Lovelace, an early pioneer in computing. *See also:* extensible language; HAL; block-structured language. (C) 610.13-1993w

Ada83 The original Ada language standard, approved by ANSI in 1983 and by ISO/IEC in 1987. (C/PA) 1003.5b-1995

Ada I/O The input/output operations defined in Ada RM and further defined in IEEE Std 1003.5b-1995. (C/PA) 1003.5b-1995

Ada95 The 1995 Ada language standard, item 1 in 1.2, used in contrast to Ada 83. (C/PA) 1003.5b-1995

adaptability *See:* flexibility.

adaptation (illuminating engineering) The process by which the retina becomes accustomed to more or less light than it was exposed to during an immediately preceding period. It results in a change in the sensitivity to light. *Note:* Adaptation is also used to refer to the final state of the process, as reaching a condition of adaptation to this or that level of luminance. *See also:* photopic vision; chromatic adaptation; scotopic vision. (ED) [127]

adaptation data Data used to adapt a program to a given installation site or to given conditions in its operational environment. (C) 610.12-1990

adaptation parameter A variable that is given a specific value to adapt a program to a given installation site or to given conditions in its operational environment; for example, the variable Installation_Site_Latitude. (C) 610.12-1990

adapter (1) (general) A device for connecting parts that will not mate. An accessory to convert a device to a new or modified use. (IM/HFIM) [40]

(2) A device, or series of devices, designed to provide a compatible connection between the unit under test (UUT) and the test equipment. It may include proper stimuli or loads not contained in the test equipment. (MIL/SCC20) [2], 993-1997

(3) A device or series of devices designed to provide a compatible connection between the test subject and the test equipment. *Synonyms:* interface device; interface test adapter; test adapter. (SCC20) 1226-1998

adapter kit (test, measurement, and diagnostic equipment) A kit containing an assortment of cables and adapters for use with test or support equipment. (MIL) [2]

adapter, standard *See:* standard adapter.

adapter, waveguide *See:* waveguide adapter.

adapting *See:* self-adapting.

adaptive antenna system An antenna system having circuit elements associated with its radiating elements such that one or more of the antenna properties are controlled by the received signal. (AP/ANT) 145-1993

adaptive coding The application of two or more image compression techniques to a single image, based on properties of different parts of the image. (C) 610.4-1990w

adaptive color shift (illuminating engineering) The change in the perceived object's color caused solely by the change of the state of chromatic adaptation. *See also:* state of chromatic adaptation. (ED) [127]

adaptive control system A control system within which automatic means are used to change the system parameters in a way intended to improve the performance of the control system. *See also:* feedback control system. (IA/IM/PE/ICTL/APP/EDPG/IAC) [69], [120], [3], [60]

adaptive equalization (data transmission) A system that has a means of monitoring its own frequency response characteristics and a means of varying its own parameters by closed-loop action to obtain the desired overall frequency response. (PE) 599-1985w

adaptive equalizer An electronic device for maximizing the signal quality on a transmission channel by monitoring the signal and adjusting the equalization. *Synonym:* automatic equalizer. (C) 610.7-1995

adaptive maintenance (1) (software) Software maintenance performed to make a computer program usable in a changed environment. *Contrast:* corrective maintenance; perfective maintenance. (C) 610.12-1990

(2) Modification of a software product performed after delivery to keep a computer program usable in a changed or changing environment. (C/SE) 1219-1998

adaptive relay A relay that can change its setting and/or relaying logic upon the occurrence of some external signal or event. (PE/PSR) C37.113-1999

adaptive relaying A protection philosophy that permits, and seeks to make adjustments automatically, in various protection functions to make them more attuned to prevailing power conditions. (PE/PSR) C37.113-1999

adaptive routing A routing strategy that dynamically adjusts path selection based on current network parameters. (C) 610.7-1995

adaptive system A system that has a means of monitoring its own performance and a means of varying its own parameters by closed-loop action to improve its performance. *See also:* system science. (SMC) [63]

ADC *See:* analog-to-digital converter.

ADC conversion gain The number of channels over which the full amplitude span can be spread; usually 2048−8192 channels are used for Ge gamma-ray spectrometry. (NI) N42.14-1991

ADC number A four-character number identifying the ADC (analog to digital converter) used for the data. Leading spaces are interpreted as leading zeros. Normally, the ADC numbers would start at 1 and go up in sequence for a given system. Different systems in a specific laboratory could use non-sequential numbers, e.g., 1 to 4, and 11 to 14, for different types of equipment. (NPS/NID) 1214-1992r

Adcock antenna A pair of vertical antennas separated by a distance of one-half wavelength or less, and connected in phase opposition to produce a radiation pattern having the shape of

the figure eight in all planes containing the centers of the two antennas. (AP/ANT) 145-1993

add To insert a record into an existing file. (C) 610.5-1990w

add-and-subtract relay *See:* bidirectional relay.

added source statements The count of source statements that were created specifically for the software product. (C/SE) 1045-1992

addend A number to be added to another number (the augend) to produce a result (the sum). (C) 1084-1986w

adder (1) A device whose output is a representation of the sum of the two or more quantities represented by the inputs. *See also:* half-adder; electronic analog computer. (C/MIL) 162-1963w, [2]

(2) A device whose output data is the arithmetic sum of the two or more quantities presented as input data. *Contrast:* subtracter. *See also:* summer; half adder; quarter adder; serial adder; adder-subtracter; full adder; parallel adder. (C) 610.10-1994w

adder-subtracter A device that acts either as an adder or subtracter depending upon the control signal received. *Note:* The adder-subtracter may be constructed so as to yield the sum and the difference at the same time. (C) 610.10-1994w

add file A file containing records that are being added or are to be added to a master file. (C) 610.5-1990w

addition agent (electroplating) A substance that, when added to an electrolyte, produces a desired change in the structure or properties of an electrodeposit, without producing any appreciable change in the conductivity of the electrolytes, or in the activity of the metal ions or hydrogen ions. *See also:* electroplating. (PE/EEC) [119]

addition without carry* *See:* exclusive OR.

* Deprecated.

additive A chemical compound or compounds added to an insulating fluid for the purpose of imparting new properties or altering those properties that the fluid already has. (PE/TR) 637-1985r

add-on board *See:* expansion board.

add record A record that is to be added or that has been added to a master file. *Contrast:* deletion record. (C) 610.5-1990w

address (1) (semiconductor memory) Those inputs whose states select a particular cell or group of cells. (TT/C/AMR/SCC31) 662-1980s, 1377-1997

(2) (A) (electronic computation) An identification, as represented by a name, label, or number, for a register, location in storage, or any other data source or destination such as the location of a station in a communication network. **(B) (electronic computation)** Loosely, any part of an instruction that specifies the location of an operand for the instruction. **(C) (electronic computation) (electronic machine-control system)** A means of identifying information or a location in a control system. Example: The *x* in the command *x* 12345 is an address identifying the numbers 12345 as referring to a position on the *x* axis. (C) [85]

(3) (test pattern language) The identification of a specific memory word, usually expressed in *x*-, *y*-, and *z*-coordinates, and in binary code. (TT/C) 660-1986w

(4) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (ED/ED) 641-1987w, 1005-1998

(5) (STEbus) The reference to a unit of data or the value represented by the address lines while ADRSTB* is active. (MM/C) 1000-1987r

(6) An identifier that tells where a *service access point (SAP)* may be found (ISO 7498). (LM/C) 8802-6-1994

(7) (A) A number, character or group of character that identifies a given device or storage location. **(B)** To refer to a device, data item or storage location by an identifying number, character, or group of characters, known as its address, as in definition (A). *Synonym:* address reference. *See also:* relative address; relocatable address; indirect address; virtual address; absolute address; implied addressing; effective address. (C) 610.10-1994

(8) An identifying name, label, or number for a data terminal, source, or storage location calculation. (SUB/PE) 999-1992w

(9) An unambiguous name, label, or number that identifies the location of a particular entity or service. (C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

(10) A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (IM/ST) 1451.2-1997

(11) *See also:* primary address. (NID) 960-1993

addressable memory A region of memory that can be located by an address. *Synonym:* addressed memory. (C) 610.10-1994w

addressable point In computer graphics, a position on a device that can be specified by coordinates. *See also:* pixel. (C) 610.6-1991w

addressable register A register with a fixed location and address. (C) 610.10-1994w

address broadcast The phase of a bus cycle that selects one slave as the responding slave and zero or more slaves as participating slaves. During the address broadcast the active master broadcasts the addressing information and then asserts an address strobe. After the slaves acknowledge the address broadcast, the master terminates the address broadcast. (C/MM) 1096-1988w

address bus A bus used to carry an address from the processor to memory or to a peripheral device. (C) 610.10-1994w

address calculation sort An insertion sort in which each of the items to be sorted is inserted into one of several lists, according to an address calculated from its value, and the resulting lists are then merged. *Synonym:* multiple list insertion sort. (C) 610.5-1990w

address cycle *See:* primary address cycle.

address/data bus signal group A set of thirty-six (36) signals, consisting of 32 address/data signals and four parity signals that are used for address and data transfers. (C/MM) 1296-1987s

addressed board A board that recognizes its address while ADRSTB* is active. (C/MM) 1000-1987r

addressed memory *See:* addressable memory.

addressed refresh A RAM-refresh protocol, in which the controller-provided read0-requests schedule the timing and specify addresses for RAM refresh cycles. (C/MM) 1596.4-1996

address, effective *See:* effective address.

address error An error that occurs when a node recognizes its own address in a packet's improper source or destination information. (C) 610.7-1995

address_error An error-status code returned to the requester when a transaction is directed to a non-existing address; on some buses, this has been called a NACK (negative acknowledge). The address_error status is generally returned if a valid address acknowledgement is not observed within a fixed timeout period. (C/MM) 1212-1991s

address field (1) The part of a *protocol data unit (PDU)* that contains an *address* that identifies one or more addressable entities. (The address may be a single-source address, single-destination address, or multiple-destination address [:*multicast*]:). (LM/C/EMB/MIB) 8802-6-1994, 1073.3.1-1994

(2) A sequence of bits that identifies the intended destination or receiver of a transmission. *Note:* May be single-source, single-destination, or multiple-destination address. (C) 610.7-1995

(3) Any of the fields of a computer instruction that contain addresses, information necessary to derive either other addresses, or values of operands. *Synonym:* address part. *See also:* operation field; operand field. (C) 610.10-1994w, 610.12-1990

address fields The ordered pair of service access point (SAP) addresses at the beginning of an LLC PDU that identifies the LLC(s) designated to receive the protocol data unit (PDU) and LLC sending the PDU. Each address field is one octet in length. (C/LM/CC) 8802-2-1998

address format (computers) The arrangement of the address parts of an instruction. *Note:* The expression plus-one is frequently used to indicate that one of the addresses specifies the location of the next instruction to be executed, such as one-plus-one, two-plus-one, three-plus-one, four-plus-one. (C) [20], [85]

(2) (A) (computers) The number and arrangement of address fields in a computer instruction. *See also:* n−address instruction; *n*−plus-one address instruction. **(B) (computers)** The number and arrangement of elements within an address, such as the elements needed to identify a particular channel, device, disk sector, and record in magnetic disk storage. (C) 610.12-1990

(3) (A) The number and arrangement of elements within an address, such as the elements needed to identify a particular channel, device, disk sector or record on a storage device. *Note:* The expression "plus-one" is frequently used to indicate that one of the addresses specifies the location of the next instruction to be executed; for example in an three-plus-one address format, an instruction contains three addresses of operands for the present operation, plus one address representing the next instruction to be executed. Such an instruction is known as a "three-plus-one address instruction." *See also:* two-address instruction; three-address instruction; four-address instruction; n-plus-one address instruction format; instruction format; one-address instruction. **(B)** The number and arrangement of elements within an address, such as the elements within an address, such as the elements needed to identify a particular channel, device, disk sector or record on a storage device. (C) 610.10-1994

addressibility The ability to locate an item in storage using an address. (C) 610.10-1994w

address ID (broadband local area networks) A unique digital identification sequence that is used to identify a device on a network. (LM/C) 802.7-1989r

addressing *See:* extended addressing (32-bit); fixed addressing (64-bit); extended addressing (64-bit).

addressing exception (software) An exception that occurs when a program calculates an address outside the bounds of the storage available to it. *See also:* protection exception; data exception; underflow exception; operation exception; overflow exception. (C) 610.12-1990

addressing mode (1) (microprocessor assembly language) The manner in which an operand is to be accessed during execution of an instruction. (C/MM) 695-1985s

(2) A means of combining information in an instruction, in registers, or in memory to define the location of a datum; for example, direct addressing, immediate addressing; implied addressing; indirect addressing; indexed addressing; relative addressing; symbolic addressing; virtual addressing. (C) 610.10-1994w

address invariance When a multi-byte data item is transferred over the bus, bytes with the same relative memory address are always mapped to the same bus lanes, regardless whether the processor is big or little endian and regardless of the significance of the bytes. (C/BA) 896.3-1993w

address-invariant A convention for defining the byte-ordering of DMA messages and data. The first byte in a contiguous set corresponds to the lowest order address, the second byte corresponds to the next address, etc. This is independent of how these addresses are sequenced onto a serial bus or assigned to physical positions and sequenced on a parallel bus. When different bus types are connected within a system, the bridge is expected to map the respective byte lanes and sequential positions to maintain address-invariance. (C/MM) 1212.1-1993

addressless instruction *See:* zero-address instruction.

address locked operation (FASTBUS acquisition and control) An operation directed to a single primary address containing a mixture of read and write cycles, possibly including block transfers as well. (NID) 960-1993

address mark A mark on a disk that is used to identify the specific areas on the disk such as an index, or free storage. *See also:* index mark. (C) 610.10-1994w

address modification (software) Any arithmetic, logical, or syntactic operation performed on an address. *See also:* effective address; relative address; relocatable address; indexed address. (C) 610.12-1990, 610.10-1994w

address-only cycle (1) (VMEbus) A data transfer bus (DTB) cycle that consists of an address broadcast, but does not have a data transfer. Slaves do not acknowledge address-only cycles and masters terminate the cycle without waiting for an acknowledgment. (C/BA) 1014-1987

(2) (VSB) The DTB cycle that consists of an address broadcast, but no data transfer. The active master terminates the cycle after the slaves acknowledge the address broadcast. (C/MM) 1096-1988w

address-only transaction(s) A bus transaction that does not include a data phase. The only information transferred is contained within the connection phase and, in some cases, the disconnection phase. (C/BA) 10857-1994, 1014.1-1994w, 896.3-1993w, 896.4-1993w

address part (1) A part of an instruction that usually is an address, but that may be used in some instructions for another purpose. (C) 162-1963w

(2) (software) *See also:* address field. (C) 610.12-1990

address reference *See:* address.

address register (1) (computers) A register in which an address is stored. (C) [20], [85]

(2) A register in which an address is stored. *Note:* An address register is generally used in an operand field of a processor instruction and contains a pointer to the address holding the data value to be used by the instruction. *See also:* base address register; instruction address register. (C) 610.10-1994w

address space (1) (A) The range of addresses that a computer program can access. *Note:* In some systems, this may be the set of physical storage locations that a program can access, disjoint from other programs, together with the set of virtual addresses referring to those storage locations which may be accessible by other programs. **(B)** The number of memory locations that a central processing unit can address. *See also:* virtual address space. (C) 610.10-1994, 610.12-1990

(2) The memory locations that can be referenced by a process. (C/PA) 1003.5-1999, 9945-2-1993

(3) The memory locations that can be referenced by the threads of a process. (C/PA) 9945-1-1996

address space identifier (ASI) An 8-bit field appended to the address by the **integer unit.** It identifies the address space being accessed and typically encodes whether the processor is in user or supervisor mode. (C/MM) 1754-1994

address stop An address that, when it is encountered by a program, causes the program to halt execution. *See also:* breakpoint instruction; instruction address stop. (C) 610.10-1994w

address table sorting (data management) A sorting technique in which a table of addresses that point to the items to be sorted is manipulated instead of moving the items themselves. *See also:* list sorting; key sorting. (C) 610.5-1990w

address, tag *See:* symbolic address.

address trace (A) To monitor references made to a particular address. **(B)** A list of addresses of previously executed instructions, in the order in which they were executed. *Note:* Generally used for debugging. (C) 610.10-1994

address track A track that contains addresses that may be used to locate data on other tracks of the same data medium. *Note:* Usually refers to disk drives. (C) 610.10-1994w

add transaction A transaction that causes a new record to be added to a master file. *See also:* update transaction; delete transaction; null transaction; change transaction. (C) 610.2-1987

address transfer (MULTIBUS II) The passing of address information over the multiplexed address/data bus from the bus owner in order to select the replying agent(s). *See also:* bus owner; replying agent. (C/MM) 1296-1987s

MULTIBUS is a registered trademark of Intel corporation.

address translator (A) A device that transforms the address of an instruction to the address in main storage at which it is to be loaded or relocated. **(B)** In virtual storage, a device that transforms the address of an item of data or instruction from its virtual address into its real address. (C) 610.10-1994

add time The elapsed time required to perform one addition operation, not including the time required to obtain the operands or to return the result to storage. *Contrast:* subtract time; multiply time. (C) 610.10-1994w

Adel'son-Velskii and Landis tree (data management) A height-balanced binary tree in which the difference in height of the two subtrees of any node is at most 1. *Note:* Also referred to as a HB tree; a height-balanced 1-tree. (C) 610.5-1990w

ADF *See:* automatic direction finder.

adhesion (coefficient of) During rolling contact, the ratio between the longitudinal tangential force at the wheel-rail/running surface interface and the normal force. (VT) 1475-1999

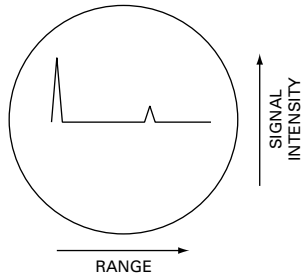
ad hoc (data management) Pertaining to an item such as a computer program or database used for a particular and specific purpose; for example, an ad hoc query. *Note:* Usually the item is used for a relatively short time, then discarded. (C) 610.5-1990w

ad hoc network A network composed solely of stations within mutual communication range of each other via the wireless medium (WM). An ad hoc network is typically created in a spontaneous manner. The principal distinguishing characteristic of an ad hoc network is its limited temporal and spatial extent. These limitations allow the act of creating and dissolving the ad hoc network to be sufficiently straightforward and convenient so as to be achievable by nontechnical users of the network facilities; i.e., no specialized "technical skills" are required and little or no investment of time or additional resources is required beyond the stations that are to participate in the ad hoc network. The term *ad hoc* is often used as slang to refer to an independent basic service set (IBSS). (C/LM) 8802-11-1999

ad hoc query (data management) A query that is used for a particular and specific purpose. *Note:* Such a query is usually used once or twice, then discarded. (C) 610.5-1990w

adiabatic atmosphere of refraction *See:* refractive index gradient.

A-display A display in which targets appear as vertical deflections from a horizontal line representing a time base. Time delay, or target range is indicated by the horizontal position of the deflection from one end of the time base. The vertical deflection is a function of signal amplitude.



A-display

(AES) 686-1997

adjacency In character recognition, a condition in which the character spacing reference lines of two consecutive characters printed on the same line are separated by less than a specified distance. (C) 610.2-1987

adjacent bridges Two Local or Remote Bridges are termed adjacent if both are attached to the same LAN or Remote Bridge Group. (C/LM) 802.1G-1996

adjacent channel A channel whose frequency band is adjacent to that of another channel, known as the reference channel. (C/PE) 610.10-1994w, 599-1985w

adjacent-channel attenuation *See:* selectance.

adjacent-channel interference (data transmission) Interference, in a reference channel, caused by the operation of an adjacent channel. (PE) 599-1985w

adjacent-channel selectivity and desensitization (receiver performance) (receiver) A measure of the ability to discriminate against a signal at the frequency of the adjacent channel. Desensitization occurs when the level of any off-frequency signal is great enough to alter the usable sensitivity. (VT) [37]

adjoint system (1) (analog computer) A method of computation based on the reciprocal relation between a system of ordinary linear differential equation and its adjoint. *Note:* By solution of the adjoint system, it is possible to obtain the weighting function (response to a unit impulse) $W(T, t)$ of the original system for fixed T (the time of observation) as a function of t (the time of application of the impulse). Thus, this method has particular application to the study of systems with time-varying coefficients. The weighting function then may be used in convolution to give the response of the original system to an arbitrary input. *See also:* electronic analog computer. (C) 165-1977w

(2) For a system whose state equations are $dx(t)/dt = f(x(t),u(t),t)$, the adjoint system is defined as that system whose state equations are $dy(t)/dt = -y(t)$, where A^* is the conjugate transpose of the matrix whose i,j element is $\partial f_i/\partial x_j$. *See also:* control system. (CS/IM) [52]

adjust (1) (instrument) Change the value of some element of the mechanism, or the circuit of the instrument or of an auxiliary device, to bring the indication to a desired value, within a specified tolerance for a particular value of the quantity measured. *See also:* instrument. (EEC/PE) [119]

(2) (airborne radioactivity monitoring) To alter the response by means of a variable, built-in control such as a potentiometer. (NI) N42.17B-1989r

(3) To alter the reading of an instrument by means of a variable (hardware or software) control. (NI) N42.20-1995

adjustable (As applied to circuit breakers.) A qualifying term indicating that the circuit breaker can be set to trip at various values of current and/or time within a predetermined range. (NESC/NEC) [86]

adjustable constant-speed motor A motor, the speed of which can be adjusted to any value in the specified range, but when adjusted, the variation of speed with load is a small percentage of that speed. For example, a direct-current shunt motor with field-resistance control designed for a specified range of speed adjustment. *See also:* asynchronous machine. (PE) [9]

adjustable impedance-type ballast (illuminating engineering) A reference ballast consisting of an adjustable inductive reactor and a suitable adjustable resistor in series. These two components are usually designed so that the resulting combination has sufficient current-carrying capacity and range of impedance to be used with a number of different sizes of lamps. The impedance and power factor of the reactor-resistor combination are adjusted and checked each time the unit is used. (EEC/LB) [97]

adjustable-speed drive An electric drive designed to provide easily operable means for speed adjustment of the motor, within a specified speed range. *See also:* electric drive. (IA/ICTL/IAC) [60]

adjustable-speed motor A motor whose speed can be varied gradually over a range of speeds, but when once adjusted remains practically unaffected by the load, such as a dc shunt-wound motor with field resistance control designed for a range of speed adjustments. (IA/MT) 45-1998

adjustable varying-speed motor A motor whose speed can be adjusted gradually, but when once adjusted for a given load will vary with change in load; such as a dc compound-wound motor adjusted by field control or a wound-rotor induction motor with speed control. (IA/MT) 45-1998

adjustable varying-voltage control A form of armature-voltage control obtained by impressing a voltage that may be changed by small increments on the armature of the motor, but that, when adjusted for a given load, will vary considerably with change in load with a consequent change in speed, such as may be obtained from a differentially compound-wound generator with adjustable field current or by means of an adjustable resistance in the armature circuit. *See also:* control. (IA/ICTL/IAC) [60]

adjustable voltage control A form of armature-voltage control obtained by impressing on the armature of the motor a voltage that may be changed in small increments; but when adjusted, it, and consequently the speed of the motor, are practically unaffected by a change in load. *Note:* Such a voltage may be obtained from an individual shunt-wound generator with adjustable field current for each motor. *See also:* control. (IA/IAC) [60]

adjusted NEXT loss The NEXT loss in decibels of a channel plus $15\log F/F_{ref}$, where F is the measured frequency and F_{ref} is a reference frequency (4 MHz at 4 Mbit/s and 16 Mbit/s). It is used to determine the NEXT to interference (NIR) ratio of a channel. (C/LM) 8802-5-1998

adjusted speed The speed obtained intentionally through the operation of a control element in the apparatus or system governing the performance of the motor. *Note:* The adjusted speed is customarily expressed in percent (or per unit) of base speed (for direct-current shunt motors). *See also:* electric drive. (IA/ICTL/IAC) [60]

adjuster A means to shorten or lengthen a strap, webbing or rope. (T&D/PE) 1307-1996

adjust line mode In text formatting, an operating mode in which line endings are automatically adjusted to comply with the current margin setting. *See also:* text end adjustment; word wrap. (C) 610.2-1987

adjustment (test, measurement, and diagnostic equipment) The act of manipulating the equipment's controls to achieve a specified condition. (MIL) [2]

adjustment accuracy (direct-current instrument shunts) The limit of error, expressed as a percentage of the rated output voltage, in the initial adjustment of the shunt made when employing a low-current measurement method. (PE/PSIM) 316-1971w

adjustment accuracy of instrument shunts (electric power system) The limit of error, expressed as a percentage of the rated voltage drop, of the initial adjustment of the shunt by resistance or low-current methods. (PE/PSIM) [55]

Adler tube* *See:* beam parametric amplifier.

* Deprecated.

administrative application A program that is concerned with managing operational aspects of the Media Management System (MMS), and typically does not itself own media. An administrative application may include an interface for administrative users. Examples of administrative applications include those that allow the addition and removal of applications, drives, libraries, media, and computer systems from the MMS, as well as those concerned with allocation and policy management of an installation. (C/SS) 1244.1-2000

administrative authority (1) The governmental authority exercising jurisdiction over application of this guide. (T&D/PE) 1307-1996

(2) The governmental authority exercising jurisdiction over application of this code. (NESC) C2-1997

administrative controls Rules, orders, instructions, procedures, policies, practices, and designations of authority and responsibility. (PE/NP) 603-1998

administrative data processing The use of computers for administrative applications such as personnel, payroll, and accounting functions. (C) 610.2-1987

administrative downtime Downtime caused by administrative or maintenance activities. If an activity that restores service for a few customers interferes with service to a larger number, then the outage of the larger number shall be included. Outages due to maintenance or administrative activities that can be scheduled to minimize interference with the customer may be weighted differently from the contribution of randomly occurring outages. Program software up-dates ordinarily fall into this category. (COM/TA) 973-1990w

administrative security Management constraints, operational procedures, and other administrative controls to enforce a security policy. (C/BA) 896.3-1993w

admissible control input set A set of control inputs that satisfy the control constraints. *See also:* control system. (CS/IM) [52]

admittance (data transmission) The reciprocal of impedance. (PE) 599-1985w

(2) (A) (linear constant-parameter system) The corresponding admittance function with p replaced by j_ω in which ω is real. **(B) (linear constant-parameter system)** The ratio of the phasor equivalent of a steady-state sine-wave current or current-like quantity (response) to the phasor equivalent of the corresponding voltage or voltage-like quantity (driving force). *Note:* Definitions (A) and (B) are equivalent. (Std100) 270-1966

admittance, effective input (electron tube or valve) The quotient of the sinusoidal component of the control-grid current by the corresponding component of the control voltage, taking into account the action of the anode voltage on the grid current; it is a function of the admittance of the output circuit and the interelectrode capacitance. *Note:* It is the reciprocal of the effective input impedance. *See also:* electron-tube admittances. (ED) [44], [84]

admittance, effective output (electron tube or valve) The quotient of the sinusoidal component of the anode current by the corresponding component of the anode voltage, taking into account the output admittance and the interelectrode capacitance. *Note:* It is the reciprocal of the effective output impedance. *See also:* electron-tube admittances. (ED) [44], [84]

admittance, electrode *See:* electrode admittance.

admittance matrix, short-circuit (multiport network) A matrix whose elements have the dimension of admittance and, when multiplied into the vector of port voltages, gives the vector of port currents. (CAS) [13]

admittance, short-circuit (A) (general) An admittance of a network that has a specified pair or group of terminals short-circuited. **(B)** (four-terminal network or line) The input, output, or transfer admittance parameters y_{11}, y_{22}, and y_{12} of a four-terminal network when the far end is short-circuited. (CAS) [13]

admittance, short-circuit driving-point (jth terminal of an n-terminal network). The driving-point admittance between that terminal and the reference terminal when all other terminal shave zero alternating components of voltage with respect to the reference point. *See also:* electron-tube admittances. (ED) 161-1971w

admittance, short-circuit feedback (electron-device transducer) The short-circuit transfer admittance from the physically available output terminals to the physically available input terminals of a specified socket, associated filters, and electron device. *See also:* electron-tube admittances. (ED) 161-1971w

admittance, short-circuit forward (electron-device transducer) The short-circuit transfer admittance from the physically available output terminals of a specified socket, asso-

ciated filters, and electron device. *See also:* electron-tube admittances. (ED) 161-1971w

admittance, short-circuit input (electron-device transducer) The driving-point admittance at the physically available input terminals of a specified socket, associated filters, and tube. All other physically available terminals are short-circuited. *See also:* electron-tube admittances. (ED) 161-1971w

admittance, short-circuit output (electron-device transducer) The driving-point admittance at the physically available output terminals of a specified socket, associated filters, and tube. All other physically available terminals are short-circuited. *See also:* electron-tube admittances. (ED) 161-1971w

admittance, short-circuit transfer (from the *j*th terminal to the *l*th terminal of an *n*-terminal network) The transfer admittance from terminal *j* to terminal *l* when all terminals except *j* have zero complex alternating components of voltage with respect to the reference point. *See also:* electron-tube admittances. (ED) 161-1971w

ADP (automatic data processing, administrative data processing) *See:* automatic data processing; automated data processing; administrative data processing.

ADSIM *See:* Applied Dynamics International Simulation Language.

advance ball (mechanical recording) A rounded support (often sapphire) attached to a cutter that rides on the surface of the recording medium so as to maintain a uniform depth of cut and to correct for small irregularities of the disk surface. (SP) [32]

Advanced Continuous Simulation Language A simulation language used for continuous simulation applications. (C) 610.13-1993w

advanced z transform (data processing) The advanced z transform of $f(t)$ is the z transform of $f(t + \Delta T)$; that is,

$$\sum_{n=0}^{\infty} f(nT + \Delta T)z^{-n}$$

$$0 < \Delta < 1$$

(IM) [52]

adverse water conditions (power operations) Water conditions that limit hydroelectric energy production. (PE/PSE) 858-1987s

adverse weather (1) (electric power system) Weather conditions that cause an abnormally high rate of forced outages for exposed components during the periods such conditions persist. *Note:* Adverse weather conditions can be defined for a particular system by selecting the proper values and combinations of weather: thunderstorms, tornadoes, wind velocities, precipitation, temperature, etc. *See also:* outage. (PE/PSE) [54], 859-1987w

(2) (generating station) Designates weather conditions that cause an abnormally high rate of forced outages for exposed components during the periods such conditions persist, but do not qualify as major storm disasters. Adverse weather conditions can be defined for a particular system by selecting the proper values and combinations of conditions reported by the Weather Bureau: thunderstorms, tornadoes, wind velocities, precipitation, temperature, etc. *Note:* This definition derives from transmission and distribution applications and does not necessarily apply to generation outages. *See also:* major storm disaster. (PE/PSE) 346-1973w

adverse-weather lamps *See:* fog lamps.

advertised ability An operational mode that is advertised using Auto-Negotiation. (C/LM) 802.3-1998

AEEC (Airlines Electronic Engineering Committee) *See:* Airlines Electronic Engineering Committee.

aeolian flexure Flexure of cables caused by the wind. (PE/IC) 1143-1994r

aeolight (optical sound recording) A glow lamp employing a cold cathode and a mixture of permanent gases in which the intensity of illumination varies with the applied signal voltage. (SP) [32]

AEP *See:* application environment profile.

aeration cell *See:* differential aeration cell.

Aerex *See:* explosives.

aerial belt A single D-ring belt designed for attachment when in an aerial bucket or platform. (T&D/PE) 1307-1996

aerial cable (1) A cable for installation on a pole line or similar overhead structure that may be self-supporting or installed on a supporting messenger (cable) and is designed to resist solar radiation and precipitation. A self-supported aerial cable is one that includes a messenger cable that has an outer jacket that covers the messenger and the shield. The messenger is available for support, gripping, pulling, and tensioning. (PE/PSC) 789-1988w

(2) An assembly of insulated conductors installed on a pole or similar overhead structures; it may be self-supporting or installed on a supporting messenger cable. *See also:* cable. (T&D/PE) [10]

aerial device A vehicular mounted articulating device or telescoping boom-type personal lift device, or both, equipped with one or more buckets or a platform used to position a worker. (T&D/PE) 516-1995

aerial lug *See:* external connector.

aerial platform A device designed to be attached to the boom tip of a crane or aerial lift and support a worker in an elevated working position. Platforms may be constructed with surrounding railings that are fabricated from aluminum, steel, or fiber reinforced plastic. Occasionally, a platform is suspended from the load line of a large crane. *Synonyms:* platform; cage. (T&D/PE) 524-1992r

aerial work (power line maintenance) Work performed on equipment used for the transmission and distribution of electricity, which is performed in an elevated position on various structures, conductors, or associated equipment. (T&D/PE) 516-1995

aerodrome beacon (illuminating engineering) An aeronautical beacon used to indicate the location of an aerodrome. *Note:* An aerodrome is any defined area on land or water—including any buildings, installations, and equipment—intended to be used either wholly or in part for the arrival, departure, and movement of aircraft. (ED) [127]

aerometeorgraph (navigation aid terms) A self-recording instrument for the simultaneous recording of atmospheric pressure, temperature, and humidity. (AES/GCS) 172-1983w

aeronautical beacon (illuminating engineering) An aeronautical ground light visible at all azimuths, either continuously or intermittently, to designate a particular location on the surface of the earth. (ED) [127]

aeronautical ground light (illuminating engineering) Any light specially provided as an aid to air navigation, other than a light displayed on an aircraft. (ED) [127]

aeronautical light (illuminating engineering) Any luminous sign or signal that is specially provided as an aid to air navigation. (ED) [127]

Aeronautical Radio Incorporated (ARINC) An organization concerned with providing services to airlines, including sponsorship of voluntary standardization among airlines and airframe and avionics manufacturers. (ATLAS) 771-1989s

aerophare *See:* navigation; radio beacon.

aerophase *See:* radio beacon.

aerosol (1) (laser maser) A suspension of small solid or liquid particles in a gaseous medium. Typically, the particle sizes may range from 100 μm to 0.01 μm or less. (LEO) 586-1980w

(2) (nuclear power plants) Suspension of solid or liquid particles in a gas. (NI) N42.17B-1989r

aerosol development (electrostatography) Development in which the image-forming material is carried to the field of the electrostatic image by means of a suspending gas. *See also:* electrostatography. (ED) [46]

aerospace support equipment (test, measurement, and diagnostic equipment) All equipment (implements, tools, test equipment, devices [mobile or fixed], and so forth), both air-

borne and ground, required to make an aerospace system (aircraft, missile, and so forth) operational in its intended environment. Aerospace support equipment includes ground support equipment. (MIL) [2]

AEW *See:* airborne early warning.

AF *See:* analog-to-frequency converter.

AFC (automatic frequency control) *See:* automatic frequency control.

AFCS (automatic flight control system) *See:* automatic flight control system.

afferent Pertaining to a flow of data or control from a subordinate module to a superordinate module in a software system. *Contrast:* efferent. (C) 610.12-1990

affiliate A remote convergence protocol entity (CPE) whose CPE address is known to the local CPE. (LM/C) 15802-2-1995

affiliation A state that exists if both remote and local CPEs know each other's CPE addresses. (LM/C) 15802-2-1995

affirmative response An input string that matches one of the responses acceptable to the LC_MESSAGES category keyword yesexpr, matching an ERE in the current locale. (C/PA) 9945-2-1993

AFIPS *See:* American Federation of Information Processing Societies.

afterimage (illuminating engineering) A visual response that occurs after the stimulus causing it has ceased. (ED) [127]

afterpulse (photo multipliers) A spurious pulse induced in a photomultiplier by a previous pulse. *See also:* phototube. (NPS) 398-1972r

AGC (automatic generation control, automatic gain control) *See:* automatic generation control; automatic gain control.

agent (1) A physical unit that has an interface to the parallel system bus, for example, a single-board computer. (C/MM) 1296-1987s

(2) A switch or switch-like component or bridge between the requester and the responder. During normal operation the agent's intervention is transparent to the requester and responder. (C/MM) 1596-1992

(3) An active switch, switch-like component, or bridge, between the requester and responder. During normal system operation, the agent is transparent to the requester and responder. (C/MM) 1212-1991s

(4) An active component or bridge that acts on behalf of the real target for an action. For example, a DMA queue could be placed in a bus bridge in order to perform special operations when crossing address or protection domain boundaries. (C/MM) 1212.1-1993

(5) A switch or switch-like component between a RamLink controller and a RamLink slave. During normal operation, the agent has two behaviors: from the higher-level controller's perspective, the agent behaves like a RamLink slave, and from the lower-level slave's perspective, the agent behaves like a controller. (C/MM) 1596.4-1996

(6) Refers to the managed nodes in a network. Managed nodes are those nodes that contain a network management entity (NME), which can be used to configure the node and/or collect data describing operation of that node. The agent is controlled by a network control host or manager that contains both an NME and network management application (NMA) software to control the operations of agents. Agents include systems that support user applications as well as nodes that provide communications services such as front-end processors, bridges, and routers. (C/LM) 802.3-1998

agent code A term used to refer to network management entity software residing in a node that can be used to remotely configure the host system based on commands received from the network control host, collect information documenting the operation of the host, and communicate with the network control host. (C/LM) 802.3-1998

agent error An agent status that indicates an error condition in a replying agent. (C/MM) 1296-1987s

agent status The condition of the replying agent, transmitted during the reply phase of a transfer operation. *See also:* transfer operation; reply phase. (C/MM) 1296-1987s

aggregate A group of entities or a group of other aggregates. The substitution of the word "unit" is used to avoid phrases like "aggregate aggregate." (C/DIS) 1278.1a-1998

aggregate responsibility A broadly stated responsibility that is eventually refined as specific properties and constraints. (C/SE) 1320.2-1998

aggregation The process of changing the resolution of an aggregate to represent it in less detail. (C/DIS) 1278.1a-1998

Aggregation Key A parameter associated with each port and with each aggregator of an Aggregation System identifying those ports that can be aggregated together. Ports in an Aggregation System that share the same Aggregation Key value are potentially able to aggregate together. (C/LM) 802.3ad-2000

Aggregation Link An instance of a MAC-Physical Layer-Medium Physical Layer-MAC entity between a pair of Aggregation Systems. (C/LM) 802.3ad-2000

Aggregation Port An instance of a MAC-Physical Layer entity within an Aggregation System. (C/LM) 802.3ad-2000

Aggregation System A uniquely identifiable entity comprising (among other things) an arbitrary grouping of one or more ports for the purpose of aggregation. An instance of an aggregated link always occurs between exactly two Aggregation Systems. A physical device may comprise a single Aggregation System or more than one Aggregation System. (C/LM) 802.3ad-2000

aggressive carbon dioxide Free carbon dioxide in excess of the amount necessary to prevent precipitation of calcium as calcium carbonate. (IA) [59]

agile device A device that supports automatic switching between multiple Physical Layer technologies. (C/LM) 802.3-1998

aging (1) (Class 1E battery chargers and inverters) The change with passage of time in physical, chemical, or electrical properties of components or equipment under design range operating conditions that may result in degradation of significant performance characteristics. (PE/NP) 650-1979s

(2) (nuclear power generating station) The effect of operational, environmental, and system conditions on equipment during a period of time up to, but not including, design basis events, or the process of simulating these events. (SWG/PE/NP) 382-1985, 627-1980r, C37.100-1992, 323-1974s

(3) (thermal classification of electric equipment and electrical insulation) The irreversible change (usually degradation) that takes place with time. (EI) 1-1986r

aging acceleration factor For a given hottest-spot temperature, the rate at which transformer insulation aging is accelerated compared with the aging rate at a reference hottest-spot temperature. The reference hottest-spot temperature is 110°C for 65°C average winding rise and 95°C for 55°C average winding rise transformers (without thermally upgraded insulation). For hottest-spot temperatures in excess of the reference hottest-spot temperature the aging acceleration factor is greater than 1. For hottest-spot temperatures lower than the reference hottest-spot temperature, the aging acceleration factor is less than 1. (PE/TR) C57.91-1995

aging assessment Evaluation of appropriate information for determining the effects of aging on the current and future ability of systems, structures, and components to function within acceptance criteria. (PE/NP) 1205-1993

aging degradation Gradual deterioration in the physical characteristics of a system, structure, or component, that is due to aging mechanisms, that occurs with time or use under preservice or service conditions, and could impair its ability to perform any of its design functions. (PE/NP) 1205-1993

aging factor (1) (thermal classification of electric equipment and electrical insulation) A factor of influence that causes aging. (EI) 1-1986r

(2) A quantitative factor expressing the degradation in the ability of the battery, due to usage, to deliver electrical energy under specified operating conditions such as, but not limited to, operating ambient temperature, cycling, depth of discharge, and maintenance practices. (VT) 1476-2000

aging mechanism (1) (nuclear power generating station) Any process attributable to service conditions that results in degradation of an equipment's ability to perform its Class 1E functions. (PE/NP) 649-1980s

(2) A specific process that gradually changes the characteristics of a system, structure, or component with time or use. (PE/NP) 1205-1993

(3) The microscopic or molecular level process or processes (such as chain scission, cross-linking, oxidation, evaporation, or diffusion) that produce changes in the material. (DEI/RE) 775-1993w

agitator (hydrometallurgy) (electrowinning) A receptacle in which ore is kept in suspension in a leaching solution. *See also:* electrowinning. (PE/EEC) [119]

aided tracking A tracking technique in which the manual correction of the tracking error automatically corrects the rate of motion of the tracking mechanism. (AES) 686-1997

aid to navigation *See:* navigational aid.

AI-ESTATE (Artificial Intelligence - Expert System Tie to ATE) *See:* Artificial Intelligence and Expert System Tie to Automatic Test Equipment.

aiming symbol A circle or other pattern of light projected by a light pen onto a display surface to aid in positioning the pen or to describe the light pen's field of view. (C) 610.6-1991w

air- (Used as a prefix). Applied to a device that interrupts an electric circuit; this prefix indicates that the interruption occurs in air. (IA/ICTL/IAC/APP) [60], [75]

AI radar *See:* airborne-intercept radar.

air, ambient *See:* ambient air.

air-blast circuit breaker *See:* circuit breaker.

airborne early warning (radar) (navigation aid terms) An early-warning radar carried by an airborne or spaceborne vehicle. *See also:* early-warning radar. (AES/GCS) 172-1983w, 686-1997

airborne-intercept radar A fire-control radar for use in interceptor aircraft. (AES) 686-1997

airborne moving-target indication radar (AMTI radar) An MTI radar flown in an aircraft or other moving platform with corrections applied for the effects of platform motion, which include the changing clutter Doppler frequency and the spread of the clutter Doppler spectrum. *See also:* displaced phase center antenna; space-time adaptive processing; time-averaged-clutter coherent airborne radar. (AES) 686-1997

airborne radioactivity Radioactivity in any chemical or physical form that is dissolved, mixed, suspended, or otherwise entrained in air. (NI) N42.17B-1989r

air cell A gas cell in which depolarization is accomplished by atmospheric oxygen. *See also:* electrochemistry. (EEC/PE) [119]

air circuit breaker *See:* circuit breaker.

air conditioning The process of treating air so as to simultaneously control temperature, humidity, and distribution to the conditioned space. (IA/PSE) 241-1990r

air-conditioning equipment All of that equipment intended or installed for the purpose of processing the treatment of air so as to control simultaneously its temperature, humidity, cleanliness, and distribution to meet the requirements of the conditioned space. (NESC/NEC) [86]

air conduction (hearing) The process by which sound is conducted to the inner ear through the air in the outer ear canal as part of the pathway. (SP) [32]

air-core inductance (winding inductance) The effective self-inductance of a winding when no ferromagnetic materials are present. *Note:* The winding inductance is not changed when ferromagnetic materials are present. (CHM) [51]

air-core reactor A reactor that does not include a magnetic core or magnetic shield. (PE/TR) C57.16-1996

aircraft aeronautical light (illuminating engineering) Any aeronautical light specially provided on an aircraft. (ED) [127]

aircraft bonding The process of electrically interconnecting all parts of the metal structure of the aircraft as a safety precaution against the buildup of isolated static charges and as a means of reducing radio interference. (EEC/PE) [119]

aircraft electric machine An electric machine designed for operation aboard aircraft. *Note:* Minimum weight and size and extreme reliability for a specified (usually short) life are required while operating under specified conditions of coolant temperature and flow, and for air-cooled machines, pressure and humidity. (PE) [9]

aircraft hangar A location used for storage or servicing of aircraft in which gasoline, jet fuels, or other volatile flammable liquids or flammable gases are used. (NESC/NEC) [86]

air data system (navigation aid terms) A set of aerodynamic and thermodynamic sensors, and a computer which provide flight parameters such as airspeed, static pressure, air temperature, and Mach number. (AES/GCS) 172-1983w

air-derived navigation data (navigation aid terms) Data obtained from measurements made on an airborne vehicle. *See also:* navigation. (AES/RS/GCS) 686-1982s, [42], 172-1983w

air discharge method (1) A method of ESD testing in which the charged electrode of the ESD simulator approaches the EUT or coupling plane regardless of the conductivity of the ESD receptor. The discharge is actuated by a spark in air to the EUT or coupling plane. (EMC) C63.16-1993

(2) A method of ESD testing in which the charged electrode of the ESD simulator approaches the Unit Under Test (UUT) or coupling plane. The discharge is actuated by a spark in the air to the UUT or to the coupling plane. (SPD/PE) C62.38-1994r

air equivalent radiation dose (valve actuators) The energy that is absorbed per unit mass of air at the geometric center of the volume occupied by the specimen if it were replaced with air and a uniform flux were incident at the boundary of the volume, directed toward the center. (PE/NP) 382-1985

air failure A failure in the cable above the waterline but below the termination. (PE/IC) 1407-1998

air-floating head *See:* floating head.

air gap The space between the magnetic shunt and the core, used to establish the required reluctance of the shunt flux path. (PEL) 449-1998

air-gap field voltage (excitation systems for synchronous machines) The synchronous machine field voltage required to produce rated voltage on the air-gap line of the synchronous machine with its field winding at 75°C for field windings designed to operate at rating with a temperature rise of 60°C or less; or 100°C for field windings designed to operate at rating with a temperature rise greater than 60°C. *Note:* This defines one per unit excitation system voltage for use in computer representation of excitation systems. (PE/EDPG) 421.1-1986r

air-gap line (excitation systems for synchronous machines) The extended straight line part of the no-load saturation curve of the synchronous machine. (PE/EDPG) 421.1-1986r

air gap, relay *See:* relay air gap.

air-gap surge arrester (low-voltage air-gap surge-protective devices) A gap or gaps in air at ambient atmospheric pressure, designed to protect apparatus and personnel, or both, from high transient voltages. (SPD/PE) C62.32-1981s

air-gap surge protector (low-voltage air-gap surge-protective devices) A protective device, consisting of one or more air-gap surge arresters; optional fuses, short-circuiting de-

vices, etc.; and a mounting assembly, for limiting surge voltages on low voltage (600 V rms or less) electrical and electronic equipment or circuits. (SPD/PE) C62.32-1981s

air horn A horn having a diaphragm that is vibrated by the passage of compressed air. *See also:* protective signaling. (EEC/PE) [119]

Airlines Electronic Engineering Committee The Aeronautical Radio Incorporated (ARINC) committee that originated the Abbreviated Test Language for All Systems (ATLAS). (ATLAS) 771-1989s

air mass The mass of air between a surface and the sun that affects the spectral distribution and intensity of sunlight. *See also:* air mass one; air mass zero. (AES/SS) 307-1969w

air mass one A term that specifies the spectral distribution and intensity of sunlight on earth at sea level with the sun directly overhead and passing through a standard atmosphere. *See also:* air mass; air mass zero. (AES/SS) 307-1969w

air mass zero A term that specifies the spectral distribution and intensity of sunlight in near-earth space without atmospheric attenuation. *Note:* The air mass must be specified when reporting the efficiency of solar cells; for example, 10% efficient at air mass zero, 60°C. *See also:* air mass one; air mass. (AES/SS) 307-1969w

air navigation (navigation aid terms) The navigation of aircraft. (AES/GCS) 172-1983w

airport beacon *See:* aerodrome beacon.

airport surface detection equipment (ASDE) (1) A ground-based radar for observation of the positions of aircraft and other vehicles on the surface of an airport. (AES/GCS) 172-1983w

(2) A high-resolution radar usually located on the airport control tower or other high point and used for observation of the positions of aircraft and other vehicles on the surface of an airport. (AES) 686-1997

airport-surveillance radar (ASR) (1) (navigation aid terms) A medium-range (for example, 60 nautical miles [nmi]) surveillance radar used to control aircraft in the vicinity of an airport. (AES/GCS) 172-1983w

(2) A medium-range (e.g., 100 km) surveillance radar used to control aircraft in the vicinity of an airport. (AES) 686-1997

air position indicator (API) (navigation aid terms) An airborne computing system that presents a continuous indication of the aircraft's position on the basis of aircraft heading, airspeed, and elapsed time. (AES/RS/GCS) 686-1982s, 172-1983w

air, recirculated *See:* recirculated air.

air, return *See:* return air.

air-route surveillance radar (ARSR) (1) (navigation aid terms) A long-range (for example, 200 nautical miles [nmi]) surveillance radar used to control aircraft on airways beyond the coverage of airport surveillance radar (ASR). (AES/GCS) 172-1983w

(2) A long-range (e.g., 350 km) surveillance radar used to control aircraft on airways beyond the coverage of airport-surveillance radar (ASR). (AES) 686-1997

airspeed (navigation aid terms) The rate of motion of a vehicle relative to the air mass. (AES/RS/GCS) 686-1982s, 172-1983w

airspeed indicator (navigation aid terms) An instrument for measuring airspeed. (AES/RS/GCS) 686-1982s, 172-1983w

air-surveillance radar A surveillance radar whose function is to detect and track aircraft over a volume of space. (AES) 686-1997

air switch (1) (high-voltage switchgear) A switch with contacts that separate in air. (SWG/PE) C37.40-1993

(2) A switching device designed to close and open one or more electric circuits by means of guided separable contacts that separate in air. The switching device may be equipped with arcing horns. (SWG/PE) C37.36b-1990r

(3) A switching device designed to close and open one or more electric circuits by means of guided separable contacts that separate in air. (SWG/PE) C37.100-1992

air terminal (lightning protection) The combination of an elevation rod and brace, or footing placed on upper portions of structures, together with tip or point, if used. (PE/T&D) 1243-1997

air ventilation The amount of supply air required to maintain the desired quality of air within a designated space. (IA/PSE) 241-1990r

airway beacon (illuminating engineering) An aeronautical beacon used to indicate a point on the airway. (ED) [127]

AIS *See:* alarm indication signal.

alarm (1) (power generating stations) A signal for attracting attention to some abnormal condition. Alarms associated with electric heat tracing systems can signal high temperature, low temperature, loss of heater circuit voltage, etc. *Synonym:* alarm signal. (PE/EDPG) 622A-1984r, 622B-1988r

(2) An audible and/or visible signal activated when the instrument reading exceeds a preset value or falls outside of a preset range. (NI) N42.17B-1989r, N42.20-1995

(3) A signal generated by a slave and received by the controller, which is typically used to interrupt the processor, or to activate processing of the slave's request/response packet queues. (C/MM) 1596.4-1996

(4) A signal for attracting attention to some abnormal condition. A warning of danger, safeguard threat, equipment failure, or other condition requiring attention. (PE/NP) 692-1997

alarm, blue* *See:* alarm indication signal.

* Deprecated.

alarm checking The identification of an alarm from a remote location by communicating with its point of origin. (COM) 312-1977w

alarm condition (1) (supervisory control, data acquisition, and automatic control) A predefined change in the condition of equipment or the failure of equipment to respond correctly. Indication may be audible or visual, or both. (SUB/PE) C37.1-1994

(2) A predefined change in the condition of equipment or the failure of equipment to respond correctly. Indication may be audible, visual, or both. (SWG/PE) C37.100-1992

alarm function *See:* supervisory control functions.

alarm indication signal A signal that replaces the normal traffic signal when a maintenance alarm indication has been activated. (COM/TA) 1007-1991r

alarm point (power-system communication) A supervisory control status point considered to be an alarm. (PE) 599-1985w

alarm point interfaces Master station or RTU (or both) element(s) that input(s) a signal to the alarm function. (SUB/PE) C37.1-1994

alarm, red *See:* red alarm.

alarm relay (1) (signal) A monitoring relay whose function is to operate an audible or visual signal to announce the occurrence of an operation or a condition needing personal attention, and usually provided with a signaling cancellation device. *See also:* relay. (SWG/PE/PSR) C37.90-1978s

(2) (power system device function numbers) A relay other than an annuciator, as covered under device function 30, [annunciator relay], that is used to operate, or to operate in connection with, a visual or audible alarm. (SUB/PE) C37.2-1979s

(3) A monitoring relay whose function is to operate an audible or visual signal to announce the occurrence of an operation or a condition needing personnel attention, and which is usually provided with a signaling cancellation device. (SWG/PE) C37.100-1992

alarm SCADA function The capability of a supervisory system to accomplish a predefined action in response to an alarm condition. (SUB/PE) C37.1-1994

alarm sending (telephone switching systems) The extension of alarms from an office to another location. (COM) 312-1977w

alarm signal A signal for attracting attention to some abnormal condition. *See also:* alarm. (COM/PE/EDPG) [48], 622B-1988r

alarm summary printout (sequential events recording systems) The recording of all inputs currently in the alarm state. (PE/EDPG) [5], [1]

alarm switch An auxiliary switch that actuates a signaling device upon the automatic opening of the circuit breaker with which it is associated. (IA/PSP) 1015-1997

alarm system (protective signaling) An assembly of equipment and devices arranged to signal the presence of a hazard requiring urgent attention. *See also:* protective signaling. (EEC/PE) [119]

alarm, yellow *See:* yellow alarm.

albedo (photovoltaic power system) The reflecting power expressed as the ratio of light reflected from an object to the total amount falling on it. (AES) [41]

(2) (A) In astronomy (where the sizes of the objects/surfaces are extremely large in comparison to a wavelength), the ratio of the total radiation reflected (scattered) from an object to the total incident power. **(B)** In transport theory or particle scattering (where the size of the object is not extremely large), the ratio of the total scattering cross-section to the sum of the scattering and absorption cross-sections. (AP/PROP) 211-1997

ALC *See:* automatic load (level) control.

alert (1) To cause the terminal of the user to give some audible or visual indication that an error or some other event has occurred. When the standard output is directed to a terminal device, the method for alerting the terminal user is unspecified. When the standard output is not directed to a terminal device, the alert shall be accomplished by writing the ⟨alert⟩ character to standard output (unless the utility description indicates that the use of standard output produces undefined results in this case). (C/PA) 9945-2-1993

(2) A notification to be watchful that shall not be considered the same priority as an alarm. (PE/NP) 692-1997

alert level A probability value placed on equipment failure rates to identify when systems, trains, or components are not achieving their target availability or reliability values. (PE/NP) 933-1999

alertness function A device or system that monitors the operator for signs of incapacitation, usually by requiring movement or response to take place within a prescribed period of time. (VT) 1475-1999

⟨**alert**⟩ A character that in the output stream shall indicate that a terminal should alert its user via a visual or audible notification. The ⟨alert⟩ shall be the character designated by '\a' in the C-language binding. It is unspecified whether this character is the exact sequence transmitted to an output device by the system to accomplish the alert function. (C/PA) 9945-2-1993

alert tone A non-power ringing tone, or combination of tones, used to request the telemetry interface unit (TIU) or customer premise equipment (CPE) to become active. (AMR/SCC31) 1390-1995, 1390.2-1999, 1390.3-1999

alert tone code (1) A data byte, from the utility controller, that identifies which alert tone is to be used by the central office service unit (COSU). (AMR/SCC31) 1390-1995, 1390.2-1999

(2) A data byte that identifies which alert tone is to be used by the central office service unit (COSU). (SCC31) 1390.3-1999

Alford loop antenna A multi-element antenna having approximately equal amplitude currents that are in phase and uniformly distributed along each of its peripheral elements and producing a substantially circular radiation pattern in its principal E-plane. *Note:* This antenna was originally developed as a four-element, horizontally polarized, UHF loop antenna. (AP/AES/ANT/GCS) 145-1993, 172-1983w

Alfvén velocity (radio-wave propagation) The characteristic velocity of an Alfven wave, given by:

$$V_a = H_0 \left[\frac{\mu}{\rho} \right]^{1/2}$$

where μ is the permeability, H_o is the static magnetic field strength, and ρ is the mass density of the conducting fluid. (AP/PROP) 211-1990s

Alfvén wave (radio-wave propagation) In a homogeneous magneto-ionic medium, the magneto-hydrodynamic wave that propagates in the direction of the static magnetic field, with associated electric and magnetic fields and fluid particle velocities oriented perpendicular to the direction of propagation. (AP/PROP) 211-1990s

algebraic coding function In hashing, a hash function that returns the result of evaluating some polynomial in which selected digits of the original key are used as coefficients. For example, in the function below, the first three digits of the original key are evaluated as a, b, and c, respectively, in the polynomial $a + b\,x + c\,x^2$ with $x = 14$.

Original key	Calculation	Hash value
964721	9 + 6(14) + 4(14)2 = 877	877
864765	8 + 6(14) + 4(14)2 = 876	876

(C) 610.5-1990w

algebraic language A programming language that permits the construction of statements resembling algebraic expressions, such as $Y = X + 5$. For example, NOMAD or FORTRAN. *See also:* algorithmic language; logic programming language; list processing language; functional language. (C) 610.13-1993w, 610.12-1990

algebraic manipulation The processing of mathematical expressions without concern for the numeric values of the symbols that represent numbers. (C) 1084-1986w

algebraic sum The answer arrived at when adding two operands numerically. For example: 01102 + 01012 = 10112. *Contrast:* logical sum. (C) 610.10-1994w

ALGOL (ALGOrithmic Language or ALGebraic Oriented Language). A high-order programming language suitable for expressing solutions to problems requiring numeric computations, algorithms, or mathematical formulas; its many elegant features and formal syntactic definition have inspired much research in programming language theory. *Note:* Jointly developed by the United States and European communities, ALGOL 60 was the first language standard to be adopted as an ISO standard. As of this writing, ALGOL 68 is the dialect accepted as the latest standard language. *See also:* extensible language; EULER; GLYPNIR; block-structured language. (C) 610.13-1993w

ALGOL 58 A dialect of ALGOL developed as an IEEE standard language in 1958. (C) 610.13-1993w

ALGOL 60 A dialect of ALGOL that was the first version to be adopted as an ISO language standard for ALGOL. *See also:* EL1; MP; SIMULA. (C) 610.13-1993w

ALGOL 68 A dialect of ALGOL characterized by being the first instance of a complete formal definition language. (C) 610.13-1993w

algorithm (general) A prescribed set of well-defined rules or processes for the solution of a problem in a finite number of steps; for example, a full statement of an arithmetic procedure for evaluating sin$x$ to a stated precision. *See also:* heuristic. (MIL/C) [2], [20], [85]

(2) (A) (software) (mathematics of computing) A finite set of well-defined rules for the solution of a problem in a finite number of steps; for example, a complete specification of a sequence of arithmetic operations for evaluating sine x to a given precision. **(B) (software)** Any sequence of operations for performing a specific task. (C) 610.12-1990, 1084-1986

algorithm analysis (software) The examination of an algorithm to determine its correctness with respect to its intended use, to determine its operational characteristics, or to understand it more fully in order to modify, simplify, or improve it. *See also:* algorithm. (C/SE) 729-1983s

algorithmic language (1) (software) A programming language designed for expressing algorithms; for example, ALGOL. *See also:* logic programming language; functional language; list processing language; algebraic language. (C) 610.12-1990, 610.13-1993w

(2) (test, measurement, and diagnostic equipment) A language designed for expressing algorithms. (MIL) [2]

alias (1) (A) (software) An additional name for an item. **(B) (software)** An alternate label. For example, a label and one or more aliases may be used to refer to the same data element or point in a computer program. *See also:* data; label; computer program; alternate name. (C/SE) 729-1983, 610.5-1990

(2) An alternate name for a directory object, provided by the use of one or more alias entries in the DIT. *Synonym:* alias name. (C/PA) 1328.2-1993w, 1224.2-1993w, 1327.2-1993w, 1326.2-1993w

(3) An alternate name for an IDEF1X model construct (class, responsibility, entity, or domain). (C/SE) 1320.2-1998

alias entry A Directory entry, of Object Class "alias," containing information used to provide an alternative name for an object. (C/PA) 1327.2-1993w, 1326.2-1993w, 1328.2-1993w, 1224.2-1993w

aliasing The visual misrepresentation that occurs when an image or model contains more detail than the display device's resolution can present. *Note:* A result of aliasing is jagged stairstepping of slanted lines. (C) 610.6-1991w

alias name In the shell command language, a word consisting solely of underscores, digits, and alphabetics from the portable character set and any of the following characters:

! % , @

Implementations may allow other characters within alias names as an extension. *See also:* alias. (C/PA) 9945-2-1993

align (test, measurement, and diagnostic equipment) To adjust a circuit, equipment, or system so that its functions are properly synchronized or its relative positions properly oriented. For example, trimmers, padders, or variable inductances in tuned circuits are adjusted to give a desired response for fixed tuned equipment or to provide tracking for tunable equipment. (MIL) [2]

aligned A term that refers to the constraints placed on the address of the data; the address is constrained to be a multiple of the data format size. (C/MM) 1596.5-1993

aligned address This is an integer multiple of the data block size. The maximum data block size that can be transferred by an implementation under test (IUT) Master is the product of data width and data length. (C/BA) 896.4-1993w

aligned bundle (fiber optics) A bundle of optical fibers in which the relative spatial coordinates of each fiber are the same at the two ends of the bundle. *Note:* The term "coherent bundle" is often employed as a synonym, and should not be confused with phase coherence or spatial coherence. *Synonym:* coherent bundle. *See also:* fiber bundle. (Std100) 812-1984w

aligned-grid tube (or valve) A vacuum multigrid tube or valve in which at least two of the grids are aligned, one behind the other, so as to obtain a particular effect (canalizing an electron beam, suppressing noise, etc.). *See also:* electron tube. (ED) [45], [84]

alignment (1) (data transmission) In communication practice, alignment is the process of adjusting a plurality of components of a system for proper interrelationship. The term is applied especially to the adjustment of the tuned circuits of an amplifier for desired frequency response, and the synchronization of the components of a system. (PE) 599-1985w

(2) (inertial navigation equipment) (navigation aid terms) The orientation of the measuring axes of the inertial components with respect to the coordinate system in which the equipment is used. *Note:* Inertial alignment refers to the result of either the process of bringing the measuring axis into a desired orientation or the computation of the angles between the measuring axis and the desired orientation with respect to the coordinate system in which the equipment is used. The initial alignment can be accomplished by the use of noninertial sensors. *See also:* gyrocompass alignment; transfer alignment. (AES/GCS) 172-1983w

(3) (communication practice) The process of adjusting a plurality of components of a system for proper interrelationship. *Note:* The term is applied especially to the adjustment of the tuned circuits of an amplifier for desired frequency response, and the synchronization of components of a system. *See also:* radio transmission. (PE) 599-1985w

(4) (computers) Pertaining to data that are stored beginning at certain machine-dependent boundaries. Such data is said to be "aligned," otherwise it is said to be "unaligned;" for example, a four-bit data item is aligned if it begins on a full-word boundary of eight-bit words. *Synonym:* boundary alignment. (C) 610.5-1990w

(5) The suitability of particular addresses for accessing particular types of data. For example, some processors require even addresses for accessing 16-bit data items. (C/BA) 1275-1994

(6) *See also:* input-axis misalignment. (AES/GYAC) 528-1994

alignment error (1) An error that occurs when a packet is not a multiple of eight bits. *Note:* It is only applicable to specific protocols. (C) 610.7-1995

(2) The deviation of the recovered clock from the ideal recovered clock embedded by the transmitter. The deviation from the ideal sampling point may be caused by static timing errors in the timing recovery circuit, internal jitter generated in the timing recovery circuit, and the inability to track exactly the jitter on the received data signal. (C/LM) 8802-5-1998

alignment jitter The jitter measured against the clock of the upstream adapter. This is not a type of jitter per se; rather, it is a way to measure jitter. When "zero transferred jitter" is specified, the jitter measured is alignment jitter. (LM/C) 802.5-1989s

alignment kit (test, measurement, and diagnostic equipment) A kit containing all the instruments or tools necessary for the alignment of electrical or mechanical components. (MIL) [2]

alignment tool (test, measurement, and diagnostic equipment) A small screwdriver, socket wrench, or special tool used for adjusting electronic, mechanical, or optical units, usually constructed of nonmagnetic materials. (MIL) [2]

alive (1) (electric systems) Electrically connected to a source of potential difference, or electrically charged so as to have a potential different from that of the ground. *Note:* The term "alive" is sometimes used in place of the term current-carrying, where the intent is clear to avoid repetitions of the longer term. *Synonym:* live. *See also:* energized; insulated. (T&D) C2.2-1960

(2) *See also:* energized. (T&D/PE) 524-1992r

alkaline cleaning (electroplating) Cleaning by means of alkaline solutions. *See also:* electroplating. (EEC/PE) [119]

alkaline storage battery A storage battery in which the electrolyte consists of an alkaline solution, usually potassium hydroxide. *See also:* battery. (EEC/PE) [119]

Allan deviation *See:* two-sample deviation.

Allan variance The average of the variance of adjacent pairs of elements in a contiguous time series of data versus the averaging time used to generate the elements. The term "Allan variance" is also used to refer to its square root versus aver-

aging time, although "square root of Allan variance" would be more proper usage. (AES/GYAC) 1293-1998

Allan variation *See:* two-sample variance.

alligator *See:* running board.

allocated baseline In configuration management, the initial approved specifications governing the development of configuration items that are part of a higher level configuration item. *Contrast:* developmental configuration; product baseline; functional baseline. *See also:* allocated configuration identification. (C) 610.12-1990

allocated configuration identification In configuration management, the current approved specifications governing the development of configuration items that are part of a higher level configuration item. Each specification defines the functional characteristics that are allocated from those of the higher level configuration item, establishes the tests required to demonstrate achievement of its allocated functional characteristics, delineates necessary interface requirements with other associated configuration items, and establishes design constraints, if any. *Contrast:* functional configuration identification; product configuration identification. *See also:* allocated baseline. (C) 610.12-1990

allocated storage Portions of storage that are assigned or reserved for active instructions or for data. (C) 610.10-1994w

allocation (1) (A) (software) The process of distributing requirements, resources, or other entities among the components of a system or program. **(B) (software)** The result of the distribution in definition (A). (C) 610.12-1990

(2) (broadband local area networks) The assignment of specific broadcast frequencies by a national organization (such as the FCC) for various communications uses (e.g., commercial television and radio, land-mobile radio, defense communications, microwave links). This divides the available spectrum between competing services and minimizes interference between them. The manager of a broadband network must allocate the available bandwidth of the cable among different services for the same reason. (LM/C) 802.7-1989r

(3) (computers) *See also:* storage allocation. (C) [20], [85]

(4) The decision to assign a function or decision to hardware, software, or humans. Allocation may be made entirely to one of these three system element types or to some combination to be resolved upon further functional decomposition. (C/SE) 1220-1998

allocation protocols The protocols used to allocate resources that are shared by multiple nodes. These include bandwidth allocation protocols and queue allocation protocols. (C/MM) 1596-1992

allotting (telephone switching systems) The preselecting by a common control of an idle circuit. (COM) 312-1977w

allowable continuous current (of a fuse link, fuse unit or refill unit) The maximum rms current in amperes at rated frequency and at a specific ambient temperature, which a device will carry continuously without exceeding the allowable total temperature. (SWG/PE) C37.40-1993, C37.41-1981s

allowable continuous-current class designation (of an air switch) A code that identifies the composite curve relating the loadability factor *LF* of the switch to the ambient temperature θ_A as determined by the limiting switch part class designations. (SWG/PE) C37.30-1992s, C37.37-1996

allowable stress (seismic design of substations) The maximum stress permitted by applicable standards or codes, or both. (PE/SUB) 693-1984s, C37.122.1-1993

alloy junction (semiconductor) A junction formed by recrystallization on a base crystal from a liquid phase of one or more components and the semiconductor. *See also:* semiconductor. (IA) 59-1962w, [12]

alloy plate An electrodeposit that contains two or more metals codeposited in combined form or in intimate mixtures. *See also:* electroplating. (EEC/PE) [119]

all-pass filter A filter designed to introduce phase shift or delay over a band of frequencies without introducing appreciable attenuation distortion over those frequencies. (CAS) [13]

all-pass function (linear passive networks) A transmittance that provides only phase shift, its magnitude characteristic being constant. *Notes:* 1. For lumped-parameter networks, this is equivalent to specifying that the zeros of the function are the negatives of the poles. 2. A realizable all-pass function exhibits non-decreasing phase lag with increasing frequency. 3. A trivial all-pass function has zero phase at all frequencies. (CAS) 156-1960w

all-pass network A network designed to introduce phase shift or delay without introducing appreciable attenuation at any frequency. *Synonym:* all-pass transducer. *See also:* network analysis. (EEC/PE) [119]

all-pass transducer *See:* all-pass network.

all-purpose computer *See:* general-purpose computer.

all-relay system An automatic telephone switching system in which all switching functions are accomplished by relays. (EEC/PE) [119]

all routes explorer (ARE) A frame that traverses every path and combination of paths through a bridged network. (C/LM/CC) 8802-2-1998

all-segments broadcast The transmission of a frame to all interconnected segments of a local area network. *See also:* all-stations broadcast. (C) 610.7-1995

all-stations broadcast The transmission of a frame to all stations on a given local area network segment. *See also:* all-segments broadcast. (C) 610.7-1995

all terrain vehicle (ATV) *See:* off-road vehicle.

all-weather distribution A distribution of corona-effect data collected under all weather conditions. Such data are usually obtained from long-term recording stations. Weather conditions are defined in the next section. (T&D/PE) 539-1990

almanac (navigation aid terms) A periodic publication of astronomical data useful to a navigator. (AES/GCS) 172-1983w

ALOHA network A telecommunication network that uses a multi-access contention protocol, first developed for use in Hawaii. (C) 610.7-1995

ALP *See:* automated language processing.

ALPHA An extension to PL/1 providing BNF (backus naur form) parsing capabilities. *Note:* Semantic routines are defined in PL/1 and invoked during the parse. (C) 610.13-1993w

alpha *See:* alphabetic; alphanumeric.

alphabet (1) (computers) An ordered set of all the letters or symbols used in a language, including letters with diacritical signs where appropriate, but not including punctuation marks. (C) 610.5-1990w

(2) A character set arranged in certain order. *Note:* Character sets are finite quantities of letters of the normal alphabet, digits, punctuation marks, control signals, such as carriage return and other ideographs. Characters are usually represented by letters (graphics) or technically realized in the form of combinations of punched holes, sequences of electric pulses, etc. (COM) [49]

alphabetic Pertaining to data that consist solely of letters from the same alphabet. For example, (AaBbCcDdEe...) plus the space character. *Note:* IEEE Std 610.5 deprecates the use of "alpha" as an abbreviation for "alphabetic". *Synonym:* alpha. *See also:* alphanumeric; character. (C) 610.5-1990w

alphabetic character set A character set that contains alphabetic characters and that may contain control characters, special characters, and the space character, but not digits. (C) 610.5-1990w

alphabetic code A code that uses alphabetic characters to represent data. (C) 610.5-1990w

alphabetic shift A control for selecting the alphabetic character set on an keyboard or printer. *Contrast:* numeric character. *See also:* shift character. (C) 610.5-1990w

alphabetic string A character string consisting solely of alphabetic characters. (C) 610.5-1990w

alphabetic word (A) A word consisting solely of letters from the same alphabet; for example, the word "CIRCUS." **(B)** A word that consists of letters and associated special characters, but not digits; for example, the word "HEAVY-DUTY." (C) 610.10-1994

alpha end (1) The end of the module nearest the lowest-numbered connector contact. (C/BA) 1101.3-1993
(2) The end of the module nearest the lowest-numbered contact. (C/BA) 1101.4-1993, 1101.7-1995

alpha key The connector keying pin located at the alpha end of the module connector. (C/BA) 1101.3-1993

alphameric *See:* alphanumeric.

alphanumeric (1) (computers) Pertaining to data that contain the letters of an alphabet (AaBbCcDdEeFfGgHh...), the decimal digits (0123456789), and may contain control characters, special characters and the space character. *Synonym:* alphameric. (C) 610.5-1990w
(2) Pertaining to a character set that contains both letters and digits, but usually some other characters such as punctuation symbols. *Synonym:* alphameric. (C) [20]

alphanumeric character set A character set that contains alphanumeric characters. (C) 610.5-1990w

alphanumeric code A code that uses alphanumeric characters to represent data. (C) 610.5-1990w

alphanumeric display device *See:* character display device.

alpha profile *See:* power-law index profile.

ALT *See:* alternate key.

alter (A) To insert, delete, or modify a data record. **(B)** To change a logical relationship or physical structure of a database. *See also:* modify. (C) 610.5-1990

alteration (elevators) Any change or addition to the equipment other than ordinary repairs or replacements. *See also:* elevator. (EEC/PE) [119]

alternate ac (AAC) source An ac power source that is available to and located at or nearby a nuclear power plant and that meets the following requirements: It can be connected to (but is not normally connected to) the offsite or onsite emergency ac power systems; It has minimum potential for common mode failure with offsite power or onsite emergency ac power sources; It is available in a timely manner after the onset of a station blackout; It has sufficient capacity and reliability to operate all systems required for both coping with a station blackout and for the time needed to bring the plant to and maintain the plant in a safe shutdown (nondesign basis accident). (PE/NP) 765-1995

alternate access unit (AAU) Type of unit architecture that defines access between multiple IEEE Standard-compliant buses (e.g., Futurebus+ and Serial Bus) when the buses share a common module. (C/BA) 896.3-1993w

alternate-channel interference (second-channel interference) Interference caused in one communication channel by a transmitter operating in a channel next beyond an adjacent channel. *See also:* radio transmission. (EEC/PE) [119]

alternate display (oscillography) A means of displaying output signals of two or more channels by switching the channels in sequence. *See also:* oscillograph. (IM/HFIM) [40]

alternate function key A function key that, when used in conjunction with the alternate key, performs a different function or command than when it is used alone. (C) 610.10-1994w

alternate hierarchical routing A routing strategy in which the traffic is routed through the lowest available level of the network hierarchy. *Note:* It uses a tree like structure of five classes: class 1—regional center, class 2—sectional center, class 3—primary center, class 4—toll center, and class 5—end office. *Synonym:* alternative hierarchical routing. (C) 610.7-1995

alternate index An index that uses alternate keys to reference indexed data. *See also:* secondary index. (C) 610.5-1990w

alternate key (1) (A) In a relation, a candidate key that is not chosen to be the primary key for that relation. **(B)** A secondary key for an indexed sequential file. *See also:* alternate index; prime key. (C) 610.5-1990
(2) A control key that controls the interpretation of other keys. That is, when used in conjunction with another key it causes a different interpretation of that key than when the key is used alone. *See also:* shift key. (C) 610.10-1994w
(3) Any candidate key of an entity other than the primary key. (C/SE) 1320.2-1998

alternate mark inversion code *See:* bipolar signal.

alternate name Any name besides the data element name by which a data item is known. *Note:* Often stored in data dictionaries. *Synonym:* alias. (C) 610.5-1990w

alternate power source One or more generator sets intended to provide power during the interruption of the normal electrical service or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises. (NESC/NEC) [86]

alternate root directory A pathname other than / for managing installed software. (C/PA) 1387.2-1995

alternate route (data transmission) A secondary communications path used to reach a destination if the primary path is unavailable. (PE) 599-1985w

alternate-route trunk group (telephone switching systems) A trunk group that accepts alternate-routed traffic. (COM) 312-1977w

alternate routing (1) (telephone switching systems) A means of selectively distributing traffic over a number of routes ultimately leading to the same destination. (COM) 312-1977w
(2) A routing strategy that assigns a secondary communications path to a destination when the primary path is busy or unavailable. *Synonym:* alternative routing. (C) 610.7-1995

alternate track On a disk, a spare track that is used in place of a normal track in the event that the latter is damaged or inoperable. *Synonym:* alternative track. (C) 610.10-1994w

alternating charge characteristic (nonlinear capacitor) The function relating the instantaneous values of the alternating component of transferred charge, in a steady state, to the corresponding instantaneous values of a specified applied periodic capacitor-voltage. *Note:* The nature of this characteristic may depend upon the nature of the applied voltage. *See also:* nonlinear capacitor. (ED) [46]

alternating current (ac) (1) An electric current that reverses direction at regularly recurring intervals of time. *Contrast:* direct current. (C) 610.10-1994w
(2) A periodic current with an average value over a period of time of zero. (Unless distinctly specified otherwise, the term refers to a current that reverses at regularly recurring intervals of time and that has alternately positive and negative values.). (IA/MT) 45-1998

alternating-current and direct-current ringing Ringing in which alternating current activates the ringer and direct current controls the removal of ringing upon answer. (COM) 312-1977w

alternating-current arc welder transformer A transformer with isolated primary and secondary windings and suitable stabilizing, regulating, and indicating devices required for transforming alternating current from normal supply voltages to an alternating-current output suitable for arc welding. (EEC/AWM) [91]

alternating-current breakdown voltage (gas-tube surge protective devices) The minimum root-mean-square (rms) value of a sinusoidal voltage at frequencies between 15 Hz and 62 Hz that results in arrester sparkover. (SPD/PE) C62.31-1984s

alternating-current circuit A circuit that includes two or more interrelated conductors intended to be energized by alternating current. (Std100) 270-1966w

alternating-current circuit breaker (power system device function numbers) A device that is used to close and interrupt an ac power circuit under normal conditions or to interrupt this circuit under fault or emergency conditions. (PE/SUB) C37.2-1979s

alternating-current commutator motor An alternating-current motor having an armature connected to a commutator and included in an alternating-current circuit. *See also:* asynchronous machine. (PE) [9]

alternating-current component *See:* symmetrical component.

alternating-current−direct-current general-use snap-switch A form of general-use snap-switch suitable for use on either direct- or alternating-current circuits for controlling the following:

a) Resistive loads not exceeding the ampere rating at the voltage involved.
b) Inductive loads not exceeding one-half the ampere rating at the voltage involved, except that switches having a marked horsepower rating are suitable for controlling motors not exceeding the horse-power rating of the switch at the voltage involved.
c) Tungsten filament lamp loads not exceeding the ampere rating at 125 V, when marked with the letter "T." Alternating-current-direct-current general use snap-switches are not generally marked alternating-current-direct-current, but are always marked with their electrical rating.

See also: switch. (NESC) [86]

alternating-current−direct-current ringing Ringing in which a combination of alternating and direct currents is utilized, the direct current being provided to facilitate the functioning of the relay that stops the ringing. (EEC/PE) [119]

alternating-current directional overcurrent relay (power system device function numbers) A relay that functions on a desired value of ac overcurrent flowing in a predetermined direction. (SUB/PE) C37.2-1979s

alternating-current distribution The supply to points of utilization of electric energy by alternating current from its source to one or more main receiving stations. *Note:* Generally, a voltage is employed that is not higher than that which could be delivered or utilized by rotating electric machinery. Step-down transformers of a capacity much smaller than that of the line are usually employed as links between the moderate voltage of distribution and the lower voltage of the consumer's apparatus. (T&D/PE) [10]

alternating-current electric locomotive An electric locomotive that collects propulsion power from an alternating-current distribution system. *See also:* electric locomotive. (EEC/PE) [119]

alternating-current erasing head A head that uses alternating current to produce the magnetic field necessary for erasing. *Note:* Alternating-current erasing is achieved by subjecting the medium to a number of cycles of a magnetic field of a decreasing magnitude. The medium is, therefore, essentially magnetically neutralized. (SP/MR) [32]

alternating-current floating storage-battery system A combination of alternating-current power supply, storage battery, and rectifying devices connected so as to charge the storage battery continuously and at the same time to furnish power for the operation of signal devices. (EEC/PE) [119]

alternating-current general-use snap-switch A form of general-use snap-switch suitable only for use on alternating-current circuits for controlling the following:

a) Resistive and inductive loads (including electric discharge lamps) not exceeding the ampere rating at the voltage involved.
b) Tungsten filament lamp loads not exceeding the ampere rating at 120 V.
c) Motor loads not exceeding 80% of the ampere rating of the switches at the rated voltage.

Note: All alternating-current general-use snap-switches are marked ac in addition to their electrical rating. *See also:* switch. (NESC) [86]

alternating-current generator A generator for the production of alternating-current power. (PE) [9]

alternating current-linked ac converter (self-commutated converters) A converter comprising two cascaded frequency changers in which the intermediate link is usually a high-frequency tank circuit. (IA/SPC) 936-1987w

alternating current-linked dc converter (self-commutated converters) A converter comprising an inverter and a rectifier, with an intermediate ac link. (IA/SPC) 936-1987w

alternating-current magnetic biasing Magnetic biasing accomplished by the use of an alternating current, usually well above the signal-frequency range. *Note:* The high-frequency linearizing (biasing) field usually has a magnitude approximately equal to the coercive force of the medium. (SP/MR) [32]

alternating-current motor An electric motor for operation by alternating current. (PE) [9]

alternating-current pulse An alternating-current wave of brief duration. *See also:* pulse. (EEC/PE) [119]

alternating-current reclosing relay (power system device function numbers) A relay that controls the automatic reclosing and locking out of an ac circuit interrupter. (SUB/PE) C37.2-1979s

alternating-current relay A relay designed for operation from an alternating-current source. *See also:* relay. (EEC/REE) [87]

alternating current root-mean-square voltage rating (semiconductor rectifiers) The maximum root-mean-square value of applied sinusoidal voltage permitted by the manufacturer under stated conditions. *See also:* semiconductor rectifier stack. (IA) [62]

alternating-current saturable reactor (power and distribution transformers) A reactor whose impedance varies cyclically with the alternating current (or voltage). (PE/TR) C57.12.80-1978r

alternating-current signal A time-varying signal whose polarity varies with a period of time T, and whose average value is zero. (PEL) 1515-2000

alternating-current standby power (low voltage varistor surge arresters) Varistor ac power dissipation measured at rated root-mean-square (rms) voltage. (PE) [8]

alternating-current time overcurrent relay (power system device function numbers) A relay that operates when its ac input current exceeds a predetermined value, and in which the input current and operating time are inversely related through a substantial portion of the performance range. (PE/SUB) C37.2-1979s

alternating-current transmission (1) The transfer of electric energy by alternating current from its source to one or more main receiving stations for subsequent distribution. *Note:* Generally, a voltage is employed that is higher than that which would be delivered or utilized by electric machinery. Transformers of a capacity comparable to that of the line are usually employed as links between the high voltage of transmission and the lower voltage used for distribution or utilization. *See also:* alternating-current distribution. (T&D/PE) [10]

(2) (television) That form of transmission in which a fixed setting of the controls makes any instantaneous value of signal correspond to the same value of brightness only for a short time. *Note:* Usually, this time is not longer than one field period and may be as short as one line period. *See also:* television. (EEC/PE) [119]

alternating-current winding (1) (power and distribution transformers) (of a rectifier transformer) The primary winding that is connected to the alternating-current circuit and usually has no conductive connection with the main electrodes of the rectifier. (PE/TR) C57.12.80-1978r

(2) (thyristor converter) The winding of a thyristor converter transformer that is connected to the ac circuit and usually has no conductive connection with the thyristor circuit elements. *Synonym:* primary winding. (IA/IPC) 444-1973w

alternating function A periodic function whose average value over a period is zero. For instance, $f(t) = \mathbf{B} \sin wt$ is an alternating function (w,**B** assumed constants). (Std100) 270-1966w

alternating voltage *See:* alternating current.

alternative (electric power system) (generating stations electric power system) A qualifying word identifying a power circuit equipment, device, or component available to be connected (or switched) into the circuit to perform a function when the preferred component has failed or is inoperative. *See also:* reserve. (PE/EDPG) 505-1977r

alternative hierarchical routing *See:* alternate hierarchical routing.

alternative routing *See:* alternate routing.

alternative track *See:* alternate track.

alternator (rotating electric machinery) An alternating-current generator. (PE/EM) 11-1980r

alternator-rectifier exciter (1) (excitation systems for synchronous machines) An exciter whose energy is derived from an alternator and converted to direct current by rectifiers. The exciter includes an alternator and power rectifiers, which may be either noncontrolled or controlled, including gate circuitry. It is exclusive of input control elements. The alternator may be driven by a motor, prime mover, or by the shaft of the synchronous machine. The rectifiers may be stationary or rotating with the alternator shaft. (PE/EDPG) 421.1-1986r
(2) (synchronous machines) An exciter whose energy is derived from an alternator and converted to direct current by rectifiers. *Notes:* 1. The exciter includes an alternator and power rectifiers which may be either noncontrolled or controlled, including gate circuitry. 2. It is exclusive of input control elements. 3. The alternator may be driven by a motor, prime mover, or by the shaft of the synchronous machine. 4. The rectifiers may be stationary or rotating with the alternator shaft. (PE/EDPG) 421-1972s

alternator transmitter A radio transmitter that utilizes power generated by a radio-frequency alternator. *See also:* radio transmitter. (AP/BT/ANT) 145-1983s, 182-1961w

altimeter (navigation aid terms) An instrument which determines the height of an object with respect to a fixed level, such as sea level. There are two common types: an aneroid, or barometric altimeter, and the radio, or radar altimeter. (AES/GCS) 172-1983w

altitude (1) (illuminating engineering) The angular distance of a heavenly body measured on that great circle that passes, perpendicular to the plane of the horizon, through the body and through the zenith. It is measured positively from the horizon to the zenith, from 0 to 90 degrees. (ED) [127]
(2) (A) (navigation aid terms) Angular distance above the horizon—the arc of a vertical circle between the horizon and a point on the celestial sphere. **(B) (navigation aid terms)** Vertical distance above a given datum. (AES/GCS) 172-1983
(3) (series capacitor) The elevation of the series capacitor above mean sea level. (T&D/PE) [26]

altitude-treated current-carrying brush A brush specially fabricated or treated to improve its wearing characteristics at high altitudes (over 6000 m). (EEC/PE) [119]

ALU *See:* arithmetic and logic unit.

aluminum alloy conductor, steel reinforced (AACSR) A composite conductor made up of a combination of aluminum alloy and coated steel wires. In the usual construction, the aluminum wires surround the steel. (T&D/PE) 524-1992r

aluminum cable steel reinforced A composite conductor made up of a combination of aluminum wires surround the steel. *See also:* conductor. (PE/T&D) [10]

aluminum conductor A conductor made wholly of aluminum. *See also:* conductor. (T&D/PE) [10]

aluminum conductor, aluminum alloy reinforced (ACAR) A composite conductor made up of a combination of aluminum and aluminum alloy wires. In the usual construction, the aluminum wires surround the aluminum alloy. (T&D/PE) 524-1992r

aluminum conductor, steel reinforced A composite conductor made up of a combination of aluminum and coated steel wires. In the usual construction, the aluminum wires surround the steel. (T&D/PE) 524-1992r

aluminum-covered steel wire (power distribution, underground cables) A wire having a steel core, to which is bonded a continuous outer layer of aluminum. (PE) [4]

aluminum sheath (aluminum sheathing for power cables) An impervious aluminum or aluminum alloy tube, either smooth or corrugated, which is applied over a cable core to provide mechanical protection. (PE/IC) 635-1989r

always_swap A bus transaction that atomatically writes a new value to an address and returns the previous value. (C/MM) 1212.1-1993

AM *See:* amplitude modulation.

AMA *See:* automatic message accounting.

amalgam (electrolytic cells) The product formed by mercury and another metal in an electrolytic cell. (EEC/PE) [119]

amateur band (overhead-power-line corona and radio noise) Frequency bands assigned for the transmission of signals by amateur radio operators. *Note:* The amateur bands may differ from country to country. The bands presently in use in the United States under 300 MHz are 1.8–2.0 MHz, 3.5–4.0 MHz, 7.0–7.3 MHz, 10.1–10.15 MHz, 14.00–14.35 MHz, 21.00–21.45 MHz, 24.89–24.99 M.Hz, 28.0–29.7 MHz, 50–54 MHz; 144–148 MHz, and 220–225 MHz. (T&D/PE) 539-1990

ambient air (1) The air surrounding or occupying a space or object. (IA/PSE) 241-1990r
(2) The general air in the area of interest (e.g., the general room atmosphere) distinct from a specific stream or volume of air that may have different properties. (NI) N42.17B-1989r

ambient air temperature (relaying) (metal enclosed bus) The temperature of the surrounding air that comes in contact with equipment. *Note:* Ambient air temperature, as applied to enclosed bus or switchgear assemblies, is the average temperature of the surrounding air that comes in contact with the enclosure. (SWG/PE/SWG-OLD) C37.20-1968w, C37.20.1-1993r, C37.20.2-1993, C37.20.3-1996, C37.21-1985r, C37.23-1969s, C37.100-1992

ambient background Those counts that can be observed, and thereby allowed for, by measuring a sample that is identical to the unknown sample in all respects except for the absence of radioactivity. These counts are attributable to environmental radioactivity in the detector itself, the detector shielding material, and the sample container; cosmic rays; electronic noise pulses; etc. (NI) N42.12-1994

ambient conditions Characteristics of the environment, for example, temperature, humidity, pressure. *See also:* measurement system. (MIL/IM/HFIM) [2], [40]

ambient level The values of radiated and conducted signal and noise existing at a specific test location and time when the test sample is not activated. *See also:* electromagnetic compatibility. (EMC/CHM) C63.5-1988, [51], C63.4-1991

ambient noise (1) (mobile communication) The average radio noise power in a given location that is the integrated sum of atmospheric, galactic, and man-made noise. *See also:* telephone station. (VT) [37]
(2) The all-encompassing noise associated with a given environment, usually a composite of contributions from many sources near and far. (T&D/PE) 539-1990

ambient operating-temperature range The range of environmental temperatures in which a power supply can be safely operated. For units with forced-air cooling, the temperature is measured at the air intake. (AES/PE) [41], [78]

ambient radio noise *See:* ambient level.

ambient sound pressure level The sound pressure level measured at the test facility or at the substation without the transformer energized. (PE/TR) C57.12.90-1999

ambient temperature (1) (electrical heating systems) The environmental temperature surrounding the object under consideration. For objects enclosed in thermal insulation, the ambient temperature is the temperature external to the thermal insulation. (IA/PC) 844-1991

(2) The temperature surrounding the object under consideration. Where electrical heating cable is enclosed in thermal insulation, the ambient temperature is the temperature exterior to the thermal insulation.

(BT/IA/AV/PC) 152-1953s, 515.1-1995, 515-1997

(3) (electric equipment) The temperature of the ambient medium.

(4) (shunt power capacitors) (power and distribution transformers) (neutral grounding devices) The temperature of the medium such as air, water, or earth into which the heat of the equipment is dissipated. *Notes:* 1. For self-ventilated equipment, the ambient temperature is the average temperature of the air in the immediate vicinity of the equipment. 2. For air- or gas-cooled equipment with forced ventilation or secondary water cooling, the ambient temperature is taken as that of the ingoing air or cooling gas. 3. For self-ventilated enclosed (including oil-immersed) equipment considered as a complete unit, the ambient temperature is the average temperature of the air outside of the enclosure in the immediate neighborhood of the equipment.

(SPD/PE/T&D/TR) 32-1972r, 18-1992, C57.12.80-1978r

(5) (light-emitting diodes) (free air temperature) The air temperature measured below a device, in an environment of substantially uniform temperature, cooled only by natural air convention and not materially affected by reflective and radiant surfaces. (IE/EEC) [126]

(6) (nuclear power generating station) The average of air temperature readings at several locations in the immediate neighborhood of the equipment. (PE/NP) 649-1980s

(7) (packaging machinery) The temperature of the surrounding cooling medium, such as gas or liquid, that comes into contact with the heated parts of the apparatus.

(IA/PKG) 333-1980w

(8) The temperature of the surrounding medium that comes in contact with the device or equipment.

(SWG/PE) C37.40-1993, C37.100-1992

(9) The temperature of the surrounding air that comes in contact with the bushing and device or equipment in which the bushing is mounted. (PE/TR) C57.19.03-1996, 21-1976

(10) The temperature of the medium such as air, gas, or water, into which the heat of the equipment is dissipated.

(T&D/PE) 824-1994

(11) The temperature of the medium, usually air, surrounding the battery charger. (IA/PSE) 602-1996

(12) The temperature of the medium, such as air or water, into which the heat generated in the equipment is dissipated.

(PE/TR) C57.15-1999

(13) Temperature of the ambient air immediately surrounding the unit under test. (PEL) 1515-2000

(14) The temperature of the cooling air surrounding a smoothing reactor. (PE/TR) 1277-2000

ambient temperature time constant At a constant operating resistance, the time required for the change in (bolometer unit) bias power to reach 63% of the total change in bias power after an abrupt change in ambient temperature.

(IM) 470-1972w

ambiguity (1) (navigation aid terms) (navigation) The condition obtained when navigation coordinates define more than one point, direction, line of position, or surface of position.

(AES/RS/GCS) 686-1982s, 172-1983w

(2) In fault isolation, an ambiguity that exists when the failure(s) in a system have not been localized to a single diagnostic unit for a repair level. (ATLAS) 1232-1995

ambiguity function The squared magnitude $|\chi(\tau, f_d)|^2$ of the function that describes the response of a radar receiver to targets displaced in range delay τ and Doppler frequency f_d from a reference position, where $|\chi(0,0)|$ is normalized to unity. Mathematically:

$$\chi(\tau,f_d) = \int u(t)u^*(t + \tau)\exp(2\pi j f_d t)dt$$

where

$u(t)$ = the transmitted waveform, suitably normalized
positive τ = a target beyond the reference delay
positive f_d = an approaching target

Ambiguity function is used to examine the suitability of radar waveforms for achieving accuracy, resolution, freedom from ambiguities, and reduction of unwanted clutter.

(AES) 686-1997

ambiguity group The collection of all diagnostic units that are in ambiguity. (ATLAS) 1232-1995

AM broadcast array One or more towers fed the same broadcast signal but at different current levels and with different delays. By carefully choosing the height, location, current level and delay for each tower, a far-field pattern can be constructed to broadcast strongly in some directions and weakly in others. (T&D/PE) 1260-1996

American Federation of Information Processing Societies A national (American) association of computing and information-related organizations that represents the United States in the International Federation of Information Processing (IFIP) organization. (C) 610.10-1994w

American Standard Code for Information Interchange (ASCII) (1) A seven-bit code that standardizes a set of characters representing letters and numbers for international use.

(PE/SUB) 1379-1997

(2) A binary code in which 128 letters, numbers, and special characters are represented by seven-bit numerals. *Note:* Some systems make use of an eight-bit binary code, called ASCII-8, in which 256 symbols are represented. (C) 1084-1986w

American National Standards Institute An organization that establishes and maintains standards for the information processing industry within the United States.

(C) 610.7-1995, 610.10-1994w

American Wire Gauge (AWG) A system of measurement of the thickness and current carrying capacity of wire.

(EMB/MIB) 1073.4.1-2000

αmin *See:* limiting angular subtense.

ammeter (1) (general) An instrument for measuring the magnitude of an electric current. *Note:* It is provided with a scale, usually graduated in either amperes, milliamperes, microamperes, or kiloamperes. If the scale is graduated in milliamperes, microamperes, or kiloamperes, the instrument is usually designated as a milliammeter, a microammeter, or a kiloammeter. *See also:* instrument. (EEC/PE) [119]

(2) An instrument for measuring electric current in amperes.

(CAS) [13]

amnesia address The module address ('FA' HEX) to which a module will respond as though uniquely addressed if that module implements the ability to detect when it cannot determine its address unambiguously and detects that it cannot determine its address unambiguously. (TT/C) 1149.5-1995

amortisseur bar (rotating machinery) A single conductor that is a part of an amortisseur winding or starting winding. *Synonym:* damper bar. *See also:* rotor; stator. (PE) [9]

amortisseur winding A permanently short-circuited winding used for starting induction motors consisting of conductors embedded in the pole shoes of a synchronous machine and connected together at the ends of the poles, but not necessarily connected between poles. (IA/MT) 45-1998

amp *See:* amplifier; ampere.

ampacity (1) (power and distribution transformers) Current-carrying capacity, expressed in amperes, of a wire or cable under stated thermal conditions. (PE/TR) C57.12.80-1978r
(2) Current-carrying capacity of electric conductors expressed in amperes. (NESC/NEC) [86]
(3) (packaging machinery) Current-carrying capacity expressed in amperes. (IA/PKG) 333-1980w
(4) The current-carrying capacity, expressed in amperes, of an electric conductor under stated thermal conditions. (NESC) C2-1997

ampacity correction factor A numeric value equal to one minus the ampacity derating factor. (PE/IC) 848-1996

ampacity derating factor A numeric value representing the fractional reduction from a base ampacity cable rating. Ampacity derating factors are associated with specific installation conditions not presently addressed in the base ampacity. (PE/IC) 848-1996

ampere (metric practice) The constant current that, if maintained in two straight parallel conductors of infinite length, of negligible circular cross section, and placed one meter apart in vacuum, would produce between these conductors a force equal to 2×10^{-7} newton per meter of length. (QUL) 268-1982s

ampere-hour capacity (storage battery) The number of ampere-hours that can be delivered under specified conditions as to temperature, rate of discharge, and final voltage. *See also:* battery. (PE/EEC) [119]

ampere-hour efficiency (storage battery) (storage cell) The electrochemical efficiency expressed as the ratio of the ampere-hour output to the ampere-hour input required for the recharge. *See also:* charge. (PE/EEC) [119]

ampere-hour meter An electricity meter that measures and registers the integral, with respect to time, of the current of the circuit in which it is connected. *Note:* The unit in which this integral is measured is usually the ampere-hour. *See also:* electricity meter. (EEC/PE) [119]

ampere rating (protection and coordination of industrial and commercial power systems) The current that the fuse will carry continuously without deterioration and without exceeding temperature rise limits specified for that fuse. (IA/PSP) 242-1986r

Ampere's law *See:* magnetic field strength produced by an electric current.

ampere-turn per meter The unit of magnetic field strength in SI units (International System of Units). The ampere-turn per meter is the magnetic field strength in the interior of an elongated uniformly wound solenoid that is excited with a linear current density in its winding of one ampere per meter of axial distance. (Std100) 270-1966w

ampere-turns (electrical heating systems) The product of the number of turns and the alternating-current (ac) amperes flowing in an induction heating coil. (IA/PC) 844-1991

& Logical AND. (C/BA) 14536-1995

amphiboly A logical expression that has more than one meaning. For example, the expression A OR B AND C might mean (A OR B) AND C or A OR (B AND C) depending upon the rules of interpretation used. (C) 1084-1986w

amplification (mechanical) The relationship between response acceleration and ground acceleration. (SUB/PE) C37.122.1-1993

amplification, current *See:* current amplification.

amplification, voltage *See:* voltage amplification.

amplified spontaneous emission (laser maser) The radiation resulting from amplification of spontaneous emission. (LEO) 586-1980w

amplifier (1) (analog computer) A device that enables an input signal to control a source of power, and thus is capable of delivering at its output a reproduction or analytic modification of the essential characteristics of the signal. (C) 165-1977w
(2) (data transmission) A unidirectional device that is capable of delivering an enlargement of the waveform of the electric current, voltage, or power supplied to it. (PE) 599-1985w
(3) A device that enables an input signal to control power from a source independent of the signal and thus be capable of delivering an output that bears some relationship to, and is generally greater than, the input signal. (AP/ANT) 145-1983s
(4) (photomultipliers for scintillation counting) A device whose output is an enlarged reproduction of the essential features of an input signal and that draws power from a source other than the input signal. (NPS) 398-1972r
(5) (A) An apparatus or device used to increase the amplitude or the power of an input signal by means of energy drawn from an external source. **(B)** In an analog computer, a device that enables an input signal to control a source of power and thus is capable of delivering at its output an enlarged reproduction or analytical modification of the essential characteristics of the signal. *See also:* high-gain dc amplifier; buffer amplifier; unloading amplifier; relay amplifier; operational amplifier; servo amplifier. (C) 610.10-1994

amplifier, balanced *See:* balanced amplifier.

amplifier, bridging *See:* bridging amplifier.

amplifier, buffer *See:* isolating amplifier.

amplifier, carrier *See:* carrier amplifier.

amplifier, chopper *See:* chopper amplifier.

amplifier class ratings (1) (A) (electron tube) Class-A amplifier. An amplifier in which the grid bias and alternating grid voltages are such that anode current in a specific tube flows at all times. *Note:* The suffix 1 is added to the letter or letters of the class identification to denote that grid current does not flow during any part of the input cycle. The suffix 2 is used to denote that current flows during some part of the cycle. *See also:* amplifier. **(B) (electron tube) Class-AB amplifier.** An amplifier in which the grid bias and alternating grid voltages are such that anode current in a specific tube flows for appreciably more than half but less than the entire electrical cycle. *Note:* The suffix 1 is added to the letter or letters of the class identification to denote that grid current does not flow during any part of the input cycle. The suffix 2 is used to denote that current flows during some part of the cycle. *See also:* amplifier. **(C) (electron tube) Class-B amplifier.** An amplifier in which the grid bias is approximately equal to the cutoff value so that the anode current is approximately zero when no exciting grid voltage is applied, and so that anode current in a specific tube flows for approximately one half of each cycle when an alternating grid voltage is applied. *Note:* The suffix 1 is added to the letter or letters of the class identification to denote that grid current does not flow during any part of the input cycle. The suffix 2 is used to denote that current flows during some part of the cycle. *See also:* amplifier. **(D) (electron tube) Class-C amplifier.** An amplifier in which the grid bias is appreciably greater than the cutoff value so that the anode current in each tube is zero when no alternating grid voltage is applied, and so that anode current in a specific tube flows for appreciably less than one half of each cycle when an alternating grid voltage is applied. *Note:* The suffix 1 is added to the letter or letters of the class identification to denote that grid current does not flow during any part of the input cycle. The suffix 2 is used to denote that current flows during some part of the cycle. *See also:* amplifier. (ED/AP/ANT) 161-1971, 145-1983
(2) A device that increases the amplitude of an electrical signal. Amplifiers are placed in a cable system to strengthen signals weakened by cable and component attenuation. (LM/C) 802.7-1989r

amplifier, difference *See:* differential amplifier.

amplifier, differential *See:* differential amplifier.

amplifier ground *See:* receiver ground.

amplifier, horizontal *See:* horizontal amplifier.

amplifier, integrating *See:* integrating amplifier.

amplifier, intensity *See:* intensity amplifier.

amplifier, inverting *See:* inverting amplifier.

amplifier, isolating *See:* isolating amplifier.

amplifier, isolation *See:* isolation amplifier.

amplifier, line *See:* line amplifier.

amplifier, monitoring *See:* monitoring amplifier.

amplifier noise *See:* noise referred to the input.

amplifier, peak limiting *See:* peak limiter.

amplifier, program *See:* line amplifier.

amplifier, relay *See:* relay amplifier.

amplifier shaping time A nonspecific indication of the shaped-pulse width issuing from a linear pulse amplifier. *See also:* shaping index. (NPS) 325-1996

amplifier, servo *See:* servo amplifier.

amplifier, summing *See:* summing amplifier.

amplifier time constant A misnomer for the width of the shaped pulse issuing from a linear pulse amplifier. *See also:* shaping index. (NPS) 325-1996

amplifier, vertical *See:* vertical amplifier.

amplifier, *x*-axis *See:* horizontal amplifier.

amplifier, *y*-axis *See:* vertical amplifier.

amplifier, *z*-axis *See:* intensity amplifier; Z-axis amplifier.

amplistat reactor A reactor conductively connected between the direct-current winding of a rectifier transformer and rectifier circuit elements that when operating in conjunction with other similar reactors, provides a relatively small controlled direct-current voltage range at the rectifier output terminals. *See also:* reactor. (PE/TR) [57]

amplitude (1) The strength or volume of a periodic signal, usually measured in decibels. (C) 610.7-1995

(2) The maximum or peak value of a periodically varying quantity. *Note:* Sometimes the term complex amplitude is used to denote a phasor. *See also:* magnitude. (AP/PROP) 211-1997

amplitude-comparison monopulse A form of monopulse in which the angular deviation of the target from the antenna axis is measured as the amplitude ratio of the target as received by two antenna patterns. The patterns may be a pair of beams displaced on opposite sides of the antenna axis, or a difference-channel beam having odd symmetry about the axis and a sum beam having even symmetry. In the latter case the ratio may have positive and negative values (0° or 180° phase shift, or in some cases +90° and −90°). Distinguished from phase-comparison monopulse, in which the relative phase of the two patterns carries the information on target displacement. *See also:* phase-comparison monopulse. (AES) 686-1997

amplitude deviation ($\varepsilon(t)$) Instantaneous amplitude departure from a nominal amplitude. (SCC27) 1139-1999

amplitude discriminator (radar) A circuit whose output is a function of the relative magnitudes of two signals. *See also:* navigation. (AES/RS) 686-1982s, [42]

amplitude distortion (data transmission) Distortion caused by a deviation from a desired linear relationship between specified measures of the output and input of a system. *Note:* The related measures need not be output and input values of the same quantity; for example, in a linear detector, the desired relation is between the output signal voltage and the input modulation envelope, or the modulation of the input carrier and the resultant detected signal. (PE) 599-1985w

amplitude factor (of transient recovery voltage) The ratio of the highest peak of the transient recovery voltage to the peak value of the normal-frequency recovery voltage. *Note:* In tests made under one condition to simulate duty under another, as in single-phase tests made to simulate duty on three-phase ungrounded faults, the amplitude factor is expressed in terms of the duty being simulated. (SWG/PE) C37.100-1992

amplitude flatness The variation in output amplitude as a function of frequency in response to a constant amplitude sine wave input. (IM/WM&A) 1057-1994w

amplitude fluctuation *See:* target fluctuation.

amplitude-frequency response (1) (data transmission) The variation of gain, loss, amplification, or attenuation as a function of frequency. *Note:* This response is usually measured in the region of operation in which the transfer characteristic of the system or transducer is essentially linear. (PE) 599-1985w

(2) (high voltage testing) The amplitude frequency response $G(f)$ of a measuring system is the ratio as a function of the frequency f of the output amplitude to the input amplitude of the system when the input is a sinusoid. A convenient form is "the normalized frequency response $g(f)$" in which the constant value of the output amplitude is denoted as unity when that amplitude, multiplied by the scale factor of the system, equals the input amplitude. (PE/PSIM) 4-1978s

amplitude gate *See:* slicer.

amplitude instability ($S_a(f)$) One-sided spectral density of the fractional amplitude deviation. (SCC27) 1139-1999

amplitude jitter A short term instability in the amplitude of a transmission signal. *See also:* phase jitter. (C) 610.7-1995

amplitude locus (control system feedback) (for a nonlinear system or element whose gain is amplitude dependent) A plot of the describing function, in any convenient coordinate system. *See also:* feedback control system. (PE/EDPG) [3]

amplitude-modulated transmitter A transmitter that transmits an amplitude-modulated wave. *Note:* In most amplitude-modulated transmitters, the frequency is stabilized. *See also:* radio transmitter. (AP/BT/ANT) 145-1983s, 182-1961w

amplitude modulation (1) (data transmission) The process by which a continuous high-frequency wave (carrier) is caused to vary in amplitude by the action of another wave containing information. The usual procedure is to key the carrier wave on and off in accordance with the data to be transmitted. For example, a 1170 Hz tone (the carrier) could be off for "space" and on for "mark." This method has several disadvantages. It does not use bandwidth efficiently, since two sidebands of the carrier are produced, and unlike single sideband voice communication methods, the carrier and one sideband cannot be completely eliminated and still do a satisfactory job. The information carrying characteristic of an AM signal is its amplitude. (PE) 599-1985w

(2) (signal-transmission system) The process, or the result of the process, whereby the amplitude of one electrical quantity is varied in accordance with some selected characteristic of a second quantity, which need not be electrical in nature. *See also:* signal. (IE) [43]

(3) Modulation in which the amplitude of a wave is the characteristic varied. (AP/ANT) 145-1983s

(4) (overhead-power-line corona and radio noise) Modulation in which the amplitude of a carrier is caused to depart from its reference value by an amount proportional to the instantaneous value of the modulating signal. 539-1990

(5) A modulation technique in which a data signal is sent onto a carrier at a fixed frequency by raising and lowering the amplitude of the carrier. *See also:* pulse amplitude modulation. (C) 610.7-1995

(6) Modulation in which the amplitude of a carrier is caused to depart from its reference value by an amount proportional to the instantaneous value of the modulating wave. (T&D/PE) 1260-1996

amplitude-modulation noise The noise produced by undesired amplitude variations of a radio-frequency signal. *See also:* radio transmission. (BT) 182-1961w

amplitude-modulation noise level The noise level produced by undesired amplitude variations of a radio frequency signal in the absence of any intended modulation. (AP/ANT) 145-1983s

amplitude noise Used variously to describe target fluctuation and scintillation error. Use of one of these specific terms is recommended to avoid ambiguity. (AES) 686-1997

amplitude pattern *See:* radiation pattern.

amplitude permeability (magnetic core testing) The value of permeability at a stated value of field strength (or induction), the field strength varying periodically with time and with no static magnetic field being present.

$$\mu_a = \frac{1}{\mu_0}\frac{B}{H}$$

μ_a = relative amplitude permeability. Maximum permeability is the maximum value of the amplitude permeability as a function of the field strength (or of the induction). (MAG) 393-1977s

amplitude probability distribution (APD) (1) (electromagnetic site survey) A distribution showing the probability (commonly percentage of time) that an amplitude is exceeded as a function of the amplitude. (EMC) 473-1985r

(2) The fraction of the total time interval for which the envelope of a function is above a given level x. (EMC) C63.12-1987

amplitude range (electroacoustics) The ratio, usually expressed in decibels, of the upper and lower limits of program amplitudes that contain all significant energy contributions. (SP) 151-1965w

amplitude ratio *See:* subsidence ratio; gain.

amplitude reference level (pulse techniques) The arbitrary reference level from which all amplitude measurements are made. *Note:* The arbitrary reference level normally is considered to be at an absolute amplitude of zero but may, in fact, have any magnitude of either polarity. If this arbitrary reference level is other than zero, its value and polarity must be stated. *See also:* pulse. (IM/HFIM) [40]

amplitude resonance Resonance in which amplitude is stationary with respect to frequency. (Std100) 270-1966w

amplitude response (camera tubes) The ratio of the peak-to-peak output from the tube resulting from a spatially periodic test pattern, to the difference in output corresponding to large-area blacks and large-area whites, having the same illuminations as the test pattern minima and maxima, respectively. *Note:* The amplitude response is referred to as modulation transfer (sine-wave response) when a sinusoidal test pattern is used and as square-wave response when the pattern consists of alternate black and white bars of equal width. *See also:* camera tube. (ED) [45]

amplitude response characteristic (camera tubes) The relation between amplitude response and television line number (camera tubes) or (image tubes) test-pattern spatial frequency, usually in line pairs per millimeter. *See also:* camera tube. (ED) [45]

amplitude selection In an analog computer, a summation of one or more variables with a constant resulting in a sudden change in rate or level at the output of a computing element as the sum changes sign. *See also:* electronic analog computer. (C) 610.10-1994w, 165-1977w

amplitude shift keying A modulation technique that encodes data by transmitting a signal at two different amplitudes representing binary digit one and binary digit zero. *See also:* binary phase shift keying; frequency shift keying. (C) 610.7-1995

amplitude suppression ratio (frequency modulation) The ratio of the undesired output to the desired output of a frequency-modulation receiver when the applied signal has simultaneous amplitude modulation and frequency modulation. *Note:* This ratio is generally measured with an applied signal that is amplitude modulated 30% at a 400-Hz rate and is frequency modulated 30% of maximum system deviation at a 1000-Hz rate. *See also:* frequency modulation. (EEC/PE) [119]

AM radio broadcast band (overhead-power-line corona and radio noise) A band of frequencies assigned for amplitude-modulated broadcasting to the general public. *Note:* In the United States and Canada, the frequency band is 535−1605 kHz. This is one of the International Telecommunications Union (ITU) frequency allocations, on a worldwide basis, for broadcasting. (T&D/PE) 539-1990

AM to FS converter *See:* transmitting converter; facsimile.

anaerobic Free of uncombined oxygen. (IA) [59]

analog (1) (analog computer) Pertaining to representation by means of continuously variable physical quantities; for example, to describe a physical quantity, such as voltage or shaft position, that normally varies in a continuous manner, or devices such as potentiometers and synchros that operate with such quantities. (C) 165-1977w

(2) (data transmission) Used to describe a physical quantity, such as voltage or shaft position, that normally varies in a continuous manner. (PE) 599-1985w

(3) Pertains to information content that is expressed by signals dependent upon magnitude. *See also:* feedback control system. (IA/ICTL/IAC) [60]

(4) (computers) Pertaining to data in the form of continuously variable physical quantities. *Contrast:* digital. *See also:* analog computer. (C) 610.10-1994w, 1084-1986w

analog and digital data Analog data implies continuity, as contrasted to digital data, that is concerned with discrete states. *Note:* Many signals can be used in either the analog or digital sense, the means of carrying the information being the distinguishing feature. The information content of an analog signal is conveyed by the value or magnitude of some characteristics of the signal such as the amplitude, phase, or frequency of a voltage, the amplitude or duration of a pulse, the angular position of a shaft, or the pressure of the fluid. To extract the information, it is necessary to compare the value or magnitude of the signal to a standard. The information content of the digital signal is concerned with discrete states of the signal, such as the presence or absence of a voltage, a contact in the open or closed position, or a hole or no hole in certain positions on a card. The signal is given meaning by assigning numerical values or other information to the various possible combinations of the discrete states of the signal. *See also:* analog; digital. (EEC) [74]

analog boundary module (ABM) A circuit module connected between the core circuit and an analog function pin to provide facilities for test in a mixed-signal integrated circuit. *Note:* An ABM may be attached to a digital function pin in order to provide analog measurement capability to the pin. *See also:* core circuit; function pin; mixed-signal circuit. (C/TT) 1149.4-1999

analog channel (1) (data transmission) A channel on which the information transmitted can take any value between the limits defined by the channel. Voice channels are analog channels. (PE) 599-1985w

(2) A channel in which transmitted information can take any value between the defined limits of the channel. *Note:* The limits for an analog channel are usually the upper and lower frequencies which will pass through the channel. (C) 610.10-1994w

analog computer (1) (A) (general) An automatic computing device that operates in terms of continuous variation of some physical quantities, such as electrical voltages and currents, mechanical shaft rotations, or displacements, and that is used primarily to solve differential equations. The equations governing the variation of the physical quantities have the same or very nearly the same form as the mathematical equations under investigation and therefore yield a solution analogous to the desired solution of the problem. Results are measured on meters, dials, oscillograph recorders, or oscilloscopes. *See also:* simulator. **(B) (direct current)** An analog computer in which computer variables are represented by the instantaneous values of voltages. **(C) (alternating current)** An analog computer in which electrical signals are in the form of amplitude modulated suppressed carrier signals where the absolute value of a computer variable is represented by the amplitude of the carrier and the sign of a computer variable is represented by the phase (0° or 180°) of the carrier relative to the reference alternating-current signal. (C) 165-1977

(2) A computer that processes analog data. *Synonym:* electronic analog computer. *Contrast:* digital computer; hybrid computer. *See also:* direct-current analog computer; ac analog computer. (C) 610.10-1994w

analog cut* *See:* clipping.

* Deprecated.

analog data (1) Date represented by scalar values. (SUB/PE) 999-1992w

(2) Data in the form of continuous numerical properties represented by physical variables. *Contrast:* digital data. (C) 610.7-1995

(3) Data that represents a variable that is mathematically continuous in the domain of the application. For example, the measurements of time, velocity, pressure, are all continuous variables, excluding quantum effects. (IM/ST) 1451.1-1999

analog device A device that operates with variables represented by continuously measured quantities such as voltages, resistances, rotations, and pressures. (SWG/PE/SUB) C37.100-1992, C37.1-1994

analog divider A divider whose output analog variable is proportional to the quotient of the input analog variables. (C) 610.10-1994w

analog function *See:* supervisory control functions.

analog function check Monitor a reference quantity. A check of master and remote station equipment by exercising a predefined component or capability. (SUB/PE) C37.1-1994

analog multiplier A multiplier whose output analog variable is proportional to the product of two input analog variables. *Note:* This term may also be applied to a device that can perform more than one multiplication, such as a servo multiplier. *Contrast:* analog divider. *See also:* quarter-squares multiplier. (C) 610.10-1994w

analog output One type of continuously variable quantity used to represent another; for example, in temperature measurement, an electric voltage or current output represents temperature input. *See also:* signal. (IE) [43]

analog pin A pin on an integrated circuit or other component that is intended to pass information represented as a current or voltage that can have any value between the limits defined by the driver or receiver to which it is connected. *Notes:* 1. Analog pins can have several forms. In addition to input, output, and bidirectional pins, which are analogous to corresponding digital forms, it is possible to have pins that do not readily fit into any of these categories (e.g., those supporting compensation elements for operational amplifiers). Any such pin that has no identifiable drive capability should be regarded for the purposes of this standard as an input pin. 2. An analog pin may be put into a state in which no signals can pass in either direction between the pin and the core circuit. 3. An analog pin can pass digital data, using discrete levels that lie within its analog range. *Contrast:* digital pin. *See also:* high-Z; core circuit; core disconnect. (C/TT) 1149.4-1999

analog plotter A plotter that presents analog data in the form of a two-dimensional graphic representation. *Contrast:* digital plotter; raster plotter. (C) 610.10-1994w

analog point interfaces Master station or RTU (or both) element(s) that input(s) or output(s) an analog quantity. (SUB/PE) C37.1-1994

analog quantity (A) (station control and data acquisition) A variable represented by a scalar value. **(B) (supervisory control, data acquisition, and automatic control)** A continuous variable that is typically digitized and represented as a scalar value. (SWG/SUB/PE) C37.1-1994, C37.100-1992

analog representation (mathematics of computing) The representation of numerical quantities by means of continuous physical variables such as translation, rotation, voltage, or resistance. *Contrast:* digital representation. (C) 1084-1986w

analog/RF modules Modules whose electronics are primarily analog or radio frequency (RF) rather than digital. These modules often utilize some digital logic for control and test and may interface to digital buses and interconnects. Analog modules often require shielding from EMI produced by digital modules. (C/BA) 14536-1995

analog SCADA function The capability of a supervisory system to accept, record, or display, or do all of these, an analog quantity as presented by a transducer or external device. The transducer may or may not be a part of the supervisory control system. (SUB/PE) C37.1-1994

analog signal (1) (control) A signal that is solely dependent upon magnitude to express information content. *See also:* feedback control system. (IA/ICTL/APP/IAC) [69], [60]

(2) A continuously changing signal. *Contrast:* digital signal. *See also:* digitize. (C) 610.7-1995

analog signaling A means of communicating between devices that uses continuously variable signals. (SUB/PE) 999-1992w

analog simulation (A) A simulation that is designed to be executed on an analog system. **(B)** A simulation that is designed to be executed on a digital system but that represents an analog system. **(C)** A simulation of an analog circuit. *Contrast:* digital simulation. *See also:* hybrid simulation. (C) 610.3-1989

analog switch (telephone loop performance) A switch capable of switching analog and digital signals without converting them into a set digital format. Most analog end office switches are two-wire systems that have simple interfaces with the loop. (COM/TA) 820-1984r

analog switching (telephone switching systems) Switching of continuously varying-level information signals. (COM) 312-1977w

analog telemetering (station control and data acquisition) Telemetering in which some characteristic of the transmitter signal is proportional to the quantity being measured. (SWG/PE/SUB) C37.100-1992, C37.1-1994

analog telephone set A telephone set where the two-way voice communication interface to the network is in an analog format. (COM/TA) 269-1992

analog test access port (ATAP) A set of two mandatory and two optional pins on a mixed-signal integrated circuit. The pins are connected to a bus allowing automatic test equipment to gain access to the components' on-chip analog test facilities. The mandatory pins are labelled AT1 and AT2; the optional pins (labelled AT1N and AT2N) are normally used for differential testing. (C/TT) 1149.4-1999

analog-to-digital (A/D) conversion Production of a digital output corresponding to the value of an analog input quantity. (SWG/PE/SUB) C37.100-1992, C37.1-1994

analog-to-digital converter (1) (data processing) A device that converts a signal that is a function of a continuous variable into a representative number sequence. (MIL) [2]

(2) A circuit whose input is information in analog form and whose output is the same information in digital form. *See also:* digital; analog. (PE) 599-1985w

(3) (hybrid computer linkage components) Provides the means of obtaining a digital number representation of a specific analog voltage value. (C) 166-1977w

(4) (x-ray energy spectrometers) A device whose input is information in analog form and whose output is the same information in digital form. (NPS/NID) 759-1984r

(5) An electronic device used to convert the amplitude of a voltage pulse from analog to digital format. (NI) N42.14-1991

(6) (ADC or A/D converter) A device that provides the means to obtain a digital number representation from a specific analog value. *Contrast:* digital-to-analog converter. (C) 610.10-1994w

(7) A circuit whose input is information in analog form and whose output is the same information in digital form. (IM/ST) 1451.2-1997

(8) A device or a group of devices that converts an analog quantity or analog position input signal into some type of numerical output signal or code. The input signal is either the

measure and or a signal derived from it. (SWG/PE) C37.100-1992

analog-to-frequency converter A circuit whose input is information in an analog form other than frequency and whose output is the same information as a frequency proportional to the magnitude of the information. *See also:* analog. (PE) 599-1985w

analog voice frequency circuits abbreviations (A) dBm. Decibels relative to one milliwatt. This is the customary unit worldwide for measurement of communications signal power. **(B)** dBm0. Decibels relative to one milliwatt, referred to a zero transmission level point (0 TLP). **(C)** dBrn. Decibels to one picowatt reference noise level. This is the customary North American unit for measurement of noise power in communications signal circuits. **(D)** dBrnC. Decibels relative to one picowatt reference noise level, measured with C-message or C-notch frequency weighting. **(E)** TLP. Transmission level point. The symbol TLP is preceded by a number that indicates, for a particular point in a transmission system, the design signal level in decibels (dB) relative to the level at a reference point (0 TLP). (COM/TA) 743-1984

analysis (1) (electric penetration assemblies) A process of mathematical or other logical reasoning that leads from stated premises to the conclusion concerning the qualification of an assembly or components. (PE/NP) 317-1983r

(2) (safety systems equipment in nuclear power generating stations) (valve actuators) A course of reasoning showing that a certain result is a consequence of assumed premises. (PE/NP) 382-1985, 627-1980r

(3) (Class 1E battery chargers and inverters) (nuclear power generating systems) A process of mathematical or other logical reasoning that leads from stated premises to the conclusion concerning specific capabilities of equipment and its adequacy for a particular application. *See also:* numerical analysis. (PE/NP) 380-1975w, 323-1974s, 650-1979s, 933-1999

(4) Examination for the purpose of understanding. (C/SE) 1074-1995s

(5) The process of studying a system by partitioning the system into parts (functions, components, or objects) and determining how the parts relate to each other. (C/SE) 1362-1998

analysis phase (1) The steps a software administration utility performs, before modifying the target, while attempting to ensure that the execution of operations on the target will succeed. (C/PA) 1387.2-1995

(2) (software) *See also:* requirements phase. (C/SE) 729-1983s

analyst A member of the technical community (such as a systems engineer or business analyst, developing the system requirements) who is skilled and trained to define problems and to analyze, develop, and express algorithms. (C/SE) 1233-1998

analyte The particular radionuclide(s) to be determined in a sample of interest. As a matter of clarity when interpreting various sections of IEEE Std N42.23-1995, a gamma-ray spectral analysis is considered one analyte. (NI) N42.23-1995

analytical engine A device from which modern digital computers are descended, invented in the mid 1800's by Charles Babbage, a British mathematician, to solve mathematical problems. (C) 610.10-1994w

analytical limit Limit of a measured or calculated variable established by the safety analysis to ensure that a safety limit is not exceeded. (PE/NP) 603-1998

analytical model (1) (software) A representation of a process or phenomenon by a set of solvable equations. *See also:* process; simulation. (C/SE) 729-1983s

(2) (modeling and simulation) A model consisting of a set of solvable equations; for example, a system of solvable equations that represents the laws of supply and demand in the world market. (C) 610.3-1989w

analyzer *See:* network analyzer; digital differential analyzer; differential analyzer.

ANC *See:* ancillary logic.

ancestor (1) Relative to a given node *x* within a tree, any node *y* for which *x* is a descendent node of *y*. (C) 610.5-1990w

(2) (of a class) A generic ancestor of the class or a parent of the class or an ancestor of a parent of the class. *Contrast:* generic ancestor; reflexive ancestor. (C/SE) 1320.2-1998

ancestral box A box related to a specific diagram by a hierarchically consecutive sequence of one or more parent/child relationships. (C/SE) 1320.1-1998

ancestral diagram A diagram that contains an ancestral box. (C/SE) 1320.1-1998

anchor (conductor stringing equipment) A device that serves as a reliable support to hold an object firmly in place. The term anchor is normally associated with cone, plate, screw or concrete anchors, but the terms snub, deadman, and anchor log are usually associated with pole stubs or logs set or buried in the ground to serve as temporary anchors. The latter are often used at pull and tension sites *Synonyms:* snub structure; snub; deadman; anchor log. (T&D/PE) 1048-1990, 524-1992r, 524a-1993r

anchorage (1) (raceway) (raceway systems for Class 1E circuits for nuclear power generating stations) The connection between the building structure and the raceway support. (PE/NP) 628-1987r

(2) A secure point of attachment to which the fall protection system is connected. (NESC/PE/T&D) C2-1997, 1307-1996

anchor guy guard A protective cover over the guy, often a length of sheet metal or plastic shaped to a semicircular or tubular section and equipped with means of attachment to the guy. It may also be of wood. *See also:* tower. (T&D/PE) [10]

anchor light (illuminating engineering) An aircraft light designed for use on a seaplane or amphibian to indicate its position when at anchored or moored. (ED) [127]

anchor log (1) A piece of rigid material such as timber, metal, or concrete, usually several feet in length, buried in earth in a horizontal position and at right angles to anchor rod attachment. *Synonym:* dead man. *See also:* tower; anchor. (T&D/PE) [10]

(2) *See also:* anchor. (T&D/PE) 524-1992r

anchor point *See:* dead-end.

anchor rod A steel or other metal rod designed for convenient attachment to a buried anchor and also to provide for one or more guy attachments above ground. *See also:* tower. (T&D/PE) [10]

anchor site The location along the line where anchors are installed to temporarily hold the conductors in facilitating splicing, pulling, or tensioning. (T&D/PE) 524a-1993r

ancillary data Optional, protocol-specific or local-system-specific information. The information can be both local or end-to-end significant. It can be header information or part of the data portion. It can be protocol-specific and implementation- or system-specific. (C) 1003.5-1999

ancillary equipment (1) (test, measurement, and diagnostic equipment) Equipment that is auxiliary or supplementary to an automatic test equipment installation. Ancillary equipment usually consists of standard off-the-shelf items such as an oscilloscope and distortion analyzer. (MIL) [2]

(2) Auxiliary or accessory equipment (e.g., thermometer, liquid level gauge, pressure gauge). (SWG/PE) C37.10-1995

ancillary logic (ANC) Logic required for each segment but not part of any device. Operations associated with arbitration, geographical addressing, system handshake and run/halt control are carried out in the ancillary logic. The circuit board containing the ANC may also contain segment terminators. (NID) 960-1993

AND (mathematics of computing) A Boolean operator having the property that if P is a statement, Q is a statement, R is a statement,. . ., then the AND of P,Q,R,. . . is true if and only if all statements are true. *Note:* P AND Q is often represented by P·Q, P&Q, P∧ Q, or PQ.

P	*Q*	*P*∧*Q*
0	0	0
0	1	0
1	0	0
1	1	1

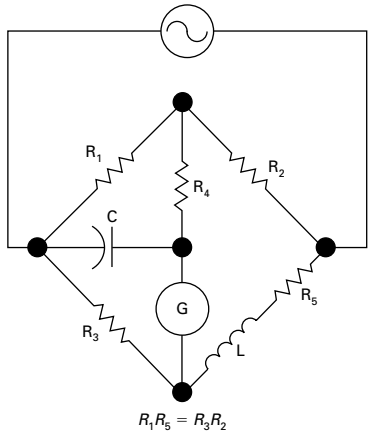
AND Truth Table

Synonyms: conjunction; meet; logic multiply; intersection; logical multiply; collation; Boolean multiplication. (C) 1084-1986w

AND-circuit *See:* AND gate.

AND element *See:* AND gate.

Anderson bridge A six-branch network in which an outer loop of four arms is formed by three nonreactive resistors and the unknown inductor, and an inner loop of three arms is formed by a capacitor and a fourth resistor in series with each other and in parallel with the arm that is opposite the unknown inductor, the detector being connected between the junction of the capacitor and the fourth resistor and that end of the unknown inductor that is separated from a terminal of the capacitor by only one resistor, while the source is connected to the other end of the unknown inductor and to the junction of the capacitor with two resistors of the outer loop. *Note:* Normally used for the comparison of self-inductance with capacitance. The balance is independent of frequency. *See also:* bridge.



$$R_1R_5 = R_3R_2$$

$$L = CR_3\left[R_4\left(1 + \frac{R_2}{R_1}\right) + R_2\right]$$

Anderson bridge

(EEC/PE) [119]

AND gate (1) (general) A combinational logic element such that the output channel is in its ONE state if and only if each input channel is in its ONE state. (C) 162-1963w

(2) A gate that implements the logic AND operator. (C) [85]

(3) A gate that performs the Boolean operation of conjunction. *Synonym:* AND element. (C) 610.10-1994w

AND-NOT* *See:* exclusion.

* Deprecated.

AND-parallelism Pertaining to the performance of multiple predicate operations concurrently; the successful completion of which results in a true response. *Contrast:* OR-parallelism. (C) 610.10-1994w

anechoic chamber An enclosure especially designed with boundaries that absorb sufficiently well the sound incident thereon to create an essentially free-field condition in the frequency range of interest. (SP) [32]

anechoic enclosure (radio frequency) An enclosure whose internal walls have low reflection characteristics. *See also:* electromagnetic compatibility. [53]

anelectrotonus (electrobiology) Electrotonus produced in the region of the anode. *See also:* excitability. (EMB) [47]

anemometer (navigation aid terms) An instrument for measuring the speed of wind. (AES/GCS) 172-1983w

aneroid altimeter *See:* barometric altimeter.

anesthetizing location (health care facilities) Any area in which it is intended to administer any flammable or nonflammable inhalation anesthetic agents in the course of examination or treatment and includes operating rooms, delivery rooms, emergency rooms, anesthetizing rooms, corridors, utility rooms and other areas that are intended for induction of anesthesia with flammable or nonflammable anesthetizing agents. (NESC/NEC) [86]

anesthetizing-location receptacle (health care facilities) A receptacle designed to accept the attachment plugs listed for use in such locations. (NESC/NEC) [86]

angel *See:* angel echo.

angel echo (1) Radar returns caused by atmospheric inhomogeneities, refractive index discontinuities, insects, birds, or unknown sources. *Note:* Originally, when some physical target could not be identified through direct visual observation, echoes from such unknown causes were designated as "angels." (AP/PROP) 211-1997

(2) A radar echo caused by birds, insects, and atmospheric clear-air turbulence not usually visible to the eye. Often a term applied to any unknown radar echo that does not appear to be related to conventional targets. *Synonym:* angel. (AES) 686-1997

angle (of a waveform). The phase of a periodic or approximately periodic waveform. *See also:* phase; phase angle. (IT) [7]

angle brackets The characters "⟨" (*left-angle-bracket*) and "⟩" (*right-angle-bracket*). When used in the phrase "enclosed in angle brackets" the symbol "⟨" shall immediately precede the object to be enclosed, and "⟩" shall immediately follow it. When describing these characters, the names ⟨less-than-sign⟩ and ⟨greater-than-sign⟩ are used. (C/PA) 9945-2-1993

angle, bunching *See:* bunching angle.

angle, effective bunching *See:* effective bunching angle.

angle, flow *See:* flow angle.

angle, maximum-deflection *See:* maximum-deflection angle.

angle modulation (1) Modulation in which the angle of a sine-wave carrier is the characteristic varied from its reference value. *Notes:* 1. Frequency modulation and phase modulation are particular forms of angle modulation; however, the term "frequency modulation" is often used to designate various forms of angle modulation. 2. The reference value is usually taken to be the angle of the unmodulated wave. *See also:* modulation index. (AP/ANT) 145-1983s

(2) (data transmission) The process of causing the angle of the carrier wave to vary in accordance with the signal wave. Phase and frequency modulation are two particular types of angle modulation. (PE) 599-1985w

angle noise The noise-like variation in the apparent angle of arrival of a signal received from a target, caused by changes in phase and amplitude of multiple, unresolved target-scattering sources. *Note:* Includes both glint and scintillation errors. *See also:* glint; scintillation error. (AES) 686-1997

angle of advance (1) (power inverter) The time interval in electrical degrees by which the beginning of anode conduction leads the moment at which the anode voltage would attain a negative value equal to that of the succeeding anode in the commutating group. *See also:* rectification. (EEC/PCON) [110]

(2) (semiconductor power converter) (semiconductor rectifiers) The angle by which forward conduction is advanced by the control means only, in the incoming circuit element, ahead of the instant in the cycle at which the incoming com-

mutating voltage passes through zero in the direction to produce forward conduction in the outgoing circuit element. *See also:* rectification; semiconductor rectifier stack. (IA) [62]

angle-of-approach lights (illuminating engineering) Aeronautical ground lights arranged so as to indicate a desired angle of descent during an approach to an aerodrome runway. *Synonym:* optical glide path lights. (ED) [127]

angle of arrival (of a wave) The angle between the negative of the propagation vector and a reference direction. (AP/PROP) 211-1997

angle of attack (navigation aid terms) The angle between the mean chord or the wing and the line of flow of the air past the aircraft. (AES/GCS) 172-1983w

angle of climb (navigation aid terms) The angle between a climbing aircraft's flight path and the horizontal. (AES/GCS) 172-1983w

angle of collimation (illuminating engineering) The angle subtended by a luminaire on an irradiated surface. (ED) [127]

angle of cut (navigation aid terms) (navigation) The angle at which two lines of position intersect. *Synonym:* crossing angle. (AES/GCS) 172-1983w

angle of descent (navigation aid terms) The angle between a descending aircraft's flight path and the horizontal. (AES/GCS) 172-1983w

angle of deviation (fiber optics) In optics, the net angular deflection experienced by a light ray after one or more refractions or reflections. *Note:* The term is generally used in reference to prisms, assuming air interfaces. The angle of deviation is then the angle between the incident ray and the emergent ray. *See also:* refraction; reflection. (Std100) 812-1984w

angle of extinction The phase angle of the stopping (extinction) instant of anode-current flow in a glass tube with respect to the starting instant of the corresponding positive half cycle of the anode voltage of the tube. *See also:* electronic controller. (IA/ICTL/IAC) [60]

angle of ignition The phase angle of the starting instant of anode-current flow in a gas tube with respect to the starting instant of the corresponding positive half cycle of the anode voltage of the tube. *See also:* electronic controller. (IA/ICTL/IAC) [60]

angle of incidence (1) (acousto-optic device) The angle in air between the acoustic wavefront and the normal to the optical wavefront. For operation in the Bragg region, maximum diffraction into the first order occurs when the angle of incidence is equal to the Bragg angle, θ_B, which is given by the equation $\sin \theta_B = \lambda_0/2\Lambda$. (UFFC) [23]

(2) (fiber optics) The angle between an incident ray and the normal to a reflecting or refracting surface. (Std100) 812-1984w

(3) At a point on a surface, the angle between the negative of the incident propagation vector and the outward normal to this surface. (AP/PROP) 211-1997

angle of protection (lightning) The angle between the vertical plane and a plane through the ground wire, within which the line conductors must lie in order to ensure a predetermined degree of protection against direct lightning strokes. *See also:* surge arrester. (PE) [8], [84]

angle of retard (1) (thyristor) The interval in electrical angular measure by which the trigger pulse is delayed in relation to operation that would occur with continuous gated control elements and a resistive load. (IA/IPC) 428-1981w

(2) (semiconductor rectifiers) The angle by which forward conduction is delayed by the control means only, beyond the instant in the cycle at which the incoming commutating voltage passes through zero in the direction to produce forward conduction in the incoming circuit element. *See also:* semiconductor rectifier stack. (IA) [62]

angle of retard unbalance (thyristor) (tracking unbalance) The load voltage/current unbalance due to unequal angles of retard either between positive and negative half cycles of a single ac wave or between two or more phases in a three-phase system. (IA/IPC) 428-1981w

angle optimum bunching *See:* optimum bunching.

angle or phase (sine wave) The measure of the progression of the wave in time or space from a chosen instant or position or both. *Notes:* 1. In the expression for a sine wave, the angle or phase is the value of the entire argument of the sine function. 2. In the representation of a sine wave by a phasor or rotating vector, the angle or phase is the angle through which the vector has progressed. *See also:* wavefront. (AP/ANT) 145-1983s

angle, overlap *See:* overlap angle.

angle random walk *See:* random walk.

angle, roll over *See:* roll over angle.

angle tower A tower located where the line changes horizontal direction sufficiently to require special design of the tower to withstand the resultant pull of the wires and to provide adequate clearance. *See also:* tower. (T&D/PE) [10]

angle tracking *See:* tracking.

angle, transit *See:* transit angle.

angstrom† **(fiber optics)** A unit of optical wavelength.

$$1\text{Å} = 10^{-10}\ \text{m}$$

Note: The angstrom has been used historically in the field of optics, but it is not an SI (International System) unit. (Std100) 812-1984w

† Obsolete.

angular acceleration sensitivity (A) (accelerometer) The output (divided by the scale factor) of a linear accelerometer that is produced per unit of angular acceleration input about a specified axis. **(B) (gyros)** The ratio of drift rate due to angular acceleration about a gyro axis divided by the angular acceleration causing it. *Note:* In single-degree-of-freedom gyros, it is nominally equal to the effective moment of inertia of the gimbal assembly divided by the angular momentum. (AES/GYAC) 528-1994

angular accelerometer A device that senses angular acceleration about an input axis. An output signal is produced by the reaction of the moment of inertia of a proof mass to an angular acceleration input. The output is usually an electrical signal proportional to applied angular acceleration. (AES/GYAC) 528-1994

angular accuracy (radar) The degree to which the measurement of the angular location of a target with respect to a given reference represents the true angular location of the target with respect to this reference. (AES/RS) 686-1982s

angular-case-motion sensitivity (dynamically tuned gyro) The drift rate resulting from an oscillatory angular input about an axis normal to the spin axis at twice the rotor spin frequency. This effect is due to the single-degree-of-freedom of the gimbal relative to the support shaft and is proportional to the input amplitude and phase relative to the flexure axes. *See also:* two-N (2N) angular sensitivity. (AES/GYAC) 528-1994

angular dependence The dependence of the response of an instrument upon the direction of the incident radiation. (NI) N42.20-1995

angular deviation loss (acoustic transducer) The ratio of the response in a specific direction to the response on the principal axis, usually expressed in decibels. (SP) [32]

angular deviation sensitivity (navigation aid terms) The ratio of change of course indication to the change of angular displacement from the course line. (AES/RS/GCS) 686-1982s, 172-1983w

angular displacement (polyphase transformer) The phase angle expressed in degrees between the line-to-neutral voltage of the reference identified high-voltage terminal and the line-to-neutral voltage of the corresponding identified low-voltage of terminal. *Note:* The preferred connection and arrangement of terminal markings for polyphase transformers are those that have the smallest possible phase-angle displacements and

are measured in a clockwise direction from the line-to-neutral voltage of the reference identified high-voltage terminal. Thus, standard three-phase transformers have angular displacements of either zero or 30 degrees. *See also:* routine test. (PE/TR) C57.12.80-1978r

angular displacement of polyphase regulator (A) The time angle, expressed in degrees, between the line-to-neutral voltage of the reference identified source voltage terminal S_1 and the line-to-neutral voltage of the corresponding identified load voltage terminal L_1. **(B)** The connection and arrangement of terminal markings for three-phase regulators in a wye connection has an angular displacement of zero degrees. **(C)** The connection and arrangement of terminal markings for three-phase regulators in a delta connection has an angular displacement of zero degrees when the regulator is on the neutral tap position. When the regulator is on a tap position other than neutral, the angular displacement will be other than zero degrees. The angular displacement with the regulator connected in delta will be less than $\pm 5°$ for a $\pm 10\%$ range of regulation. (PE/TR) C57.15-1999

angular frequency (ω) (of a sinusoidal wave) 2π times the frequency. *Synonym:* radian frequency. (AP/PROP) 211-1997

angular misalignment loss (fiber optics) The optical power loss caused by angular deviation from the optimum alignment of source to optical waveguide, waveguide to waveguide, or waveguide to detector. *See also:* extrinsic joint loss; intrinsic joint loss; lateral offset loss; gap loss. (Std100) 812-1984w

angular power spectrum Constituted by the mean squared magnitudes of the plane wave spectrum of an electromagnetic field as a function of the direction cosines k_x/k and k_y/k. *Note:* The angular power spectrum and the mutual coherence function are Fourier transform pairs. *See also:* mutual coherence function. (AP/PROP) 211-1997

angular resolution The ability to distinguish between two targets solely by the measurement of their angle, usually expressed in terms of the minimum angle separation by which two targets at a given range can be distinguished. *Note:* The required separation should be specified for targets of given relative power level at the receiver. Equal powers are often assumed, but where resolution of targets of different powers is important it may be necessary to specify the separation at two or more power ratios. (AES) 686-1997

angular spectrum An electromagnetic field that is source-free in the homogeneous half space $z > 0$, can be represented in this half space by a superposition of plane waves. The complex amplitude of these plane waves, as a function of their direction cosines, constitute the angular spectrum. *Notes:* 1. The direction cosines are defined by k_x/k and k_y/k where k_x and k_y are the x and y components of the wave vector $\tilde{\mathbf{k}}$. 2. The angular spectrum is the Fourier transform of the field in the plane $z = 0$ or any other plane $z =$ constant > 0. (AP/PROP) 211-1990s

angular swing (acousto-optic deflector) The center-to-center angular separation between the deflected light beams obtained upon application of the maximum and minimum acoustic frequency of the frequency range. (UFFC) [17]

angular-velocity-sensitivity (accelerometer) (inertial sensors) The output (divided by the scale factor) of a linear accelerometer that is produced per unit of angular velocity input about a specified axis. (AES/GYAC) 528-1984s

angular vibration sensitivity (inertial sensors) (gyros) The ratio of the change in output due to angular vibration about a sensor axis divided by the amplitude of the angular vibration causing it. (AES/GYAC) 528-1994

angular width *See:* course width.

ANI *See:* automatic number identification.

animation A technique that presents a logical sequence of images in such a manner as to create an illusion of motion. (C) 610.6-1991w

anisoelasticity (gyros) The inequality of compliance of a structure in different directions. *See also:* principal axis of compliance; acceleration-squared-sensitive drift rate. (AES/GYAC) 528-1994

anisoinertia (A) (accelerometer) A relationship among the principal axis moments of inertia of an accelerometer pendulum in which the moment of inertia about the output axis differs from the difference of the moments of inertia about the other two principal axes. This inequality causes the effective centers of mass for angular velocity and for angular acceleration to be physically separated. In a system in which the accelerometer is modeled as though it were located at the effective center of mass for angular acceleration, there will be an offset in accelerometer output proportional to the product of the angular rates about the input and pendulous axes. Anisoinertia may be expressed as the magnitude of the actual separation in units of length, or as a compensation term in units of μg/(rad/s) squared. Anisoinertia, in this usage, differs from standard physical definitions, but it describes a real effect that is closely analgous to the effect of the same name in gyros. **(B) (gyros)** The inequality of the moments of inertia about the gimbal principal axes. When the gyro is subjected to angular rates about the input and spin axes, and the moments of inertia about these axes are unequal, a torque is developed about the output axis that is proportional to the difference of the inertias about the input and spin axes multiplied by the product of the rates about these two axes. (AES/GYAC) 528-1994

anisotropic (1) (fiber optics) Pertaining to a material whose electrical or optical properties are different for different directions of propagation or different polarizations of a traveling wave. *See also:* isotropic. (Std100) 812-1984w
(2) (wood transmission structures) Of unequal physical properties along different axes. (T&D/PE) 751-1990

anisotropic medium A medium that is not isotropic, i.e., whose constitutive parameters depend on the polarization and direction of wave propagation of the electric and magnetic fields. (AP/PROP) 211-1997

anisotropic substrate A substrate whose electric or magnetic properties, or both, are directionally dependent. (MTT) 1004-1987w

annealing (metal-nitride-oxide field-effect transistor) In the context of metal oxide semiconductor (MOS) device properties under irradiation, annealing refers to the sometimes observed reduction of the radiation-induced threshold voltage change over a period of seconds to hours after exposure to radiation has ceased. (ED) 581-1978w

annotation Further documentation accompanying a requirement such as background information and/or descriptive material. (C/SE) 1233-1998

annoyance shock An electric shock from a steady-state or a discharge current for which a person would consider the sensation to be a mild irritant if it were to occur repeatedly. (PE/T&D) 539-1990

annual cycle One complete execution of a data processing function that must be performed once a year. *Synonym:* yearly cycle. *See also:* monthly cycle; weekly cycle; daily cycle. (C) 610.2-1987

annular slot antenna A slot antenna with the radiating slot having the shape of an annulus. (AP/ANT) 145-1993

annul bit A bit in a delayed control-transfer instruction that can cause the delay instruction to have no effect. (C/MM) 1754-1994

annunciator (thyristor) A visual signal device consisting of a number of pilot lights or drops, each one indicating the condition that exists or has existed in an associated circuit, accordingly labeled. (IA/IPC) 428-1981w

annunciator relay (power system device function numbers) A nonautomatically reset device that gives a number of separate visual indications upon the functioning of protective devices, and which may also be arranged to perform a lockout function. (SUB/PE) C37.2-1979s

anode (1) An electrode through which current enters any conductor of the nonmetallic class. Specifically, an electrolytic anode is an electrode at which negative ions are discharged, or positive ions are formed, or at which other oxidizing reactions occur. (EEC/PE) [119]

(2) An electrode or portion of an electrode at which a net oxidation-reaction occurs. *See also:* electrochemical cell. (AES/IA/APP) [41], [59], [73]

(3) (thyristor) The electrode by which current enters the thyristor, when the thyristor is in the ON state with the gate open-circuited. *Note:* This term does not apply to bidirectional thyristors. (IA/ED) 223-1966w, [46], [12], [62]

(4) (electron tube or valve) An electrode through which a principal stream of electrons leaves the interelectrode space. *See also:* electrode. (ED/NPS) 161-1971w, 398-1972r

(5) (semiconductor rectifier diode) The electrode from which the forward current flows within the cell. *See also:* semiconductor. (IA) 59-1962w, [12]

(6) (x-ray tubes) *See also:* target.

(7) (light-emitting diodes) The electrode from which the forward current is directed within the device. (IE/EEC) [126]

anode butt A partially consumed anode. *See also:* fused electrolyte. (EEC/PE) [119]

anode characteristic *See:* anode-to-cathode voltage-current characteristic.

anode circuit A circuit that includes the anode-cathode path of an electron tube in series connection with other elements. *See also:* electronic controller. (IA/ICTL/IAC) [60]

anode circuit breaker (1) (power system device function numbers) A device used in the anode circuits of a power rectifier circuit if an arc-back should occur. (PE/SUB) C37.2-1979s

(2) A low-voltage power circuit breaker that is designed for connection in an anode of a mercury-arc power rectifier unit, that trips automatically only on reverse current and starts reduction of a current in a specified time when the arc-back occurs at the end of the forward current conduction, and that substantially interrupts the arc-back current within one cycle of the fundamental frequency after the beginning of the arc-back. *Note:* The specified time in present practice is 0.008 s or less (at an ac frequency of 60 Hz). (SWG/PE) C37.100-1992

anode cleaning (electroplating) (reverse-current cleaning) Electrolytic cleaning in which the metal to be cleaned is made the anode. *See also:* battery. (PE/EEC) [119]

anode corrosion efficiency The ratio of the actual corrosion of an anode to the theoretical corrosion calculated from the quantity of electricity that has passed. (IA) [59]

anode current *See:* electrode current; electronic controller.

anode dark space (gas tube) (gas) A narrow dark zone next to the surface of the anode. *See also:* discharge. (Std100) [84]

anode differential resistance *See:* anode resistance.

anode effect A phenomenon occurring at the anode, characterized by failure of the electrolyte to wet the anode and resulting in the formation of a more or less continuous gas film separating the electrolyte and anode and increasing the potential difference between them. *See also:* fused electrolyte. (EEC/PE) [119]

anode efficiency The current efficiency of a specified anodic process. *See also:* electrochemistry. (EEC/PE) [119]

anode, excitation *See:* excitation anode.

anode fall (gas) The fall of potential due to the space charge near the anode. *See also:* discharge. (ED) [45], [84]

anode firing The method of initiating conduction of an ignitron by connecting the ignitor through a rectifying element to the anode of the ignitron to obtain power for the firing current pulse. *See also:* electronic controller. (IA/ICTL/IAC) [60]

anode glow (gas tube) A very bright narrow zone situated at the near end of the positive column with respect to the anode. *See also:* discharge. (ED) [45], [84]

anode layer A molten metal or alloy, serving as the anode in an electrolytic cell, that floats on the fused electrolyte or upon which the fused electrolyte floats. *See also:* fused electrolyte. (EEC/PE) [119]

anode, main *See:* main anode.

anode mud *See:* anode slime.

anode paralleling reactor (power and distribution transformers) A reactor with a set of mutually coupled windings connected to anodes operating in parallel from the same transformer terminal. (PE/TR) C57.12.80-1978r

anode power supply (electron tube) (plate power supply) The means for supplying power to the plate at a voltage that is usually positive with respect to the cathode. *See also:* power pack. (PE/EEC) [119]

anode-reflected-pulse rise time The rise time of a pulse reflected from the anode. *Note:* This time can be measured with a time-domain reflectometer. (NPS) 398-1972r

anode region (gas tube) The group of regions comprising the positive column, anode glow, and anode dark space. *See also:* discharge. (ED) [45], [84]

anode relieving (gas tube) (pool-cathode tube) An anode that provides an alternative conducting path to reduce the current to another electrode. *See also:* electrode. (ED) [45], [84]

anode resistance The quotient of a small change in anode voltage by a corresponding small change of the anode current, all the other electrode voltages being maintained constant. It is equal to the reciprocal of the anode conductance. *See also:* ON period. (ED) [45], [84]

anode scrap That portion of the anode remaining after the scheduled period for the electrolytic refining of the bulk of its metal content has been completed. *See also:* electrorefining. (EEC/PE) [119]

anode slime Finely divided insoluble metal or compound forming on the surface of an anode or in the solution during electrolysis. (EEC/PE) [119]

anode sputtering *See:* cathode sputtering.

anode strap (magnetrons) A metallic connector between selected anode segments of a multicavity magnetron, principally for the purpose of mode separation. *See also:* magnetron. (ED) 161-1971w, [45]

anode supply voltage The voltage at the terminals of a source of electric power connected in series in the anode circuit. *See also:* electronic controller. (IA/ICTL/IAC) [60]

anode terminal (1) (semiconductor devices) The terminal by which current enters the device. *See also:* semiconductor device; semiconductor. (ED) 216-1960w

(2) (thyristor) The terminal that is connected to the anode. *Note:* This term does not apply to bidirectional thyristors. *See also:* anode. (ED) [46]

anode-to-cathode voltage (thyristor) The voltage between the anode terminal and the cathode terminal. *Note:* It is called positive when the anode potential is higher than the cathode potential and called negative when the anode potential is lower than the cathode potential. *Synonym:* anode voltage. *See also:* electronic controller; principal voltage-current characteristic. (ED) [46]

anode-to-cathode voltage-current characteristic (thyristor) A function, usually represented graphically, relating the anode-to-cathode voltage to the principal current with gate current, where applicable, as a parameter. *Note:* This term does not apply to bidirectional thyristors. *Synonym:* anode characteristic. (ED) [46]

anode voltage *See:* electrode voltage; electronic controller; anode-to-cathode voltage.

anode voltage drop (glow-discharge cold-cathode tube) The main gap voltage drop after conduction is established in the main gap. (ED) [45]

anode voltage, forward, peak *See:* peak forward anode voltage.

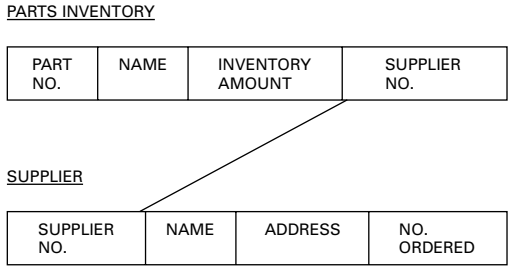
anode voltage, inverse, peak *See:* peak inverse anode voltage.

anodic polarization Polarization of an anode. *See also:* electrochemistry. (EEC/PE) [119]

anolyte The portion of an electrolyte in an electrolytic cell adjacent to an anode. If a diaphragm is present, it is the portion of electrolyte on the anode side of the diaphragm. *See also:* electrolytic cell. (IA) [59]

anomaly (1) (software verification and validation plans) Anything observed in the documentation or operation of software that deviates from expectations based on previously verified software products or reference documents. (C/SE) 1012-1986s, 610.12-1990

(2) (data management) An irregularity that arises when processing an improperly structured database. For example, in order to retrieve all the SUPPLIERS from the database in the figure below, one would have to search sequentially through all the PARTS INVENTORY segments.



anomaly

(C) 610.5-1990w

(3) Any deviation from requirements, expected or desired behavior, or performance of the software. (C/SE) 1074-1995s

(4) Irregularity; deviation from usual behavior. (ATLAS) 1232-1995

(5) Any condition that deviates from expectations based on requirements specifications, design documents, user documents, standards, etc., or from someone's perceptions or experiences. Anomalies may be found during, but not limited to, the review, test, analysis, compilation, or use of software products or applicable documentation. (C/SE) 1044.1-1995, 1044-1993, 1028-1997

(6) Deviation from the normal behavior of a test subject. Faults (e.g., output stuck high, gain low) and manufacturing defects (e.g., missing or incorrect components, incorrectly installed components) are kinds of anomalies. (SCC20) 1226-1998

A-N radio range (navigation aid terms) A radio range providing four radial lines of position identified aurally as a continuous tone resulting from the interleaving of equal amplitude A and N of international Morse code. The sense of deviation from these lines is indicated by deterioration of the steady tone into audible A or N code signals. (AES/GCS) 172-1983w

ANSI *See:* American National Standards Institute.

ANSI standard A standard approved by The American National Standards Institute. Examples of ANSI standards include programming languages (C, FORTRAN, or COBOL), media formats (Hollerith cards), and interface standards (SCSI interfaces, device drivers). (C) 610.7-1995, 610.10-1994w

ANSI C A standardized version of C established by ANSI. (C) 610.13-1993w

answer To respond to a calling station, either automatically, under program control, or manually, to establish a connection between stations. (C) 610.7-1995

answered call (1) (telephone switching systems) A call on which an answer signal occurred. (COM) 312-1977w

(2) (public telephone service) The called party off-hook supervision duration exceeds the minimum chargeable duration (MCD) after an allowance equal to the worst possible inaccuracy known about the timing sensor has been applied. *See also:* charge delay. (COM/TA) 973-1990w

answering plug and cord A plug and cord used to answer a calling line. (EEC/PE) [119]

answer signal (telephone switching systems) A signal that indicates that the call has been answered. (COM) 312-1977w

answer supervision delay The time interval between the transition of the called line equipment from on-hook to off-hook and transfer of the answer signal to the originating system during a multi-office call. *Note:* To transmit an answer signal to an originating switching system in per-trunk-signaling, the terminating system sends an on-hook-to-off-hook transition and maintains the off-hook state until disconnect. (COM/TA) 973-1990w

antenna (1) (general) That part of a transmitting or receiving system that is designed to radiate or to receive electromagnetic waves. (AP/ANT) 145-1993

(2) (data transmission) A means for radiating or receiving radio waves. *See also:* horn antenna; effective height; dipole antenna; effective area antenna; loop antenna; helical antenna; slot antenna. (PE) 599-1985w

(3) (overhead-power-line corona and radio noise) A device used to radiate or receive electromagnetic waves. (T&D/PE) 539-1990

(4) A device used for transmitting or receiving electromagnetic signals or power. As such, it is designed to maximize its coupling to the electromagnetic field; as a receiver it is made to intercept as much of the field as possible. Those devices that are made to measure the power level of the electromagnetic field rather than its field components are included in this category. (EMC) 1309-1996

(5) A device used to send or receive radio waves. (SCC32) 1455-1999

antenna [aperture] illumination efficiency The ratio, usually expressed in percent, of the maximum directivity of an antenna [aperture] to its standard directivity. *Note:* For planar apertures, the standard directivity is calculated by using the projected area of the actual antenna in a plane transverse to the direction of its maximum radiation intensity. *Synonym:* normalized directivity. *See also:* standard directivity. (AP/ANT) 145-1993

antenna array *See:* array antenna.

antenna correction factor (land-mobile communications transmitters) A factor usually supplied with the antenna, which, when properly applied to the meter reading of the measuring instrument, yields the electric field in volts/meters (V/m) or the magnetic field strength in amperes/meters (A/m). *Notes:* 1. This factor includes the effects of antenna effective length and impedance mismatch plus transmission line losses. 2. The factor for electric field strength is not necessarily the same as the factor for the magnetic field strength. (EMC) 377-1980r

antenna effect (1) (radio direction finding) (navigation aid terms) The presence of output signals having no directional information and caused by the directional array acting as simple nondirectional antenna; the effect is manifested by angular displacement of the nulls, or a broadening of the nulls. (AES/GCS) 172-1983w

(2) (loop antenna) Any spurious effect resulting from the capacitance of the loop to ground. *See also:* antenna. (AP/ANT) 145-1983s

antenna, effective area *See:* effective area antenna.

antenna, effective height *See:* effective height antenna.

antenna, effective height base station *See:* effective height base station antenna.

antenna, effective length *See:* effective length antenna.

antenna efficiency (of an aperture-type anenna) For an antenna with a specified planar aperture, the ratio of the maximum

effective area of the antenna to the aperture area. (AP/ANT) 145-1993

antenna factor (1) Quantity relating the strength of the field in which the antenna is immersed to the output voltage across the load connected to the antenna. (EMC) C63.5-1988, 1128-1998

(2) A factor that, when properly applied to the meter reading of the measuring instrument, yields the electric field strength in volts/meter or the magnetic field strength in amperes/meter. *Notes:* 1. This factor includes the effects of antenna effective length and mismatch and may include transmission line losses. 2. The factor for electric field strength is not necessarily the same as the factor for the magnetic field strength. (EMC) [53], C63.4-1991

(3) A factor that, when properly applied to the voltage meter reading of the measuring instrument, yields the electric field strength in volts/meter or the magnetic field strength in amperes/meter. *Notes:* 1. This factor includes the effects of antenna effective length and mismatch and may include transmission line loss. 2. The factor for the electric field strength is not necessarily the same as the factor for the magnetic field strength. (EMC) 1128-1998

antenna figure of merit (communication satellite) An antenna performance parameter equaling the antenna gain G divided by the antenna noise temperature T, measured at the antenna terminals. It can be expressed as a ratio, $M = G/T$, or logarithmically,

$$M(\text{dB}) = 10 \log_{10} G - 10 \log_{10} T$$

(COM) [25]

antenna pattern *See:* radiation pattern.

antenna-pattern loss *See:* beamshape loss.

antenna resistance (1) (general) The real part of the input impedance of an antenna. (AP/ANT) 145-1993

(2) (test procedures for antennas) The ratio of the power accepted by the entire antenna circuit to the mean-square antenna current referred to a specified point. *Note:* Antenna resistance is made up of such components as radiation resistance, ground resistance, radio-frequency resistance of conductors in the antenna circuit, and equivalent resistance due to corona, eddy currents, insulator leakage, and dielectric power loss. *See also:* antenna. (AP) 149-1979r

antenna sensitivity-test input (amplitude-modulation broadcast receivers) The sensitivity input is the least signal-input voltage of a specified carrier frequency, modulated 30% at 400 cycles and applied to the receiver through a standard dummy antenna, which results in normal test output when all controls are adjusted for greatest sensitivity. It is expressed in decibels below one volt, or in microvolts. (CE) 186-1948w

antenna temperature The temperature of a blackbody that, when placed around a matched, loss-free antenna similar to the actual antenna, produces the same available noise power, in a specified frequency range, as the actual antenna in its normal electromagnetic environment. *See also:* blackbody. (AP/PROP) 211-1997

antenna terminal conducted interference Any undesired voltage or current generated within a receiver, transmitter, or their associated equipment appearing at the antenna terminals. *See also:* electromagnetic compatibility. (EMC) [53]

anti-aliasing (1) By the Nyquist Theorem, the maximum reproducible frequency is one-half the sampling rate. Aliasing is caused when frequencies higher than one half of the sampling rate are present. This results in the higher frequencies being "aliased" down to look like lower frequency components. Anti-aliasing is providing low pass filtering to block out frequencies higher than those that can be accurately reproduced by the given sampling rate. (PE/PSR) 1344-1995

(2) A technique that reduces the visual effects of aliasing. (C) 610.6-1991w

anticathode *See:* anode.

anticipatory buffering A buffering technique in which data are stored in a buffer in anticipation of a need for the data. *See also:* simple buffering; dynamic buffering. (C) 610.12-1990

anticipatory paging A storage allocation technique in which pages are transferred from auxiliary storage to main storage in anticipation of a need for those pages. *Contrast:* demand paging. (C) 610.12-1990

anticlutter circuits Circuits that attenuate undesired reflections from the natural environment (clutter) to permit detection of targets otherwise obscured by such reflections. *See also:* clutter. (AES) 686-1997

anticlutter gain control (nonlinear, active, and nonreciprocal waveguide components) (radar) A device that automatically and smoothly increases the gain of a radar receiver from a low level to the maximum, within a specified period after each transmitter pulse, so that short-range echoes producing clutter are amplified less than long-range echoes. (MTT) 457-1982w

anticoincidence (radiation counter) The occurrence of a count in a specified detector unaccompanied simultaneously or within an assignable time interval by a count in one or more other specified detectors. (ED) [45]

anticoincidence circuit (pulse techniques) A circuit that produces a specified output pulse when one (frequently predesignated) of two inputs receives a pulse and the other receives no pulse within an assigned time interval. (NPS) 398-1972r

anticollision light (illuminating engineering) A flashing aircraft aeronautical light or system of lights designed to provide a red signal throughout 360° of azimuth for the purpose of giving long-range indication of an aircraft's location to pilots of other aircraft. (ED) [127]

antiferroelectric material A material that exhibits structural phase changes and anomalies in dielectric permittivity, as do ferroelectrics, but has zero net spontaneous polarization, and hence, exhibits no hysteresis phenomena. *Note:* In some cases, it is possible to apply electric fields sufficiently high to produce a structural transition to a ferroelectric phase as evidenced by appearance of a double hysteresis loop. *See also:* paraelectric region; ferroelectric material. (UFFC) [21]

antifouling Pertaining to the prevention of marine organism attachment and growth on a submerged metal surface (through the effects of chemical action). (IA) [59]

antifreeze pin, relay *See:* relay antifreeze pin.

anti-lock means (laser gyro) A means of preventing lock-in, such as magneto-optical (Faraday cell, magnetic mirrors), mechanical (dither, rate biasing), or mechanical-optical (mirror dither). *See also:* lock-in. (AES/GYAC) 528-1994

anti-lock residual (laser gyro) Output noise remaining after compensation for anti-lock means. (AES/GYAC) 528-1994

antinoise microphone A microphone with characteristics that discriminate against acoustic noise. *See also:* microphone. (EEC/PE) [119]

anti-overshoot The effect of a control function or a device that causes a reduction in the transient overshoot. *Note:* Anti-overshoot may apply to armature current, armature voltage, field current, etc. *See also:* feedback control system. (IA/ICTL/IAC) [60]

antioxidant *See:* oxidation inhibitor.

antiplugging protection The effect of a control function or a device that operates to prevent application of counter torque by the motor until the motor speed has been reduced to an acceptable value. *See also:* feedback control system. (IA/ICTL/IAC) [60]

antipodal focusing Ionospheric focusing sometimes observed in the vicinity of the antipodal point or region. (AP/PROP) 211-1997

antipump device A device that prevents reclosing after an opening operation as long as the device initiating closing is maintained in the position for closing. *Synonym:* pump-free device. (SWG/PE) C37.100-1992

antireflection coating (fiber optics) A thin, dielectric or metallic film (or several such films) applied to an optical surface to reduce the reflectance and thereby increase the transmittance. *Note:* The ideal value of the refractive index of a single layered film is the square root of the product of the refractive indices on either side of the film, the ideal optical thickness being one quarter of a wavelength. *See also:* dichroic filter; Fresnel reflection; transmittance; reflectance. (Std100) 812-1984w

antiresonant frequency Usually in reference to a crystal unit or the parallel combination of a capacitor and inductor. The frequency at which, neglecting dissipation, the impedance of the object under consideration is infinite. (CAS) [13]

antisidetone induction coil An induction coil designed for use in an antisidetone telephone set. *See also:* telephone station. (EEC/PE) [119]

antisidetone telephone set A telephone set that includes a balancing network for the purpose of reducing sidetone. *See also:* telephone station; sidetone. (EEC/PE) [119]

anti-single-phase tripping device A device that operates to open all phases of a circuit by means of a polyphase switching device, in response to the interruption of the current in one phase. *Notes:* 1. This device prevents single phasing of connected equipment resulting from the interruption of any one phase of the circuit. 2. This device may sense operation of a specific single-phase interrupting device or may sense loss of single-phase potential. (SWG/PE) C37.100-1992

antistatic (1) (health care facilities) Adjective describing that class of materials that includes conductive materials and also those materials that, throughout their stated life, meet the requirements of 4-6. 6. 3 and 4-6. 6. 4 of NFPA-56A, 1978. (EMB) [47]

(2) A property of materials that resist triboelectric charging. (SPD/PE) C62.47-1992r

antisubmarine warfare radar A radar used in antisubmarine warfare (ASW). It includes radars for the detection of submarines and submarine effects as well as radars on ships or aircraft employed in ASW operations to obtain situational awareness of the surface ships and aircraft in the vicinity of ASW operations. (AES) 686-1997

anti-transmit-receive switch A radio-frequency switch that automatically decouples the transmitter from the antenna during the receiving period. *Note:* The ATR switch is employed when a common transmitting and receiving antenna is used. (AES) 686-1997

anti-transmit-receive tube (electron tube) A gas-filled radio-frequency switching tube used to isolate the transmitter during the interval for pulse reception. *Synonym:* ATR tube. *See also:* gas tube. (ED/MTT) 161-1971w, 457-1982w

***A* operator** An operator assigned to an *A* switchboard. (EEC/PE) [119]

APC *See:* automatic phase control.

APD *See:* amplitude probability distribution; avalanche photodiode.

aperiodically sampled equivalent time format (pulse measurement) A format that is identical to the aperiodically sampled real time format except that the time coordinate is equivalent to and convertible to real time. Typically, each datum point is derived from a different measurement on a different wave in a sequence of waves. *See also:* sampled format. (IM/WM&A) 181-1977w

aperiodically sampled real time format (pulse measurement) A format that is identical to the periodically sampled real time format except that the sampling in real time is not periodic and wherein the data exists as coordinate point pairs t_1, m_1; t_2, m_2; . . .; t_n, m_n. *See also:* sampled format. (IM/WM&A) 181-1977w

aperiodic antenna An antenna that, over an extended frequency range, does not exhibit a cyclic behavior with frequency of either its input impedance or its pattern. *Note:* This term is often applied to an electrically small monopole or loop, containing an active element as an integral component, with impedance and pattern characteristics varying but slowly over the extended frequency range. (AP/ANT) 145-1993

aperiodic circuit A circuit in which it is not possible to produce free oscillations. *See also:* oscillatory circuit. (PE) 599-1985w, [84]

aperiodic component (rotating machinery) (of short-circuit current) The component of current in the primary winding immediately after it has been suddenly short-circuited when all components of fundamental and higher frequencies have been subtracted. *See also:* asynchronous machine. (PE) [9]

aperiodic damping *See:* overdamping.

aperiodic tasks Tasks that arrive at irregular intervals and have only soft (not rigid) deadlines, but a good response time is typically desirable. (C/BA) 896.3-1993w

aperiodic time constant (rotating machinery) The time constant of the aperiodic component when it is essentially exponential, or of the exponential that can most nearly be fitted. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

aperture (1) A surface, near or on an antenna, on which it is convenient to make assumptions regarding the field values for the purpose of computing fields at external points. *Notes:* 1. In some cases the aperture may be considered as a line. 2. In the case of a unidirectional antenna, the aperture is often taken as that portion of a plane surface near the antenna, perpendicular to the direction of maximum radiation, through which the major part of the radiation passes. *See also:* antenna. (AP) 149-1979r

(2) (data transmission) For a unidirectional antenna, that portion of a plane surface near the antenna perpendicular to the direction of maximum radiation through which the major part of the radiation passes. (PE) 599-1985w

(3) (of an antenna) A surface, near or on an antenna, on which it is convenient to make assumptions regarding the field values for the purpose of computing fields at external points. *Note:* The aperture is often taken as that portion of a plane surface near the antenna, perpendicular to the direction of maximum radiation, through which the major part of the radiation passes. (AP/ANT) 145-1993

(4) An opening in a data medium or device such as the opening in the an aperture card, or an opening in a multiaperture core. (C) 610.10-1994w

(5) Maximum interdigital transducer finger overlap length, which is expressed in length units or normalized in terms of wavelength. (UFFC) 1037-1992w

aperture averaging The reduction in output signal variation when the size of the antenna is large compared to the decorrelation distance of the incident field across the aperture. *Note:* The beamwidth of the antenna is much smaller than the angular spectrum of the incoming wave. *See also:* angular spectrum. (AP/PROP) 211-1997

aperture blockage A condition resulting from objects lying in the path of rays arriving at or departing from the aperture of an antenna. *Note:* For example, the feed, subreflector, or support structure produce aperture blockage for a symmetric reflector antenna. (AP/ANT) 145-1993

aperture card A punch card of standard dimensions into which microfilm frames may be inserted. (C) 610.10-1994w

aperture compensation *See:* aperture equalization.

aperture correction *See:* aperture equalization.

aperture dimension (1) The space or opening between features. (C/BA) 1301.2-1993

(2) The usable height, width, or depth between features. (C/MM) 1301.3-1992r

(3) The usable space between features. (C/MM) 1301.1-1991

(4) The usable space between standardized features. (C/BA) 1301.4-1996

aperture distribution (excitation systems) The field over the aperture as described by amplitude, phase, and polarization distributions. *Synonym:* aperture illumination. (AP/ANT) 145-1993

aperture efficiency (for an antenna aperture) The ratio of its directivity to the directivity obtained when the aperture illumination is uniform. *See also:* antenna. (AP/ANT) [35], 145-1983s

aperture equalization (television) Electrical compensation for the distortion introduced by the size of a scanning aperture. *See also:* television. (BT/AV) [34]

aperture illumination (excitation systems) The field over the aperture as described by amplitude, phase, and polarization distributions. *Synonym:* aperture illumination. (AP/ANT) 145-1993

aperture uncertainty The standard deviation of the sample instant in time. *Synonyms:* timing phase noise; short-term timing instability; timing jitter. (IM/WM&A) 1057-1994w

API *See:* application program interface; air position indicator.

APL *See:* A Programming Language; average picture level.

apoapsis (communication satellite) The most distant point from the center of a primary body (or planet) to an orbit around it. (COM) [19]

apodization Response weighting produced by the change of finger overlap along the length of the interdigital transducer. (UFFC) 1037-1992w

apogee (1) (navigation aid terms) That orbital point farthest from the earth, when the earth is the center of attraction. (AES/GCS) 172-1983w

(2) (communication satellite) The most distant point from the center of the earth to an orbit around it. (COM) [19]

apparatus (1) (power and distribution transformers) A general designation for large electrical equipment such as generators, motors, transformers, circuit breakers, etc. (PE/TR) C57.12.80-1978r

(2) A device or system of devices that performs a distinct function within a basic operating unit, including a device or system of devices whose principal function is data communications. (VT) 1473-1999

apparatus insulator (cap and pin, post) An assembly of one or more apparatus-insulator units, having means for rigidly supporting electric equipment. *See also:* insulator. (EEC/IEPL) [89]

apparatus insulator unit The assembly of one or more elements with attached metal parts, the function of which is to support rigidly a conductor, bus, or other conducting elements on a structure or base member. *See also:* tower. (T&D/PE) [10]

apparatus interoperability The ability of any specific apparatus to communicate with other apparatuses in such a way that it can successfully replace another apparatus of the same type without any requirement for manual configuration other than the address or unique identifier of the replacement apparatus. (VT) 1473-1999

apparatus termination A termination designed for use in sealed enclosures where the external dielectric strength is dependent upon liquid or special gaseous dielectric and where the ambient temperature of the medium immediately surrounding the termination may reach 55°C. (PE/IC) 48-1996

apparatus thermal device (power system device function numbers) A device that functions when the temperature of the shunt field, or the amortisseur winding of a machine, or that of a load limiting or load shifting resistor, or of a liquid or other medium exceeds a predetermined value; or if the temperature of the protected apparatus, such as a power rectifier, or of any medium decreases below a predetermined value. (SUB/PE) C37.2-1979s

apparatus type A predefined configuration that, when adhered to by a given apparatus, makes it possible for that apparatus to achieve apparatus interoperability, without restriction on the internal constructional details of the apparatus concerned. (VT) 1473-1999

apparent altitude (navigation aid terms) That sextant altitude corrected for reading and reference level inaccuracies. (AES/GCS) 172-1983w

apparent bearing (navigation aid terms) (direction finding systems) A bearing from a direction-finder site to a target transmitter determined by averaging the readings made on a calibrated direction-finder test standard; the apparent bearing is then used in the calibration and adjustment of other direction finders at the same site. (AES/GCS) 172-1983w

apparent candlepower (extended source) At a specified distance, the candlepower of a point source that would produce the same illumination at that distance. (ED) [127]

apparent charge (1) That charge that, if it could be injected instantaneously between the terminals of the test object, would momentarily change the voltage between its terminals by the same amount as the partial discharge itself. The apparent charge should not be confused with the charge transferred across the discharging cavity in the dielectric medium. Apparent charge is expressed in coulombs (C). One pC is equal to 10^{-12} C. (PE/PSIM/TR) 62-1995, C57.113-1991

(2) (terminal charge) A charge that, if injected instantaneously between the terminals of the test object, would momentarily change the voltage between its terminals by the same amount as the partial discharge itself. The apparent charge should not be confused with the charge transferred across the overstressed insulation in the dielectric medium. Apparent charge within the terms of this document is expressed in picocoulombs, which is abbreviated as pC (10^{-12} Coulombs). (SWG/PE) 1291-1993r

(3) (dielectric tests) That charge of a partial discharge which, if injected instantaneously between the terminals of the test object, would momentarily change the voltage between its terminals by the same amount as the partial discharge itself. The apparent charge should not be confused with the charge transferred across the discharging cavity in the the dielectric. Apparent charge is expressed in coulombs. *Synonym:* terminal charge. (PE/PSIM) 454-1973w

apparent dead time *See:* dead time.

apparent discharge magnitude (corona measurement) The charge transfer measured at the terminals of a sample caused by a corona pulse in a sample. (MAG/ET) 436-1977s

apparent horizon (navigation aid terms) Visible horizon. (AES/GCS) 172-1983w

apparent impedance The impedance to a fault as seen by a distance relay is determined by the applied current and voltage. It may be different from the actual impedance because of current outfeed or current infeed at some point between the relay and the fault. (PE/PSR) C37.113-1999

apparent inductance The reactance between two terminals of a device or circuit divided by the angular frequency at which the reactance was determined. This quantity is defined only for frequencies at which the reactance is positive. *Note:* Apparent inductance includes the effects of the real and parasitic elements that comprise the device or circuit and is therefore a function of frequency and other operating conditions. (CHM) [51]

apparent output power (self-commutated converters) (converters having ac output) The product of fundamental current and fundamental phase voltage summed for all phases of the circuit. (IA/SPC) 936-1987w

apparent (phasor) power

$$S = VI$$

where S is the apparent power, V is the rms value of the voltage, and I is the rms value of the current. (PE/PSIM) 120-1989r

apparent power (1) (rotating machinery) The product of the root-mean-square current and the root-mean-square voltage. *Notes:* 1. It is a scalar quantity equal to the magnitude of the phasor power. *See also:* asynchronous machine. (PE) [9]

(2) (metering) For sinusoidal quantities in either single-phase or polyphase circuits, apparent power is the square root of the sum of the squares of the active and reactive powers. *Note:* This is, in general, not true for nonsinusoidal quantities.
(ELM) C12.1-1982s

(3) (A) (polyphase circuit) At the terminals of entry of a polyphase circuit, a scalar quantity equal to the magnitude of the vector power. *Note:* In determining the apparent power, the reference terminal for voltage measurement shall be taken as the neutral terminal of entry, if one exists, otherwise as the true neutral point. 2. If the ratios of the components of the vector power, for each of the terminals of entry, to the corresponding apparent power are the same for every terminal of entry, the total apparent power is equal to the arithmetic apparent power for the polyphase circuit: otherwise the apparent power is less than the arithmetic apparent power. 3. If the voltages have the same wave form as the corresponding currents, the apparent power is equal to the amplitude of the phasor power. 4. Apparent power is expressed in volt-amperes when the voltages are in volts and the currents in amperes. **(B) (single-phase two-wire circuit)** At the two terminals of entry of a single-phase two-wire circuit into a delimited region, a scalar equal to the product of the root-mean-square voltage between one terminal of entry and the second terminal of entry, considered as the reference terminal, and the root-mean-square value of the current through the first terminal. *Note:* Mathematically, the apparent power U is given by the equation

$$U = EI$$
$$= (\pm)\,(E_1^2 + E_2^2 + \ \ldots\ + E_r^2 + \ \ldots\ )^{1/2}$$
$$\times\,(I_1^2 + I_r^2 + \ \ldots\ + I_q^2 + \ \ldots\ )^{1/2}$$

in which E and I are the root-mean-square amplitudes of the voltage and current, respectively. E_r and I_q are the root-mean-square amplitudes of the rth harmonic of voltage and the qth harmonic of current, respectively. 2. If both the voltage and current are sinusoidal and of the same period, so that the distortion power is zero, the apparent power becomes

$$U = EI = E_1 I_1$$

in which E_1 and I_1 are the root-mean-square amplitudes of voltage and current of the primitive period. The apparent power is equal to the amplitude of the phasor power. 3. If the voltage and current are quasiperiodic and the amplitude of the voltage and current components are slowly varying, the apparent power at any instant may be taken as the value derived from the amplitudes of the components at that instant. 4. Apparent power is expressed in volt-amperes when the voltage is in volts and the current in amperes. Because apparent power has the property of magnitude only and its sign is ambiguous, it does not have a definite direction of flow. For convenience, it is usually treated as positive.
(Std100) 270-1966

apparent-power loss (volt-ampere loss) (electric instruments) Of the circuit for voltage-measuring instruments, the product of end-scale voltage and the resulting current: and for current-measuring instruments, the product of the end-scale current and the resulting voltage. *Notes:* 1. For other than current-measuring or voltage-measuring instruments, for example, wattmeters, the apparent power loss of any circuit is expressed at a stated value of current or of voltage. 2. Computation of loss: For the purpose of computing the loss of alternating-current instruments having current circuits at some selected value other than that for which it is rated, the actual loss at the rated current is multiplied by the square of the ratio of the selected current to the rated current. Example: A current transformer with a ratio of 500:5 amperes is used with an instrument having a scale of 0−300 amperes and, therefore, a 3-ampere field coil, and the allowable loss at end scale is as stated on the Detailed Requirement Sheet. The allowable loss of the instrument referred to a 5-amperes basis is as follows: Allowable loss in volt-amperes equals (allowable loss end-scale volt-amperes). *See also:* accuracy rating.
(EEC/AII) [102]

apparent resistance (insulation testing) Ratio of the voltage across the electrodes in contact with the specimen to the current between them as measured under the specified test conditions and specified electrification time. (PE) 402-1974w

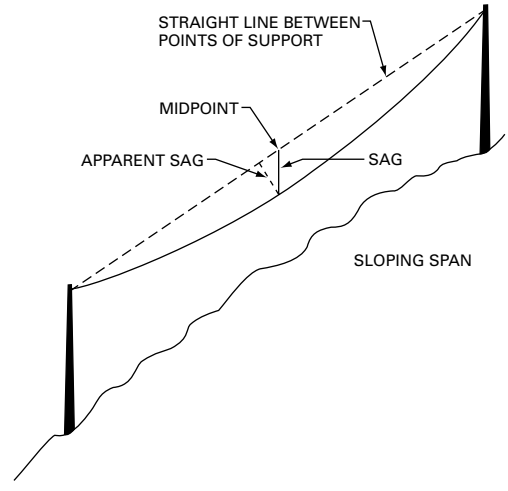
apparent sag (1) (A) (wire in a span) The maximum departure in the vertical plane of the wire in a given span from the straight line between the two points of support of the span, at 60°F, with no wind loading. *Note:* Where the two supports are at the same level this will be the sag. *See also:* tower. **(B) (wire in a span)** The departure in the vertical plane of the wire at the particular point in the span from the straight line between the two points of support.
(T&D/PE) [10], C2.2-1960

(2) (of a span) The maximum distance between the wire in a given span and the straight line between the two points of support of the wire, measured perpendicularly from the straight line. (NESC) C2-1997

(3) (of a span) The maximum departure of the wire in a given span from the straight line between the two points of support of the span. (T&D) C2.2-1960

apparent sag at any point in the span (1) The departure of the wire at the particular point in the span from the straight line between the two points of support of the span.
(T&D) C2.2-1960

(2) The distance, at the particular point in the span, between the wire and the straight line between the two points of support of the wire, measured perpendicularly from the straight line.



sag and apparent sag
(NESC) C2-1997

apparent time constant The time required for 63% of the change in output electromotive force to occur after an abrupt change in the input quantity to a new constant value. *Synonym:* 63% response time. *See also:* characteristic time; thermal converter; response. (EEC/AII) [102]

apparent vertical (navigation aid terms) The direction of the vector sum of the gravitational and all other accelerations.
(AES/GCS) 172-1983w

apparent visual angle (laser maser) The angular subtense of the source as calculated from the source size and distance from the eye. It is not the beam divergence of two sources.
(LEO) 586-1980w

appliance (1) (electric) A utilization item of electric equipment, usually complete in itself, generally other than industrial, normally built in standardized sizes or types, that transforms electric energy into another form, usually heat or mechanical motion, at the point of utilization. For example, a toaster, flatiron, washing machine, dryer, hand drill, food mixer, air conditioner. (IA/APP) [80]

(2) Utilization equipment, generally other than industrial, normally built in standardized sizes or types, which is in-

stalled or connected as a unit to perform one or more functions such as clothes washing, air conditioning, food mixing, deep frying, etc. (NESC/NEC) [86]
(3) Current-conducting, energy-consuming equipment, fixed or portable; for example, heating, cooling, and small motor-operated equipment. (NESC/T&D) C2-1977s, C2.2-1960

appliance branch circuit (1) A branch circuit supplying energy to one or more outlets to which appliances are to be connected; such circuits to have no permanently connected lighting fixtures not a part of an appliance. (NESC/NEC) [86]
(2) A circuit that supplies energy to one or more outlets to which appliances are connected. These circuits have no permanently connected lighting fixtures that are not a part of an appliance. (IA/MT) 45-1998

appliance, fixed *See:* fixed appliance.

appliance outlet (household electric ranges) An outlet mounted on the range and to which a portable appliance may be connected by means of an attachment plug cap. (IA/APP) [90]

appliance, portable *See:* portable appliance.

appliance, stationary *See:* stationary appliance.

application (1) The use to which a computer system is put; for example, a payroll application, an airline application, or a network application. (C) 610.2-1987, 610.5-1990w
(2) The use of capabilities provided by an information system specific to the satisfaction of a set of user requirements. *Note:* These capabilities include hardware, software, and data. (C/PA) 14252-1996
(3) When the User Portability Utilities Option is supported, requirements associated with the term *application* also shall be interpreted to include the actions of the user who is interacting with the system by entering shell command language statements from a terminal. (C/PA) 2003.2-1996
(4) A software program consisting of one or more processes and supporting functions. (PE/SUB) 1379-1997
(5) A computer program that performs some desired function. (C) 1003.5-1999

application-association (1) A cooperative relationship between two applications for the purpose of communication of information and coordination of their joint operations. (C/PA) 1351-1994w
(2) A cooperative relationship between two application-entities, formed by their exchange of application-protocol-control-information through their use of presentation services. (C/PA) 1238.1-1994w

application engineering The process of constructing or refining application systems by reusing assets. (C/SE) 1517-1999

application entity The aspects of an application process pertinent to OSI. (C/PA) 1238.1-1994w

application entity title In OSI, a title that unambiguously identifies an application entity. An application entity title is composed of an application process title and an application entity qualifier. (C) 1003.5-1999

application entity qualifier In OSI, a component of an application entity title that is unambiguous within the scope of the application process. (C) 1003.5-1999

application environment The physical environment of a backplane serial bus. This includes the bus itself, the modules, and the system that contains them. This environment may be a standardized host backplane (e.g., a Futurebus+ profile) that describes signal requirements, transceivers, mechanical arrangement of the modules, and temperature range over which operation is guaranteed. (C/MM) 1394-1995

application environment profile (aep, AEP) (1) A document that describes functional requirements and points to existing standards, selecting and binding options within those standards. An implementer who then designs a specific module and/or system should be reasonably assured that another designer's (manufacturer's or supplier's) modules will properly function within the same system. This includes all aspects of definition: mechanical, electrical, protocol, environmental, and system considerations. (C/BA) 896.2-1991w, 896.3-1993w, 896.4-1993w, 896.10-1997
(2) A profile specifying a complete and coherent specification of the Open System Environment (OSE), in which the standards, options, and parameters chosen are necessary to support a class of applications. (C/PA) 14252-1996

application generator A code generator that produces programs to solve one or more problems in a particular application area; for example, a payroll generator. (C) 610.12-1990

application identifier (AID) An identifier that defines the category of dedicated short-range communications (DSRC) applications to which a specific application belongs. (SCC32) 1455-1999

application interface The programming access mechanism to the communication resources of a network. (DIS/C) 1278.2-1995

application layer (1) (Layer 7) The layer of the OSI reference model (ISO 7498: 1984) that provides the means for simulation applications to access and use the network's communications resources. (DIS/C) 1278.1-1995, 1278.2-1995
(2) The seventh and highest layer of the seven-layer OSI model providing the only interface between the user and the application program. *Note:* It hides from the user the physical distribution of processors, communications media, and data resources while maximizing the utility of those resources. *See also:* entity layer; logical link control sublayer; session layer; client layer; data link layer; presentation layer; physical layer; transport layer; sublayer; network layer; medium access control sublayer. (C) 610.7-1995

application logic That portion of a module that excludes the MTM-Bus interface logic. *See also:* module. (TT/C) 1149.5-1995

application-oriented language A programming language with facilities or notations applicable primarily to a single application area; for example, a language for computer-assisted instruction or hardware design. *See also:* simulation language; specification language; authoring language. (C) 610.13-1993w, 610.12-1990

application platform (1) A set of resources, including hardware and software, that support the services on which application software will run. The application platform provides services at its interfaces that, as much as possible, make the specific characteristics of the platform transparent to the application software. (C/PA) 14252-1996
(2) A set of resources on which an application will run. (C/PA) 1003.13-1998

application process title In OSI, a title that unambiguously identifies an application process. An application process title is a single name, which, for convenience, may be structured internally. (C) 1003.5-1999

application program (1) A computer program that is used for a specific application. (C) 610.5-1990w
(2) A program executed with the processor in **user mode.** *Note:* Statements made in this document regarding application programs may be inapplicable to programs (for example, debuggers) that have access to privileged processor state (e.g., as stored in a memory-image dump). (C/MM) 1754-1994

application program interface (API) The interface between the application software and the application platform, across which all services are provided. (C/PA) 14252-1996

application-service-element The part of an application-entity that provides an OSI environment, using underlying services when appropriate. (C/PA) 1238.1-1994w

application software (1) Software designed to fulfill specific needs of a user; for example, software for navigation, payroll, or process control. *Contrast:* support software; system software. (C) 610.12-1990
(2) Software that is specific to an application and is composed of programs, data, and documentation. (C/PA) 14252-1996

application-specific data dictionary A data dictionary specific to a particular implementation of an Intelligent Transportation Systems (ITS) application. (SCC32) 1489-1999

application valve (brake application valve) An air valve through the medium of which brakes are automatically applied. (EEC/PE) [119]

application view *See:* logical database.

applicative order A property of a programming language or procedure: the arguments to a procedure call are evaluated before the procedure is invoked, and the result of each evaluation is passed to the procedure in place of its argument expression. (C/MM) 1178-1990r

applicator (dielectric heating) (electrodes) Appropriately shaped conducting surfaces between which is established an alternating electric field for the purpose of producing dielectric heating. (IA) 54-1955w

Applied Dynamics International Simulation Language A simulation language designed for use in dynamic simulation applications. (C) 610.13-1993w

applied-fault protection A protective method in which, as a result of relay action, a fault is intentionally applied at one point in an electrical system in order to cause fuse blowing or further relay action at another point in the system. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

applied-potential tests (electric power) Dielectric tests in which the test voltages are low-frequency alternating voltages from an external source applied between conducting parts, and between conducting parts and ground. (SPD/PE) 32-1972r

applied voltage (corona measurement) Voltage that is applied across insulation. Applied voltage may be between windings or from winding(s) to ground. (MAG/ET) 436-1977s

applied voltage tests (power and distribution transformers) Dielectric tests in which the test voltages are low-frequency alternating voltages from an external source applied between conducting parts and ground without exciting the core of the transformer being tested. (PE/TR) C57.12.80-1978r

approach circuit A circuit used to announce the approach of trains at block or interlocking stations. (EEC/PE) [119]

approach indicator A device used to indicate the approach of a train. (EEC/PE) [119]

approach-light beacon (illuminating engineering) An aeronautical ground light placed on the extended centerline of the runway at a fixed distance from the runway threshold to provide an early indication of position during an approach to a runway. *Note:* The runway threshold is the beginning of the runway usable for landing. (ED) [127]

approach lighting An arrangement of circuits so that the signal lights are automatically energized by the approach of a train. (EEC/PE) [119]

approach-lighting relay A relay used to close the lighting circuit for signals upon the approach of a train. (EEC/PE) [119]

approach lights (illuminating engineering) A configuration of aeronautical ground lights located in extension of a runway or channel before the threshold to provide visual approach and landing guidance to pilots. (ED) [127]

approach locking (electric approach locking) Electric locking effective while a train is approaching, within a specified distance, a signal displaying an aspect to proceed, and that prevents, until after the expiration of a predetermined time interval after such signal has been caused to display its most restrictive aspect, the movement of any interlocked or electrically locked switch, movable-point frog, or derail in the route governed by the signal, and that prevents an aspect to proceed from being displayed for any conflicting route. *See also:* interlocking. (EEC/PE) [119]

approach navigation (navigation aid terms) Navigation during the time that the approach to a dock, runway, or other terminal facility is of immediate importance. (AES/GCS) 172-1983w

approach path (navigation aid terms) That portion of the flight path between the point at which the descent for landing is normally started and the point at which the aircraft touches down on the runway. (AES/GCS) 172-1983w

approach signal A fixed signal used to govern the approach to one or more other signals. (EEC/PE) [119]

approach speed The rate at which the intruder approaches the receptor. (SPD/PE) C62.47-1992r

appropriate privileges (1) An implementation-defined means of associating privileges with a implementation defined process with regard to the function calls and function call options defined in ISO/IEC 9945 that need special privileges. There may be zero or more such means. (C/PA) 9945-1-1996, 1003.5-1992r, 9945-2-1993

(2) An implementation defined means of associating privileges with a process with regard to the subprogram calls and options defined in this standard that need special privileges. There may be zero or more such means. (C/PA) 1003.5b-1995

approval Written notification by an authorized representative of the acquirer that a developer's plans, design, or other aspects of the project appear to be sound and can be used as the basis for further work. Such approval does not shift responsibility from the developer to meet contractual requirements. (C/SE) J-STD-016-1995

approval plate A label that the United States Bureau of Mines requires manufacturers to attach to every completely assembled machine or device sold as permissible mine equipment. *Note:* By this means, the manufacturer certifies to the permissible nature of the machine or device. (PE/EEC/MIN) [119]

approval test (metering) (acceptance tests) A test of one or more meters or other items under various controlled conditions to ascertain the performance characteristics of the type of which they are a sample. (ELM) C12.1-1982s

approved (1) (general) Approved by the enforcing authority. (EEC/PE) [119]

(2) Acceptable to the authority having jurisdiction. (NEC/NESC/DEI) 1221-1993w, [86]

approved supplier (replacement parts for Class 1E equipment in nuclear power generating stations) A supplier whose quality assurance (QA) system has been evaluated and found to meet the owner's QA requirements for the item or service to be purchased. (PE/NP) 934-1987w

approximate value (metric practice) A value that is nearly but not exactly correct or accurate. (QUL) 268-1982s

A Programming Language An interactive programming language with a concise syntax that is well-suited for solving mathematical problems requiring intricate vector or matrix manipulations. *Notes:* 1. Requires a special keyboard configuration due to its extended character set. 2. Standardized by ISO/IEC. (C) 610.13-1993w

APSE *See:* Automatic Programming and Scaling of Equations.

APS Instance An instantiation of an APS API service provider, including the APS environment and internal state information. (C/PA) 1351-1994w

APT (automatically programmed tools) *See:* automatic programmed tools; Automatically Programmed Tools.

aramid A manufactured material in which the base polymer is a long-chain synthetic polyamide with at least 85% of the amide linkages attached directly to two aromatic rings. Paper and transformerboard are made from this material and have been shown to be suitable for use in high-temperature and hybrid high-temperature insulation systems. (PE/TR) 1276-1997

arbiter (1) A functional module that accepts bus requests from requester modules and grants control of the data transfer bus (DTB) to one requester at a time. (C/BA) 1014-1987

(2) When implementing the serial arbitration method, the arbiter module accepts requests for the DTB from requesters and grants control of the DTB to one requester at a time.

There is one and only one active arbiter in the serial arbitration scheme, and it is always located in slot 1. An arbiter is not required in the parallel arbitration method. (C/MM) 1096-1988w

(3) The module that is performing the arbitration. (C/BA) 896.4-1993w

arbitrary sequence computer A computer in which each instruction explicitly specifies the location of the next instruction to be executed. *Contrast:* consecutive sequence computer. *See also:* nonsequential computer. (C) 610.10-1994w

arbitrated message (1) A number broadcast on the arbitrated message bus lines to all modules on the bus. (C/BA) 10857-1994, 896.3-1993w

(2) An event number broadcast on the arbitrated message bus lines to all modules on the bus. (C/BA) 896.4-1993w

arbitration (1) The process of determining which requesting device will gain access to a resource. (C/MM) 959-1988r

(2) The means whereby masters compete for control of the bus and the process by which a master is granted control of the bus. (C/MM) 1000-1987r

(3) A collection of mechanisms that allow masters to access the bus without conflicting with each other. (C/MM) 1196-1987w

(4) The process of selecting the next bus master. (C/BA) 10857-1994, 896.3-1993w, 896.4-1993w, 1014.1-1994w

(5) The process by which nodes compete for ownership of the bus. The cable environment uses a hierarchical point-to-point algorithm, while the backplane environment uses the bit-serial process of transmitting an arbitration sequence. At the completion of an arbitration contest, only one node will be able to transmit a data packet. (C/MM) 1394-1995

(6) In 1000BASE-X, Auto-Negotiation process that ensures proper sequencing of configuration information between link partners using the Physical Coding Sublayer (PCS) Transmit and Receive functions. (C/LM) 802.3-1998

(7) The process by which nodes compete for control of the bus. Upon completion of arbitration, the winning node is able to transmit a packet or initiate a short bus reset. (C/MM) 1394a-2000

arbitration bus One of the four buses provided by the backplane. This bus allows an arbiter module and several requester modules to coordinate use of the DTB. (C/BA) 1014-1987

arbitration clock rate The rate used to define a number of timing requirements within the backplane physical layer. It is 49.152 MHz × 100 ppm, regardless of the backplane interface technology. (C/MM) 1394-1995

arbitration contest This is the core mechanism to resolve bus ownership between one or more competing masters. It takes two bus periods. (C/MM) 1196-1987w

arbitration cycle (1) (FASTBUS acquisition and control) The process by which the next master to be granted bus mastership is determined. It is initiated by the arbitration timing controller and is complete when the winning master assumes bus mastership. (NID) 960-1993

(2) (VSB) A cycle that is initiated by the active requester in response to a bus request, after its associated active master no longer needs the bus. This cycle is used to select the master that will be granted use of the DTB. If the active requester detects a request for the bus, and if its associated master no longer needs the bus, it initiates an arbitration cycle. During the arbitration cycle, all contending requesters drive an arbitration ID on the bus. This ID is a combination of the geographical address of the board that is supplied by the backplane slot, and a priority code that is supplied by user-defined on-board logic. At the end of the arbitration cycle, one of the contending requesters becomes the active requester. (MM/C) 1096-1988w

arbitration locked sequence A sequence of operations by one master, directed to a number of different primary addresses, which is not interruptable by any other master because the originating master does not allow bus arbitration to take place. (NID) 960-1993

arbitration operation The bus operation in which agents attempt to gain exclusive access to the parallel system bus. (C/MM) 1296-1987s

arbitration reset gap (1) The minimum period of idle bus that has to occur after a source using the fairness protocol has won an arbitration contest before it can once again compete for bus mastership. This is longer than a normal subaction gap. (C/MM) 1394-1995

(2) The minimum period of idle bus (longer than a normal subaction gap) that separates fairness intervals. (C/MM) 1394a-2000

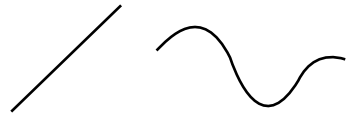
arbitration sequence For the backplane environment, a set of bits transmitted by nodes that wish to transmit packets that is used to determine which node will be able to transmit next. (C/MM) 1394-1995

arbitration signal Bidirectional signal exchanged between nodes during arbitration. One of the PDUs for the physical layer (the other is the data bit). (C/MM) 1394-1995

arbitration signaling A protocol for the exchange of bidirectional, unclocked signals between nodes during arbitration. (C/MM) 1394a-2000

arbitration timing control (ATC) Logic associated with each segment for the purpose of supervising and generating the arbitration control signals, run/halt control, and broadcast system handshake. (This is part of the ancillary logic.). (NID) 960-1993

arc (1) (A) (computer graphics) A continuous portion of a circle. **(B) (computer graphics)** A finite set of pixels representing a portion of a curve. **(C) (overhead power lines)** A continuous luminous discharge of electricity across an insulating medium, usually accompanied by the partial volatilization of the electrodes.



illustrations of arc

(C/PE/T&D) 610.4-1990, 539-1990

(2) A discharge of electricity through a gas, normally characterized by a voltage drop in the immediate vicinity of the cathode approximately equal to the ionization potential of the gas. *See also:* gas tube. (ED/T&D/PE) 161-1971w, 539-1990

(3) *See also:* timing arc. (C/DA) 1481-1999

arc-back (gas tube) A failure of the rectifying action, which results in the flow of a principal electron stream in the reverse direction, due to the formation of a cathode spot on an anode. *See also:* gas tube; rectification. (ED) 161-1971w

arc cathode (gas tube) A cathode whose electron emission is self-sustaining, with a small voltage drop approximately equal to the ionization potential of the gas. (Std100) [84]

arc chute (of a switching device) A structure affording a confined space or passageway, usually lined with arc-resisting material, into or through which an arc is directed to extinction. (SWG/PE) C37.100-1992

arc, clockwise *See:* clockwise arc.

arc converter A form of negative-resistance oscillator utilizing an electric arc as the negative resistance. *See also:* radio transmission. (BT) 182-1961w

arc, counterclockwise *See:* counterclockwise arc.

arc current (gas-tube surge protective devices) (gas tube surge arresters) The current that flows after breakdown when the circuit impedance allows a current that exceeds the glow-to-arc transition current. *Synonym:* arc mode current. (PE/SPD) C62.31-1987r, [8]

arc discharge (1) (illuminating engineering) An electric discharge characterized by high cathode current densities and a low voltage drop at the cathode. (ED) [127]
(2) (nonlinear, active, and nonreciprocal waveguide components) Commonly refers to weakly ionized plasma created by a radio-frequency (rf) discharge in gas tubes, receiver protectors, or duplexers. (MTT) 457-1982w

arc-discharge tube (valve) A gas-filled tube or valve in which the required current is that of an arc discharge. (PE/PSR) C37.90-1978s

arc-drop loss (gas tube) The product of the instantaneous values of the arc-drop voltage and current averaged over a complete cycle of operation. *See also:* gas tube. (ED) 161-1971w

arc-drop voltage (gas tube) The voltage drop between the anode and cathode of a rectifying device during conduction. *See also:* tube voltage drop; electrode voltage. (ED) [45]

arc-extinguishing medium (1) Material included in the fuse to facilitate current interruption. *Synonym:* fuse filler. (SWG/PE) C37.40-1993
(2) (of a fuse) Material included in the fuse to facilitate current interruption. (SWG/PE) C37.100-1992

arc furnace An electrothermic apparatus, the heat energy for which is generated by the flow of electric current through one or more arcs internal to the furnace. *See also:* electrothermics. (EEC/PE) [119]

arc gap *See:* resonant gap.

arching time (of a mechanical switching device) The interval of time between the instant of the first initiation of the arc and the instant of final arc extinction in all poles. *Note:* For switching devices that embody switching resistors, a distinction should be made between the arcing time up to the instant of the extinction of the main arc, and the arcing time up to the instant of the breaking of the resistance current. (SWG/PE) C37.100-1992

architecture (1) (computers) The organizational structure of a system or component. *See also:* system architecture; component; program architecture; subprogram; routine; module. (C) 610.12-1990
(2) (of AI-ESTATE) The elements of AI-ESTATE and their interrelationships. (ATLAS) 1232-1995
(3) In computer hardware, the organizational structure and interrelationship between the parts of a computing system, including the arrangement, design and interconnection of components. *Note:* This term is sometimes taken to mean the "instruction set" of a computer, since the physical architecture of a computer is often very tightly coupled with the instruction set of a computer. *See also:* computer architecture; network architecture. (C) 610.10-1994w
(4) The organizational structure of a system or a software item, identifying its components, their interfaces, and a concept of execution among them. (C/SE) J-STD-016-1995

architecture design (A) The process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system. **(B)** The result of the process in definition (A). *See also:* functional design. (C) 610.10-1994, 610.12-1990

archival database A copy of a database saved for later reference or use. (C) 610.5-1990w

archival pages On-line data that is no longer maintained, is not expected to change, and may not be readily renderable by future tools. (C) 2001-1999

arcing chamber (expulsion-type arrester) The part of an expulsion-type arrester that permits the flow of discharge current to the ground and interrupts the follow current. *See also:* surge arrester. (IA/ICTL) 74-1958w

arcing contacts (1) The contacts of a switching device on which the arc is drawn after the main (and intermediate, where used) contacts have parted. (SWG/PE/TR) C57.12.44-1994
(2) The contacts of a switching device on which the arc is drawn after the main (and intermediate, where used) contacts have parted. (SWG/PE) C37.100-1992

arcing distance The shortest external tight-string distance measured over the insulating envelope between the metal parts at line potential and ground. Formerly referred to as striking distance or flashover distance. (PE/TR) C57.19.03-1996

arcing horn (1) One of a pair of diverging electrodes on which an arc is extended to the point of extinction after the main contacts of the switching device have parted. *Synonym:* arcing runners. (SWG/PE) C37.36b-1990r
(2) One of a pair of diverging electrodes on which an arc is extended to the point of extinction after the main contacts of the switching device have parted. *Note:* Arcing horns are sometimes referred to as arcing runners. (SWG/PE) C37.100-1992

arcing runners *See:* arcing horn.

arcing switch A switching device used in conjunction with a tap selector to carry, make, and break current in circuits that have already been selected. (PE/TR) C57.131-1995

arcing tap switch A switching device capable of carrying current and also breaking and making current while selecting a tap position. It, thereby, combines the duties of an arcing switch and a tap selector. (PE/TR) C57.131-1995

arcing time (1) (protection and coordination of industrial and commercial power systems) The arcing time of a fuse is the time elapsing from the melting of the current-responsive element (such as the link) to the final interruption of the circuit. This time will be dependent upon such factors as voltage and reactance of the circuit. (IA/PSP) 242-1986r
(2) (mechanical switching device). The interval of time between the instant of the first initiation of the arc and the instant of final arc extinction in all poles. *Note:* For switching devices that embody switching resistors, a distinction should be made between the arcing time up to the instant of the extinction of the main arc, and the arcing time up to the instant of the breaking of the resistance current. (SWG)
(3) (of a fuse) The time elapsing from the severance of the current-responsive element to the final interruption of the circuit. (PE/SWG-OLD) C37.100-1992, C37.40-1993

arc loss (1) (nonlinear, active, and nonreciprocal waveguide components) Power absorbed in an active nonlinear device during above-threshold switching or limiting in gas tubes, duplexers, ferrite limiters, or diode limiters. *Synonym:* absorptive loss. (MTT) 457-1982w
(2) (switching tubes) The decrease in radio-frequency power measured in a matched termination when a fired tube, mounted in a series or shunt junction with a waveguide, is inserted between a matched generator and the termination. *Note:* In the case of a pretransmit-receive tube, a matched output termination is also required for the tube. *See also:* gas tube. (ED) 161-1971w

arc mode current *See:* arc current.

arc mode voltage *See:* arc voltage.

arc reach The distance from a point midway between the arc extremities to the most remote point of the arc at the time of its maximum length. (SWG/PE) C37.36b-1990r, C37.100-1992

arc resistance The impedance of an arc that is resistive by nature; it is a function of the current magnitude and arc length. (PE/PSR) C37.113-1999

arc-shunting-resistor-current arcing time The interval between the parting of the secondary arcing contacts and the extinction of the arc-shunting-resistor current. (SWG/PE) C37.100-1992

arc suppression (rectifier) The prevention of the recurrence of conduction, by means of grid or ignitor action, or both, during the idle period, following a current pulse. *See also:* rectification. (EEC/PCON) [110]

arc-through (gas tube) A loss of control resulting in the flow of a principal electron stream through the rectifying element in the normal direction during a scheduled nonconducting period. *See also:* rectification. (ED) 161-1971w

arc-tube relaxation oscillator *See:* gas-tube relaxation oscillator.

arc voltage (gas-tube surge protective devices) (gas tube surge arresters) The voltage drop across the arrester during arc current flow. *Synonym:* arc mode voltage. (SPD/PE) C62.31-1987r, [8]

arc welder generator (generator, alternating-current arc welder) An alternating-current generator with associated reactors, regulators, control, and indicating devices required to produce alternating current suitable for arc welding.
(2) (A) (generator-rectifier, direct-current arc welder) A combination of static rectifiers and the associated alternating-current generator, reactors, regulators, controls, and indicating devices required to produce direct current suitable for arc welding. **(B) (generator, direct-current arc welder)** A direct-current generator with associated reactors, regulators, control, and indicating devices required to produce direct current suitable for arc welding. (EEC/AWM) [91]

arc-welding engine generator A device consisting of an engine mechanically connected to and mounted with one or more arc-welding generators. (EEC/AWM) [91]

arc-welding motor-generator A device consisting of a motor mechanically connected to and mounted with one or more arc-welding generators. (EEC/AWM) [91]

ARE *See:* all routes explorer.

area (1) (A) (data management) In CODASYL, a part of a database that can be opened or closed as a unit. *Note:* This term was used in early CODASYL documents, but is now considered deprecated. **(B) (data management)** A named collection of records within a database. *Note:* May contain occurrences of one or more record types, and a record type may have occurrences in one or more area. *Synonym:* realm. (C) 610.5-1990
(2) (image processing) The number of pixels in a region. (C) 610.4-1990w
(3) *See also:* equivalent flat plate area of a scattering object; partial effective area; effective area antenna. (AP/ANT) 145-1993

area assist action (electric power system) A control feature that bypasses economic control and that controls all available units while the area control error violates a preset limit. (PE/PSE) 94-1991w

area code (telephone switching systems) A one-, two-, or three-digit number that, for the purpose of distance dialing, designates a geographical subdivision of the territory covered by a separate national or integrated numbering plan. (COM) 312-1977w

area control error (1) (electric power system) A quantity reflecting the deficiency or excess of power within a control area. (PE/PSE) 858-1993w, 94-1991w
(2) (isolated-power system consisting of a single control area) The frequency deviation (of a control area on an interconnected system) is the net interchange minus the biased scheduled net interchange. *Note:* The above polarity is that which has been generally accepted by electric power systems and is in wide use. It is recognized that this is the reverse of the sign of control error generally used in servomechanism and control literature, which defines control error as the reference quantity minus the controlled quantity. (PE/PSE) [54]

area fill *See:* fill.

area frequency-response characteristic (control area) The sum of the change in total area generation caused by governor action and the change in total area load, both of which result from a sudden change in system frequency, in the absence of automatic control action. (PE/PSE) 94-1970w

areal beamwidth For pencil-beam antennas the product of the two principal half-power beamwidths. *See also:* principal half-power beamwidths. (AP/ANT) 145-1993

area load-frequency characteristic (control area) The change in total area load that results from a change in system frequency. (PE/PSE) 94-1970w

areal object A synthetic environment object that is geometrically anchored to the terrain with a set of at least three points that come to a closure. (C/DIS) 1278.1a-1998

area moving target indication A method of MTI based upon amplitude changes in corresponding resolution cells for radar returns obtained at different times. (AES) 686-1997

area supplementary control (electric power system) The control action applied, manually or automatically, to area generator speed governors in response to changes in system frequency, tie-line loading, or the relation of these to each other, so as to maintain the scheduled system frequency and/or the established net interchange with other control areas within predetermined limits. (PE/PSE) 94-1970w

area tie line (electric power system) A transmission line connecting two control areas. *Note:* Similar to interconnection tie. *See also:* transmission line. (PE/PSE) 94-1970w

argand plane A graphical representation of a vector used in complex number notation. (SCC20) 771-1998

Argument A value of type `Argument`. (IM/ST) 1451.1-1999

argument (1) (A) An independent variable; for example, the variable m in the equation $E = mc^2$. **(B)** A specific value of an independent variable; for example, the value $m = 24$ kg. **(C)** A constant, variable, or expression used in a call to a software module to specify data or program elements to be passed to that module. *Synonym:* actual parameter. *Contrast:* formal parameter. (C) 610.12-1990
(2) A parameter passed to a utility as the equivalent of a single string in the *argv* array created by one of the POSIX.1 *exec* functions. An argument is one of the options, option-arguments, or operands following the command name. (C/PA) 9945-2-1993
(3) Information that is passed to an interface operation or a directory operation. (C/PA) 1328.2-1993w, 1327.2-1993w, 1224.2-1993w, 1326.2-1993w
(4) An expression occurring as the actual value in a function call or procedure call. (C/DA) 1076.3-1997
(5) The value or the address of a data item passed to a function or procedure by the caller. (C/DA) 1481-1999
(6) The usual mathematical meaning. (IM/ST) 1451.1-1999

Argument Array A value of type `ArgumentArray`. (IM/ST) 1451.1-1999

ARINC *See:* Aeronautical Radio Incorporated.

arithmetic Pertaining to data that has the characteristics of base, scale, mode, and precision. *Note:* Used to represent numbers. *Contrast:* string. *See also:* decimal picture data; coded arithmetic data; binary picture data; numeric data. (C) 610.5-1990w

arithmetic and logic unit A functional component of a computer system that performs arithmetic and logical operations. *Synonym:* arithmetic-logic unit. *See also:* logic unit; arithmetic unit; exponent arithmetic and logic unit; register-arithmetic and logic unit. (C) 610.10-1994w

arithmetic check *See:* mathematical check.

arithmetic element *See:* arithmetic unit.

arithmetic expression An expression containing any combination of variables and constants joined by one or more arithmetic operators such that the expression can be reduced to a single numerical result. (C) 1084-1986w

arithmetic instruction An instruction in which the operation field specifies an arithmetical operation; for example, an add instruction or a multiply instruction. *Contrast:* logic instruction. (C) 610.10-1994w

arithmetic-logic unit *See:* arithmetic and logic unit.

arithmetic mean The numerical result obtained by dividing the sum of two or more quantities by the number of quantities. *Notes:* 1. Strictly speaking, arithmetic means of corona-effect data expressed in decibels cannot be taken unless the numbers are converted back to real units such as microvolts per meter (μV/m) or micropascals (μPa). 2. An arithmetic mean that is

commonly used in audible noise investigations is the energy average of the quantities. The units in decibels above 20 μPa are converted to energy units such as microwatts (μW), which are then averaged. (T&D/PE) 539-1990

arithmetic operation (1) An operation for which the VHDL operator is +, -, *, /, **mod**, **rem**, **abs**, or **. (C/DA) 1076.3-1997

(2) An operation that is performed in accordance with the rules of ordinary arithmetic. (C) 1084-1986w

(3) (test, measurement, and diagnostic equipment) Operations in which numerical quantities form the elements of the calculation. (MIL) [2]

arithmetic overflow *See:* overflow.

arithmetic point *See:* radix point.

arithmetic power factor The ratio of the active power to the arithmetic apparent power. The arithmetic power factor is expressed by the equation

$$F_{pa} = \frac{P}{U_a}$$

where

F_{pa} = arithmetic power factor
P = active power
U = arithmetic apparent power.

Normally power factor, rather than arithmetic power factor, will be specified, but in particular cases, especially when the determination of the apparent power for a polyphase circuit is impracticable with the available instruments, arithmetic power factor may be used. When arithmetic power factor and power factor differ, arithmetic power factor is the smaller. (Std100) 270-1966w

arithmetic reactive factor The ratio of the reactive power to the arithmetic apparent power. (Std100) 270-1966w

arithmetic register A register that holds the operands or the results of operations such as arithmetic operations, logic operations, and shift operations. (C) 610.10-1994w

arithmetic shift (1) (mathematics of computing) A shift that affects all digit positions in a register, word, or numeral but does not affect the sign position. For example, +231.702 shifted two places to the left becomes +170.200. *Note:* The result is equivalent to multiplication or division by an integral power of the radix, except for the truncation effects. *Synonym:* numerical shift. *Contrast:* logical shift. (C) 1084-1986w

(2) (general) (A) A shift that does not affect the sign position. **(B)** A shift that is equivalent to the multiplication of a number by a positive or negative integral power of the radix. (MIL/C) [2], [85]

arithmetic underflow *See:* underflow.

arithmetic unit (1) The unit of a computing system that contains the circuits that perform arithmetic operations. (MIL/C) [2], [20], [85]

(2) A functional component of a computer system that performs arithmetic operations. *Note:* The term is also sometimes used for an arithmetic and logic unit. *Synonym:* arithmetic element. *See also:* vector unit; scalar unit. (C) 610.10-1994w

arm *See:* network analysis; branch.

arm a timer To start a timer measuring the passage of time, enabling the notification of a process when the specified time or time interval has passed. (C) 1003.5-1999

armature (of a relay) The moving element of an electromechanical relay that contributes to the designed response of the relay and that usually has associated with it a part of the relay contact assembly. (SWG/PE) C37.100-1992

armature band (rotating machinery) A thin circumferential structural member applied to the winding of a rotating armature to restrain and hold the coils so as to counteract the effect of centrifugal force during rotation. *Note:* Armature bands may serve the further purpose of archbinding the coils. They may be on the end windings only or may be over the coils within the core. (PE) [9]

armature band insulation (rotating machinery) An insulation member placed between a rotating armature winding and an armature band. *See also:* armature. (PE) [9]

armature bar (rotating machinery) (half coil) Either of two similar parts of an armature coil, comprising an embedded coil side and two end sections, that when connected together form a complete coil. *See also:* armature. (PE) [9]

armature coil (rotating machinery) A unit of the armature winding composed of one or more insulated conductors. *See also:* asynchronous machine; armature. (PE/EEC) [119]

armature core (rotating machinery) A core on or around which armature windings are placed. *See also:* armature. (PE) [9]

armature I^2R loss (synchronous machines) The sum of the I^2R losses in all of the armature current paths. *Note:* The I^2R loss in each current path shall be the product of its resistance in ohms, as measured with direct current and corrected to a specified temperature, and the square of its current in amperes. (PE/REM) [9], [115]

armature quill *See:* armature spider.

armature reaction (rotating machinery) The magnetomotive force due to armature-winding current. (PE) [9]

armature-reaction excited machine A machine having a rotatable armature, provided with windings and a commutator, whose load-circuit voltage is generated by flux that is produced primarily by the mag-netomotive force of currents in the armature winding. *Notes:* 1. By providing the stationary member of the machine with various types of windings, different characteristics may be obtained, such as a constant-current characteristic or a constant-voltage characteristic. 2. The machine is normally provided with two sets of brushes, displaced around the commutator from one another, so as to provide primary and secondary circuits through the armature. 3. The primary circuit carrying the excitation armature current may be completed externally by a short-circuit connection, or through some other external circuit, such as a field winding or a source of power supply; and the secondary circuit is adapted for connection to an external load. (EEC/PE) [119]

armature sleeve *See:* armature spider.

armature spider A support upon which the armature laminations are mounted and which in turn is mounted on the shaft. *Synonyms:* armature sleeve; armature quill. (EEC/PE) [119]

armature terminal (rotating machinery) A terminal connected to the armature winding. *See also:* armature. (PE) [9]

armature to field transfer function (G[s]) (synchronous machine parameters by standstill frequency testing) (standstill frequency response testing). The ratio of the Laplace transform of the direct-axis armature flux linkages to the Laplace transform of the field voltage, with the armature open-circuited. (PE/EM) 115A-1987

armature-voltage control A method of controlling the speed of a motor by means of a change in the magnitude of the voltage impressed on its armature winding. *See also:* control. (IA/IAC) [60]

armature winding (rotating machinery) The winding in which alternating voltage is generated by virtue of relative motion with respect to a magnetic flux field. *See also:* asynchronous machine. (PE) [9]

armature winding cross connection *See:* armature winding equalizer.

armature winding equalizer (rotating machinery) An electric connection to normally equal-potential points in an armature circuit having more than two parallel circuits. *Synonym:* armature winding cross connection. *See also:* armature. (PE) [9]

armed sweep *See:* single sweep.

armor clamp (wiring methods) A fitting for gripping the armor of a cable at the point where the armor terminates or where

the cable enters a junction box or other piece of apparatus. (T&D/PE) [10]

armored cable (interior wiring) A fabricated assembly of insulated conductors and a flexible metallic covering. *Note:* Armored cable for interior wiring has its flexible outer sheath or armor formed of metal strip, helically wound and with interlocking edges. Armored cable is usually circular in cross section but may be oval or flat and may have a thin lead sheath between the armor and the conductors to exclude moisture, oil, etc., where such protection is needed. *See also:* nonmetallic-sheathed cable. (EEC/PE) [119]

arm, thermoelectric *See:* thermoelectric arm.

arm, thermoelectric, graded *See:* thermoelectric, graded arm.

arm, thermoelectric, segmented A thermoelectric arm composed of two or more materials having different compositions. *See also:* thermoelectric device. (ED) [46], 221-1962w

ARQ *See:* automatic repeat request.

Array Denotes the IEEE 1451.1 array datatype. (IM/ST) 1451.1-1999

array (1) (photovoltaic converter) A combination of panels coordinated in structure and function. (AES) [41]
(2) (solar cells) A combination of solar-cell panels or paddles coordinated in structure and function. (AES/SS) 307-1969w
(3) (data management software) An *n*-dimensional ordered set of data items identified by a single name and one or more indices, so that each element of the set is individually addressable. (C) 610.5-1990w, 610.12-1990
(4) The language-independent syntax for a family of datatypes constructed from a base datatype and an index datatype. The base datatype may be any datatype, the index datatype shall be a finite ordered datatype. (C/PA) 1351-1994w
(5) A datatype constructed from a base datatype and an index datatype. The base datatype may be any datatype; the index datatype shall be a finite, ordered datatype. (C/PA) 1224.1-1993w
(6) A group of memory cells that are arranged in a pattern. (ED) 1005-1998

array antenna An antenna comprised of a number of identical radiating elements in a regular arrangement and excited to obtain a prescribed radiation pattern. *Notes:* 1. The regular arrangements possible include ones in which the elements can be made congruent by simple translation or rotation. 2. This term is sometimes applied to cases where the elements are not identical or arranged in a regular fashion. For those cases qualifiers shall be added to distinguish from the usage implied in this definition. For example, if the elements are randomly located, one may use the term random array antenna. *Synonym:* antenna array. (AP/ANT) 145-1993

array control (terrestrial photovoltaic power systems) All electrical and mechanical controls that ensure proper electric and thermal performance of the array field. (PV) 928-1986r

array element In an array antenna, a single radiating element or a convenient grouping of radiating elements that have fixed relative excitations. (AP/ANT) 145-1993

array factor The radiation pattern of an array antenna when each array element is considered to radiate isotropically. *Note:* When the radiation patterns of individual array elements are identical, and the array elements are congruent under translation, then the product of the array factor and the element radiation pattern gives the radiation pattern of the entire array. (AP/ANT) 145-1993

array field (terrestrial photovoltaic power systems) The aggregate of all array subfields. *See also:* array control. (PV) 928-1986r

array processor A processor capable of executing instructions in which the operands may be arrays rather than scalar data elements. *Synonym:* vector processor. (C) 610.10-1994w

array source A common diffusion that provides the source of electrons for the cell in the read mode or, in the case of a cell that programs via channel hot elecrons (CHE), provides the source of electrons for programming. (ED) 1005-1998

array subsystem (terrestrial photovoltaic power systems) The array field and the controls that together produce dc electric and thermal energy. Associated thermal energy may be utilized or dissipated. *See also:* array control. (PV) 928-1986r

arrester *See:* surge arrester.

arrester alternating sparkover voltage The root-mean-square value of the minimum 60-Hz sine-wave voltage that will cause sparkover when applied between its line and ground terminals. *See also:* surge arrester; current rating, 60-hertz. (PE) [8]

arrester, dead-front type *See:* dead-front type arrester.

arrester discharge capacity The crest value of the maximum current of specified wave shape that the arrester can withstand without damage to any of its parts. *See also:* surge arrester. (PE) [8]

arrester discharge current The current that flows through an arrester resulting from an impinging surge. (SPD/PE) C62.22-1997

arrester discharge voltage The voltage that appears across the terminals of an arrester during the passage of discharge current. (SPD/PE) C62.22-1997

arrester discharge voltage-current characteristic The variation of the crest values of discharge voltage with respect to discharge current. *Note:* This characteristic is normally shown as a graph based on three or more current surge measurements of the same wave shape but of different crest values. *See also:* surge arrester; lightning; current rating, 60-hertz. (PE) 28-1974, [8]

arrester discharge voltage-time curve A graph of the discharge voltage as a function of time while discharging a current surge of given wave shape and magnitude. *See also:* surge arrester. (PE) [8]

arrester disconnector A means for disconnecting an arrester in anticipation of, or after, a failure in order to prevent a permanent fault on the circuit and to give indication of a failed arrester. *Note:* Clearing of the fault current through the arrester during disconnection is generally done by the nearest source side over-current-protective device. (SPD/PE) C62.11-1999

arrester, distribution, normal duty class *See:* distribution arrester.

arrester duty cycle rating The designated maximum permissible root-mean-square (rms) value of power-frequency voltage between its line and ground terminals at which it is designed to perform its duty cycle. (SPD/PE) C62.22-1997

arrester, expulsion-type *See:* expulsion-type surge arrester.

arrester ground An intentional electric connection of the arrester ground terminal to the ground. *See also:* surge arrester. (PE) [8]

arresters, classification of Arrester classification is determined by prescribed test requirements. These classifications are: station valve arrester; intermediate valve arrester; secondary valve arrester; protector tube. (PE) [8]

arrester unit Any section of a multiunit arrester. (SPD/PE) C62.11-1999

arrester, valve-type An arrester having a characteristic element consisting of a resistor with a nonlinear volt-ampere characteristic that limits the follow current to a value that the series gap can interrupt. *Note:* If the arrester has no series gap, the characteristic element limits the follow current to a magnitude that does not interfere with the operation of the system. *See also:* surge arrester; nonlinear resistor-type arrester. (PE) [8]

arrow A directed line, composed of one or more connected arrow segments in a single diagram from a single source (box or diagram boundary) to a single use (box or diagram bound-

ary). *See also:* arrow segment; boundary arrow; internal arrow. (C/SE) 1320.1-1998

arrow button A visual user interface control that is a button labeled with an arrow pointing in a specified direction that represents an action associated with that direction. The action is invoked if the user clicks the mouse within the button. (C) 1295-1993w

arrow label A noun or noun phrase associated with an arrow segment to signify the arrow meaning of the arrow segment. Specifically, an arrow label identifies the object type set that is represented by an arrow segment. (C/SE) 1320.1-1998

arrow meaning The object types (e.g., a physical thing, a data element) of an object type set, regardless of how these object types may be collected, aggregated, grouped, bundled, or otherwise joined within the object type set. (C/SE) 1320.1-1998

arrow reference *See:* ICOM code.

arrow role The relationship between an object type set represented by an arrow segment and the activity represented by the box to which the arrow segment is attached. There are four arrow roles: input, control, output, and mechanism. (C/SE) 1320.1-1998

arrow segment A directed line that originates at a box side, arrow junction (branch or join), or diagram boundary and terminates at the next box side, arrow junction (branch or join), or diagram boundary that occurs in the path of the line. (C/SE) 1320.1-1998

ARSR *See:* air-route surveillance radar.

articulated part A visible part of a simulated entity that may not move relative to the entity, but is able to move relative to the entity itself. (DIS/C) 1278.1-1995

articulated unit substation (1) (A) power and distribution transformer. A unit substation in which the incoming, transforming, and outgoing sections are manufactured as one or more subassemblies intended for connection in the field. **(B)** radial type. One that has a single stepdown transformer and that has an outgoing section for the connection of one or more outgoing radial (stub end) feeders. **(C)** distributed-network type. One that has a single step-down transformer having its outgoing side connected to a bus through a circuit breaker equipped with relays that are arranged to trip the circuit breaker on reverse power flow to the transformer and to reclose the circuit breaker upon the restoration of the correct voltage, phase angle, and phase sequence at the transformer secondary. The bus has one or more outgoing radial (stub end) feeders and one or more tie connections to a similar unit substation. **(D)** spot-network type. One that has two step-down transformers, each connected to an incoming high-voltage circuit. The outgoing side of each transformer is connected to a common bus through circuit breakers equipped with relays which are arranged to trip the circuit breaker on reverse power flow to the transformer and to reclose the circuit breaker upon the restoration of the correct voltage, phase angle and phase sequence at the transformer secondary. The bus has one or more outgoing radial (stub end) feeders. **(E)** secondary-selective type (low-voltage-selective type). One which has two stepdown transformers, each connected to an incoming high-voltage circuit. The outgoing side of each transformer is connected to a separate bus through a suitable switching and protective device. The two sections of bus are connected by a normally open switching and protective device. Each bus has one or more outgoing radial (stub end) feeders. **(F)** duplex type (breaker-and-a-half arrangement). One that has two stepdown transformers, each connected to an incoming high-voltage circuit. The outgoing side of each transformer is connected to a radial (stub end) feeder. These feeders are joined on the feeder side of the power circuit breakers by a normally open-tie circuit breaker. (SWG/PE/TR) C57.12.80-1978
(2) A unit substation in which the incoming, transforming, and outgoing sections are manufactured as one or more subassemblies intended for connection in the field. (SWG/PE) C37.100-1992

articulation (percent articulation) and intelligibility (percent intelligibility) The percentage of the speech units spoken by a talker or talkers that is correctly repeated, written down, or checked by a listener or listeners. *Notes:* 1. The word "articulation" is used when the units of speech material are meaningless syllables or fragments; the word "intelligibility" is used when the units of speech material are complete, meaningful words, phrases, or sentences. 2. It is important to specify the type of speech material and the units into which it is analyzed for the purpose of computing the percentage. The units may be fundamental speech sounds, syllables, words, sentences, etc. 3. The percent articulation or percent intelligibility is a property of the entire communication system: talker, transmission equipment or medium, and listener. Even when attention is focused upon one component of the system (for example, a talker, a radio receiver), the other components of the system should be specified. 4. The kind of speech material used is identified by an appropriate adjective in phrases such as syllable articulation, individual sound articulation, vowel (or consonant) articulation, monosyllabic word intelligibility, discrete word intelligibility, discrete sentence intelligibility. *See also:* volume equivalent. (SP) [32]

articulation equivalent (complete telephone connection) A measure of the articulation of speech reproduced over it. The articulation equivalent of a complete telephone connection is expressed numerically in terms of the trunk loss of a working reference system when the latter is adjusted to give equal articulation. *Note:* For engineering purposes, the articulation equivalent is divided into articulation losses assignable to the station set, subscriber line, and battery supply circuit that are on the transmitting end, the station set, subscriber line, and battery supply circuit that are on the receiving end, the trunk, and interaction effects arising at the trunk terminals. *See also:* volume equivalent. (EEC/PE) [119]

artificial antenna A device that has the necessary impedance characteristics of an antenna and the necessary power-handling capabilities, but that does not radiate or receive radio waves. *Synonym:* dummy antenna. *See also:* antenna. (AP/ANT) 145-1983s

artificial dielectric A medium containing a distribution of scatterers, usually metallic, that react as a dielectric to radio waves. *Notes:* 1. The scatterers are usually small compared to a wavelength and embedded in a dielectric material whose effective permittivity and density are intrinsically low. 2. The scatterers may be in either a regular arrangement or a random distribution. (AP/ANT) 145-1993

artificial ear (1) (transmission performance of telephone sets) A device for the measurement of the acoustic output of telephone-set receivers. It presents to the receiver an acoustic impedance approximating the impedance presented by the average human ear. (COM/TA) 269-1983s
(2) (general) A device for the measurement of the acoustic output of earphones in which the artificial ear presents to the earphone an acoustic impedance approximating the impedance presented by the average human ear and is equipped with a microphone for measurement of the sound pressures developed by the earphone. (SP/COM) [32], [50]

artificial hand A device simulating the impedance between an electric appliance and the local earth when the appliance is grasped by the hand. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

artificial horizon (A) (navigation aid terms) A device for indicating the horizontal, as a bubble, gyroscope, pendulum, or the flat surface of a liquid. **(B) (navigation aid terms)** A gyroscopic flight instrument that shows the pitching and banking attitudes of a vehicle with respect to a reference line horizon. (AES/GCS) 172-1983

artificial intelligence (A) The study of designing computer systems exhibiting the characteristics associated with intelligence in human behavior including understanding language, learning, reasoning from incomplete or uncertain information, and solving problems. **(B)** The discipline for developing com-

puter systems capable of passing the *Turing Test* in which behavior of the computer system is indistinguishable from human behavior. **(C)** The study of problem solving using computational models. (ATLAS) 1232-1995

Artificial Intelligence and Expert System Tie to Automatic Test Equipment (AI-ESTATE) (1) A set of specifications that defines the software interface of artificial intelligence and expert systems to system test and diagnosis. *Note:* The AI-ESTATE set of standards currently includes IEEE Std 1232-1995, IEEE P1232.1, IEEE P1232.2, and IEEE P1347. (ATLAS) 1232-1995

(2) Provides standard representation of dependency information used to drive intelligent diagnostic reasoning systems. (ATLAS) 1226-1993s

artificial language *See:* formal language.

artificial line (1) (data transmission) An electric network that simulates the electrical characteristics of a line over a desired frequency range. *Note:* Although the term basically is applied to the case of simulation of an actual line, by extension it is used to refer to all periodic lines that may be used for laboratory purposes in place of actual lines, but that may represent no physically realizable line. For example, an artificial line may be composed of pure resistances. *See also:* network analysis. (AP/PE/ANT) 145-1983s, 599-1985w

(2) (waveguide) A network that simulates the electrical characteristics of a transmission line over a given frequency range. (MTT) 146-1980w

artificial load A dissipative but essentially nonradiating device having the impedance characteristics of an antenna, transmission line, or other practical utilization circuit. (AP/PE/ANT) 145-1983s, 599-1985w

artificial mains network A network inserted in the supply mains lead of the apparatus to be tested, which provides a specified measuring impedance for interference voltage measurements and isolates the apparatus from the supply mains at radio frequencies. *See also:* line-impedance stabilization network; electromagnetic compatibility. (EMC/INT) [53], [70]

artificial mouth (transmission performance of telephone sets) An electroacoustic transducer that produces a sound field simulating that of a typical human talker. The reference point for the handset and the headset is the center of the circular plane of contact of the handset ear-cap and the ear. If the handset ear-cap is not circular or has no external plane of contact, an effective center and an effective plane of contact are determined. (COM/TA) 269-1983s

artificial pupil (illuminating engineering) A device or arrangement for confining the light passing through the pupil of the eye to an area smaller than the natural pupil. (ED) [127]

artificial test head A fixture containing an artificial mouth and an artificial ear located in a specified relationship with each other. *See also:* loudness rating guard-ring position. (COM/TA) 269-1992, 1206-1994

artificial voice A sound source for microphone measurements consisting of a small loudspeaker mounted in a shaped baffle proportioned to simulate the acoustic constants of the human head. *See also:* close-talking pressure-type microphones. (SP) 258-1965w

as-built curve (rotating electric machinery) A curve that is found on an individual machine during testing. (PE/EM) 11-1980r

as-built drawings A complete set of drawings which, in addition to the original drawings, includes all drawings that accurately record changes made to the equipment or subsystem to indicate the final installation and commissioning. (PE/SUB) 1303-1994

ASC *See:* accredited standards committee.

***A*-scan** *See: A* and *R* display.

ascender The portion of a graphic character that extends above the main part of the character; for example, the upper portion of the letters b and h. *Contrast:* descender. (C) 610.2-1987

ascending node (communication satellite) The point on the line of nodes that the satellite passes through as the satellite travels from below to above the equatorial plane. (COM) [19]

ASCII *See:* American Standard Code for Information Interchange.

ASCIIz An ASCII string concatenated with a NULL character. (C/MM) 1284.1-1997

A-scope A cathode-ray oscilloscope arranged to present an A-display. (AES/RS) 686-1990

ASC T1 A standards committee accredited by the American National Standards Institute organization that recommends standards for telecommunication. (C) 610.7-1995

ASC X3 A standards committee accredited by the American National Standards Institute organization that recommends standards for computers and information processing systems. (C) 610.7-1995

ASDE *See:* airport surface detection equipment.

ash layer porosity (fly ash resistivity) (cm^3/cm^3) The ratio of the ash layer void volume to the test cell volume in a test cell used for the laboratory measurement of fly ash resistivity. (PE/EDPG) 548-1984w

ASI *See:* address space identifier.

A64 module A module whose address space is limited to a 64-bit width. (C/BA) 14536-1995

askarel (1) (handling and disposal of transformer grade insulating liquids containing PCBs) A generic term for a group of synthetic, fire-resistant, chlorinated aromatic hydrocarbons used as electrical insulating liquid. They have a property under arcing conditions such that any gases produced will consist predominantly of noncombustible hydrogen chloride with lesser amounts of combustible gases. Askarel does not necessarily contain polychlorinated biphenyl (PCBs). (LM/C) 802.2-1985s

(2) A generic term for a group of nonflammable synthetic chlorinated hydrocarbons used as electrical insulating media. Askarels of various compositional types are used. The gases produced under arcing conditions, while consisting predominantly of noncombustible hydrogen chloride, can include varying amounts of combustible gases depending upon the askarel type. (NESC/NEC) [86]

(3) (power and distribution transformers) A generic term for a group of synthetic, fire-resistant, chlorinated, aromatic hydrocarbons used as electrical insulating liquids. They have a property under arcing conditions such that any gases produced will consist predominantly of noncombustible hydrogen chloride with lesser amounts of combustible gases. (PE/TR) 637-1985r, C57.12.80-1978r

ASN.1 *See:* Abstract Syntax Notation One.

aspect ratio (1) (television) The ratio of the frame width to the frame height. The ratio of the frame width to the frame height as defined by the active picture. (BT/AV) 201-1979w, 202-1954w

(2) The ratio of the height to the width of a rectangle such as is found in a display surface, window, viewport, or character space. (C) 610.6-1991w

asphalt (rotating machinery) A dark brown to black cementitious material, solid or semisolid in consistency, in which the predominating constituents are bitumens that occur in nature as such or are obtained as residue in refining of petroleum. (PE) [9]

ASR *See:* airport-surveillance radar.

assay (sodium iodide detector) The determination of the activity of a radionuclide in a sample. (NI) N42.12-1994

assemble (1) (software) To translate a computer program expressed in an assembly language into its machine language equivalent. *Contrast:* disassemble; compile; interpret. (C) 610.12-1990

(2) The process of constructing from parts one or more identified pieces of software. (C/SE) 1517-1999

assemble-and-go An operating technique in which there are no stops between the assembling, linking, loading, and execution of a computer program. (C) 610.12-1990

assembled origin The address of the initial storage location assigned to a computer program by an assembler, a compiler, or a linkage editor. *Contrast:* loaded origin. *See also:* starting address; offset. (C) 610.12-1990

assembler (1) (microprocessor assembly language) A utility program that translates symbolic assembly language instructions into machine instructions or data on a one-to-one basis. (C/MM) 695-1985s

(2) (software) A computer program that translates programs expressed in assembly language into their machine language equivalents. *Contrast:* interpreter; compiler. *See also:* relocating assembler; absolute assembler; cross-assembler. (C) 610.12-1990

(3) (test, measurement, and diagnostic equipment) A computer program that is one step more automatic than a translator; it translates not only operations but also data and input-output quantities from symbolic to machine language form in a one-to-one ratio. An assembler program may have the capability to assign locations within a storage device. (MIL) [2]

assembler code *See:* assembly code.

assembler language *See:* assembly language.

assembly (GIS) (1) (electric and electronics parts and equipment) A number of basic parts or subassemblies, or any combination thereof, joined together to perform a specific function. The application, size, and construction of an item may be factors in determining whether an item is regarded as a unit, an assembly, a subassembly, or a basic part. A small electric motor might be considered as a part if it is not normally subject to disassembly. The distinction between an assembly and a subassembly is not always exact: An assembly in one instance may be a subassembly in another where it forms a portion of an assembly. Typical examples are: electric generator, audio-frequency amplifier, power supply. (GSD) 200-1975w

(2) (nuclear power generating station) (seismic qualification of Class 1E equipment) Two or more devices sharing a common mounting or supporting structure. *Note:* Examples are control panels and diesel generators. (PE/NP) 380-1975w, 344-1975s

(3) A collection of GIS components that are interconnected and ready for insertion as a subassembly in a GIS, such as a breaker bay shipping assembly. The term is also used to describe a complete GIS. (SUB/PE) C37.122.1-1993, C37.122-1993

(4) Gas-insulated substation fully erected. (SWG/PE) C37.100-1992

(5) (A) An element of the physical or system architecture, specification tree, and system breakdown structure that is a subordinate element to a subsystem and is comprised of two or more components. It represents a consumer product (automatic brake system) of a subsystem (braking system of an automobile); or a life-cycle process product (control system) of a subsystem (flight controls of a simulator) related to a life-cycle process (training) that supports an assembly or group of assemblies. **(B)** The act of fitting together fabricated or manufactured elements into a larger element. (C/SE) 1220-1994

assembly code Computer instructions and data definitions expressed in a form that can be recognized and processed by an assembler. *Synonym:* assembler code. *Contrast:* compiler code; machine code; interpretive code. (C) 610.12-1990

assembly language A symbolic programming language that corresponds closely to the instruction set of a given computer, allows symbolic naming of operations and addresses, and usually results in a one-to-one translation of program instructions into machine instructions. *Synonyms:* assembler language; second generation language. *Contrast:* high-order language; machine language; fifth generation language; fourth generation language. *See also:* META 5. (C) 610.13-1993w, 610.12-1990

assembly, microelectronic device (electric and electronics parts and equipment) An assembly of inseparable parts, circuits, or a combination thereof. Typical examples are: microcircuit, integrated-circuit package, micromodule. (GSD) 200-1975w

assert (1) (signals and paths) To cause a signal line to make a transition from its logically false (inactive) state to its logically true (active) state. The true or active state is either a high or low state, as specified for each signal. (C/MM) 696-1983w

(2) (STD bus) To place a signal in its logic 1 state. (C/MM) 961-1987r

(3) (A) For a set of parallel signals of the same function, to place the desired logic state pattern on the bus, which may include both one and zero values. **(B)** For a single signal, to drive a signal to the one ("1"), or asserted, logic state. (C/BA) 1496-1993

(4) (A) The action of applying a logic one signal to a bus line. **(B)** The state of a bus line when the signal it carries represents a logic one. (C/BA) 10857-1994, 896.10-1997, 896.2-1991, 896.4-1993, 896.3-1993

(5) To change the value of a bus signal from logic 0 (released) to logic 1 (asserted) or ensure that such a signal remains at a logic 1. (TT/C) 1149.5-1995

asserted (1) The state of a signal line. Since all lines are active low signals, this state is the low state for all bus lines. (C/MM) 1196-1987w

(2) Having a current value equal to logic 1 (said of any signal). (TT/C) 1149.5-1995

assertion (1) (software) A logical expression specifying a program state that must exist or a set of conditions that program variables must satisfy at a particular point during program execution. Types include input assertion, loop assertion, output assertion. *See also:* proof of correctness; invariant. (C) 610.12-1990

(2) A statement of functionality or behavior for a POSIX element that is derived from the POSIX standard being tested and that is true for a conforming POSIX implementation. (C/PA) 13210-1994, 2003.1-1992

(3) A statement that is derived from the standard to which conformance is being measured, that is true for a conforming implementation, and that pertains either to functionality or behavior of a functional interface or namespace allocation or to the documentation associated with the implementation being tested. (C/PA) 1328.2-1993w, 1326.2-1993w, 1224-1993w, 1327-1993w, 1224.1-1993w, 1326.1-1993w, 1328-1993w

(4) The specification for testing a conformance requirement in an IUT. It defines what to test and is **TRUE** for a conforming implementation. Assertions are the basic entities for test method specifications and test method standards. (C/PA) 2003-1997

assertion identifier The identifier assigned to an assertion. The name of the element and the assertion identifier together shall uniquely identify an assertion within a test method specification. (C/PA) 2003-1997

assertion number The numeric identifier assigned to an assertion. The name of the element and the assertion number together uniquely identify an assertion. (C/PA) 13210-1994, 2003.1-1992

assertion test (1) The software or procedural methods that ascertain the conformance of a POSIX implementation to an assertion. (C/PA) 13210-1994, 2003.1-1992

(2) The software or procedural methods that generate the test result codes used for assessment of conformance to an assertion. (C/PA) 2003-1997

assessed failure rate The failure rate of an item determined by a limiting value or values of the confidence interval associated with a stated confidence level, based on the same data as the

observed failure rate of nominally identical items. *Notes:* 1. The source of the data shall be stated. 2. Results can be accumulated (combined) only when all conditions are similar. 3. The assumed underlying distribution of failures against time shall be stated. 4. It should be stated whether a one-sided or a two-sided interval is being used. 5. Where one limiting value is given this is usually the upper limit. (R) [29]

assessed mean active maintenance time The active maintenance time determined as the limit or the limits of the confidence interval associated with a stated confidence level, and based on the same data as the observed mean active maintenance time or nominally identical items. *Notes:* 1. The source of the data shall be stated. 2. Results can be accumulated (combined) only when all conditions are similar. 3. It should be stated whether a one-sided or two-sided interval is being used. 4. The assumed underlying distribution of mean active maintenance times shall be stated with the reason for the assumption. 5. When one value is given, this is usually the upper limit. (R) [29]

assessed mean life (non-repaired items) The mean life of an item determined by a limiting value or values of the confidence interval associated with a stated confidence level, based on the same data as the observed mean life of nominally identical items. *Notes:* 1. The source of the data shall be stated. 2. Results can be accumulated (combined) only when all conditions are similar. 3. The assumed underlying distribution of failures against time shall be stated. 4. It should be stated whether a one-sided or a two-sided interval is being used. 5. Where one limiting value is given, this is usually the lower limit. (R) [29]

assessed reliability The reliability of an item determined by a limiting value or values of the confidence interval associated with a stated confidence level, based on the same data as the observed reliability of nominally identical items. *Notes:* 1. The source of the data shall be stated. 2. Results can be accumulated (combined) only when all conditions are similar. 3. The assumed underlying distribution of failures against time shall be stated. 4. It should be stated whether a one-sided or a two-sided interval is being used. 5. Where one limiting value is given, this is usually the lower limit. (R) [29]

assessment A planned and documented activity performed to determine whether various elements within a quality management system are effective in achieving stated quality objectives. (NI) N42.23-1995

asset (1) The items of interest that are stored in a reuse library, such as design documentation, specifications, source code, documentation, test suites, etc., or any other unit of information of potential value to a reuser. (C/SE) 1420.1-1995, 1420.1a-1996

(2) A class in the BIDM. *Asset* will always be capitalized when referring to the class Asset. (C/SE) 1420.1-1995

(3) An item, such as design, specifications, source code, documentation, test suites, manual procedures, etc., that has been designed for use in multiple contexts. (C/SE) 1517-1999

Asset Certification Framework A technique and associated data model used for organizing, selecting, communicating, and guiding the process of certifying assets. (C/SE) 1420.1a-1996

assigned indexing Automatic indexing in which appropriate keywords are assigned from a list of preselected keywords rather than from the text of the document or information being indexed. *Synonym:* assignment indexing. *Contrast:* derivative indexing. (C) 610.2-1987

assigned value The best estimate of the value of a quantity. The assigned value may be from an instrument reading, a calibration result, a calculation, etc. (IM) 470-1972w, 544-1975w

assignment *See:* variable assignment.

assignment indexing *See:* assigned indexing.

assignment reference The occurrence of a literal or other expression as the waveform element of a signal assignment statement or as the right-hand side expression of a variable assignment statement. (C/DA) 1076.3-1997, 1076.6-1999

assignment statement (software) A computer program statement that assigns a value to a variable; for example, $Y = X - 5$. *Contrast:* control statement; declaration. *See also:* initialize; reset; clear. (C) 610.12-1990

assistance call (telephone switching systems) A call to an operator for help in making a call. (COM) 312-1977w

associated circuits (1) (nuclear power generating station) (design and installation of cable systems for Class 1E circuits in nuclear power generating stations) Non-Class 1E circuits that share power supplies, signal sources, enclosures, or raceways with Class 1E circuits or are not physically separated or electrically isolated from Class 1E circuits by acceptable separation distance, barriers, or isolation devices. *Note:* Circuits include the interconnecting cabling and the connected loads. *See also:* circuit. (EDPG) 690-1984r

(2) Non-Class 1E circuits that are not physically separated or are not electrically isolated from Class 1E circuits by acceptable separation distance, safety class structures, barriers, or isolation devices. (PE/NP) 603-1998

associated equipment (packaging machinery) Any attachment or component part that is not necessarily located on the packaging machine but is directly associated with the performance of the machine. Limit switches and photoelectric devices are examples. (IA/PKG) 333-1980w

associate developer An organization that is neither prime contractor nor subcontractor to the developer, but who has a development role on the same or related system or project. (C/SE) J-STD-016-1995

associated structural parts (1) (insulation system) Includes items such as slot wedges, space blocks, and ties used to position the coil ends and connections, any nonmetallic supports for the winding, and field-coil flanges. *See also:* insulation system. (IA/PC) 1068-1996

(2) (insulation systems of synchronous machines) The associated structural parts of the installation system include the field collars, the slot wedges, the filler strips under the support ring insulation, the nonmetallic support for the winding, the space blocks used to separate the coil ends and connections, the lead cleats, and the terminal boards. (REM) [115]

association (1) In data management, a relationship established in a data model to represent a connection between entities that is not reflected solely by the attributes inherent in the entities. (C) 610.5-1990w

(2) The service used to establish access point/station (AP/STA) mapping and enable STA invocation of the distribution system services (DSSs). (C/LM) 8802-11-1999

(3) *See also:* application-association. (C/PA) 1351-1994w

associative class A class introduced to resolve a many-to-many relationship. (C/SE) 1320.2-1998

associative literal A literal that denotes an instance in terms of its value. The form of expression used to state an associative literal is `className with propertyName: propertyValue`. (C/SE) 1320.2-1998

associative lookup Table lookup performed on a table that is stored in associative memory. (C) 610.5-1990w

associative memory A type of memory whose locations are identified by their contents or by a part of their contents, rather than by their names or positions. *Synonyms:* search memory; content addressable storage. (C) 610.10-1994w

associative storage A storage device in which storage locations may be identified by specifying part or all of their contents. *Synonym:* content addressed storage. (C) 162-1963w

assumed binary point The position in a binary numeral at which the binary point is assumed to be located; usually at the right unless otherwise specified. *Synonym:* implied binary point. (C) 1084-1986w

assumed decimal point The position in a decimal numeral at which the decimal point is assumed to be located; usually at the right unless otherwise specified. *Synonym:* implied decimal point. (C) 1084-1986w

assumed position (navigation aid terms) A point at which a craft is assumed to be located. (AES/GCS) 172-1983w

assumed radix point The position in a numeral at which the radix point is assumed to be located; usually at the right unless otherwise specified. *Synonym:* implied radix point. (C) 1084-1986w

assumptions Conditions and/or resource requirements that are mandatory for process completion. (C/SE) 1209-1992w

assured access protocol (FASTBUS acquisition and control) A potential master is operating in the assured access protocol if, on detecting an arbitration request inhibit (AI) assertion, it will not assert arbitration request (AR) and thus will not participate in subsequent arbitration cycles until all devices currently asserting AR have obtained bus mastership and completed their operations. (NID) 960-1993

assured disruptive discharge voltage The prospective value of the test voltage that causes disruptive discharge under specified conditions. (PE/PSIM) 4-1995

asterisk (*) (1) When appended to a signal's name, the suffix "*" (asterisk) indicates that the logic one state of the signal is such that it will override the logic zero state applied by any other module on the line. (C/BA) 896.4-1993w, 14536-1995, 896.2-1991w, 10857-1994

(2) When appended to a signal's name, the suffix "*" (asterisk) indicates that the logic 1 state of the signal is represented by a less positive voltage than the logic 0 state. (C/BA) 896.10-1997

astern (navigation aid terms) Bearing approximately 180° relative. (AES/GCS) 172-1983w

aster rectifier circuit A circuit that employs 12 or more rectifying elements with a conducting period of 30 electrical degrees plus the commutating angle. *See also:* rectification. (EEC/PE) [119]

astigmatism (electron optical) In an electron-beam tube, a focus defect in which electrons in different axial planes come to focus at different points. *See also:* oscillograph. (ED) 161-1971w

ASTM The American Society for Testing and Materials. Founded in 1898, the ASTM is a scientific and technical organization formed for the development of standards on characteristics and performance of materials, products, systems, and service; and the promotion of related knowledge. (T&D/PE) 524a-1993r

Aston dark space (gas) The dark space in the immediate neighborhood of the cathode, in which the emitted electrons have a velocity insufficient to excite the gas. *See also:* discharge. (ED) [45], [84]

astrocompass (navigation aid terms) An instrument that, when oriented to the horizontal and the celestial sphere, indicates horizontal reference direction relative to the earth. It is used to obtain true heading by reference to celestial bodies. (AES/GCS) 172-1983w

astrodynamics (communication satellite) Engineering application of celestial mechanics. (COM) [19]

astro-inertial navigation equipment *See:* celestial-inertial navigation equipment.

astronomical position (A) (navigation aid terms) A point on the earth where coordinates have been determined as a result of the observation of celestial bodies. **(B) (navigation aid terms)** A point on the earth defined in terms of astronomical latitude and longitude. (AES/GCS) 172-1983

astronomical unit (communication satellite) Abbreviated AU: the mean distance between the centers of the sun and the earth, 149.6 x 10^6 kilometers, 92.98 $\times$ 10^6, miles or 80.78 $\times$ 10^6 nautical miles. (COM) [19]

astronomical unit of distance The length of the radius of the unperturbed circular orbit of a body of negligible mass moving around the sun with a sidereal angular velocity of 0.017 202 098 950 radian per day of 86 400 ephemeris seconds. In the system of astronomical constants of the International Astronomical Union, the value adopted for it is 1 AU = 149 600 $\times$ 10^6 m. (QUL) 268-1982s

astrotracker (navigation aid terms) An automatic sextant that has the ability to sight on and track selected stars throughout the day and night, providing heading and position data. The tracker may be optical or radiometric. *Synonym:* star tracker. (AES/GCS) 172-1983w

ASW *See:* antisubmarine warfare radar.

***A* switchboard (telephone switching systems)** A telecommunications switchboard in a local central office, used primarily to extend calls received from local stations. (COM) 312-1977w

asymmetrical cell A cell in which the impedance to the flow of current in one direction is greater than in the other direction. (EEC/PE) [119]

asymmetric multiprocessor A multiprocessor in which the processors are not assigned equal tasks. *Note:* Typically one processor is in charge of assigning tasks to processors and controlling I/O for them all. *Contrast:* symmetric multiprocessor. (C) 610.10-1994w

asymmetric terminal voltage Terminal voltage measured with a delta network between the midpoint of the resistors across the mains lead and ground. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

asymptomatic stability (of a solution $\phi(x(t_0);t)$) The solution is (1) Lyapunov stable, (2) such that

$$\lim_{t\to\infty} \|\Delta\phi\| = 0$$

where $\Delta\phi$ is a change in the solution due to an initial state perturbation. See "stability" for explanation of symbols. *Note:* The solution $x = 0$ of the system $x = ax$ is asymptotically stable for $a < 0$, but not for $a = 0$. In this case

$$\varphi(x(t_0);t) = x(t0)\exp(-a(t - t_0))$$

In some cases the rate of convergence to zero depends on both the initial state $x(t0)$ and the initial time t_0. See **stability, equiasymptotic** for stability concepts where this rate of convergence is independent of either $\mathbf{x}(t_0)$ or t_0. *See also:* stability; control system. (CS/IM) [120]

async-cancel-safe function A function that may be safely invoked by an application while the asynchronous form of cancellation is enabled. No function in this standard is async-cancel safe unless explicitly described as such. *Note:* Section 18 for further clarifications of the meaning of this term. (C/PA) 9945-1-1996

asynchronous (1) A transmission process such that between any two significant instants in the same group, there is always an integral number of unit intervals. Between two significant instants located in different groups, there is not always an integral number of unit intervals. *Synonym:* nonsynchronous. (COM/TA) 1007-1991r

(2) Protocol operation in which more than one exchange between a given pair of entities can be handled simultaneously. (LM/C) 15802-2-1995

(3) Describes an activity initiated by a function that is not necessarily complete when the function returns. (C/MM) 855-1990

asynchronous circuit A logic circuit in which the timing of the result is not related to a clock. *Contrast:* synchronous circuit. *See also:* double-rail logic. (C) 610.10-1994w

Asynchronous Client Port An instance of the class `IEEE1451_AsynchronousClientPort` or of a subclass thereof. (IM/ST) 1451.1-1999

asynchronous communication In the IEEE 1451.1 client-server model, refers to a communication in which the client does not block. State is maintained to allow the client to determine whether the return has been received from the server and to permit the client to retrieve the return. (IM/ST) 1451.1-1999

asynchronous completion (1) Completion of an asynchronous directory operation. An asynchronous directory operation is complete when a corresponding synchronous directory op-

eration would complete and any associated status fields have been updated.
(C/PA) 1328.2-1993w, 1326.2-1993w, 1327.2-1993w, 1224.2-1993w

(2) The state of an asynchronous read or write operation when a corresponding synchronous read or write would have completed and any associated status attributes have been updated.
(C) 1003.5-1999

asynchronous computer (1) A computer in which each event or the performance of each operation starts as a result of a signal generated by the completion of the previous event or operation, or by the availability of the parts of the computer required for the next event or operation. (C) [20], [85]

(2) A computer in which each event or operation is performed upon receipt of a signal generated by the completion of a previous event or operation, or upon availability of the system resources required by the event or operation. *Contrast:* synchronous computer. (C) 610.10-1994w

asynchronous errored second A one-second interval during which one or more errors are received, which is measured by detecting errors within seconds defined by a clock that is independent of the error occurrence. (COM/TA) 1007-1991r

asynchronous events Events that occur independently of the execution of the application. (C) 1003.5-1999

asynchronous impedance (rotating machinery) The quotient of the voltage, assumed to be sinusoidal and balanced, supplied to a rotating machine out of synchronism, and the same frequency component of the current. *Note:* The value of this impedance depends on the slip. *See also:* asynchronous machine. (PE) [9]

asynchronous I/O completion (1) For an asynchronous read or write operation, when a corresponding synchronous read or write would have completed and when any associated status fields have been updated. (C/PA) 9945-1-1996

(2) An asynchronous read or write operation is complete when a corresponding synchronous read or write would have completed and any associated status attributes have been updated. (C/PA) 1003.5b-1995

asynchronous I/O operation (1) An I/O operation that does not of itself cause the thread requesting the I/O to be blocked from further use of the processor. This implies that the thread and the I/O operation may be running concurrently.
(C/PA) 9945-1-1996

(2) An I/O operation that does not of itself cause the task requesting the I/O to be blocked. This implies that the requesting task and the I/O operation may be running concurrently. (C/PA) 1003.5b-1995

asynchronously generated signal (1) A signal that is not attributable to a specific thread. *Note:* Examples are: signals sent via *kill*( ), signals sent from the keyboard, and signals delivered to process groups. Being asynchronous is a property of how the signal was generated and not a property of the signal number. All signals may be generated asynchronously.
(C/PA) 9945-1-1996

(2) An occurrence of a signal that is generated by some mechanism external to the task receiving the signal; for example, via a call to `POSIX_Signals.Send_Signal` by another process or via the keyboard. Being asynchronous is a property of how an occurrence of the signal was generated and not a property of the signal. All signals may be generated asynchronously. *Note:* Only asynchronously generated signal occurrences are visible to an Ada application as signals. All signal occurrences that are not generated asynchronously are translated into exceptions. (C) 1003.5-1999

asynchronous machine (1) (rotating machinery) An ac machine in which the rotor does not turn at synchronous speed.
(PE) [9]

(2) A machine in which the speed of operation is not proportional to the frequency of the system to which it is connected.
(IA/MT) 45-1998

asynchronous operation (1) (rotating machinery) Operation of a machine where the speed of the rotor is other than synchronous speed. *See also:* asynchronous machine. (PE) [9]

(2) An operation that occurs without a regular or predictable time relationship to a specified event; for example, an interrupt. (C) 610.10-1994w

(3) An operation that does not of itself cause the process requesting the operation to be blocked from further use of the CPU. This implies that the process and the operation are running concurrently.
(C/PA) 1328.2-1993w, 1326.2-1993w, 1224.2-1993w, 1327.2-1993w

(4) An I/O operation that does not of itself cause the task requesting the I/O to be blocked. An asynchronous I/O operation and the requesting task may be running concurrently.
(C) 1003.5-1999

asynchronous packet (1) A primary packet that contains the bus_ID of the destination in the first quadlet. It is sent as the request subaction and/or response subaction of a transaction.
(C/MM) 1394-1995

(2) A primary packet transmitted in accordance with asynchronous arbitration rules (outside of the isochronous period).
(C/MM) 1394a-2000

asynchronous reactance (rotating machinery) The quotient of the reactive component of the average voltage at rated frequency, assumed to be sinusoidal and balanced, applied to the primary winding of a machine rotating out of synchronism, and the average current component at the same frequency.
(PE) [9]

asynchronous receiver/transmitter *See:* universal asynchronous receiver/transmitter.

asynchronous resistance (rotating machinery) The quotient of the active component of the average voltage at rated frequency assumed to be sinusoidal and balanced, applied to the primary winding of a machine rotating out of synchronism, and the average current component at the same frequency.
(PE) [9]

asynchronous transfer mode A LAN WAN communications architecture that switches or relays small fixed length (53 octets) packets called cells. *Note:* Each cell has a 5 octet header and 48 octets of data. (C) 610.7-1995

asynchronous transmission (1) A transmission in which each information character, word, or block is individually synchronized, and the transmission is controlled by start and stop bits at the beginning and end of each character. *Synonym:* start-stop transmission. *Contrast:* synchronous transmission.
(C) 610.7-1995

(2) *See also:* nonsynchronous transmission.

async-signal-safe function A function that may be invoked, without restriction, from signal-catching functions. No function in this standard is async-signal safe unless explicitly described as such. (C/PA) 9945-1-1996

ATC *See:* arbitration timing control.

ATE *See:* automatic test equipment.

A32 module A module whose address space is limited to a 32-bit width. (C/BA) 14536-1995

ATLAS *See:* Abbreviated Test Language for All Systems.

ATLAS compiler Software that converts ATLAS statements into executable machine code which may involve more than one operation. (SCC20) 771-1998

ATLAS translator Software that converts ATLAS statements into another language. This language may be a computer language or a restricted and structured version of a natural language. (SCC20) 771-1998

ATLAS vocabulary The range of words and symbols used in standard ATLAS. (SCC20) 771-1998

ATM *See:* asynchronous transfer mode; automated teller machine.

atmospheric absorption (1) (general) The loss of energy in transmission of radio waves, due to dissipation in the atmosphere. *See also:* radiation. (EEC/PE) [119]

(2) (communication satellite) Absorption, by the atmosphere, of electromagnetic energy traversing it.
(COM) [25]

atmospheric condition monitor (power system device function numbers) A device that functions upon the occurrence of an abnormal atmospheric condition, such as damaging fumes, explosive mixtures, smoke, or fire. (SUB/PE) C37.2-1979s

atmospheric correction factor A factor applied to account for the difference between the atmospheric conditions in service and the standard atmospheric conditions. (In terms of this standard, it applies to external insulation only). (PE/C) 1313.1-1996

atmospheric duct *See:* atmospheric radio duct.

atmospheric noise (communication satellite) Noise radiated by the atmosphere into a space communications receiver antenna. (COM) [25]

atmospheric paths (atmospheric correction factors to dielectric tests) Paths entirely through atmospheric air, such as along the porcelain surface of an outdoor bushing. 579-1975w

atmospheric radio duct A layer in the atmosphere within which radio waves propagate with low attenuation. (AP/PROP) 211-1997

atmospheric radio noise (control of system electromagnetic compatibility) Noise having its source in natural atmospheric phenomena. *See also:* electromagnetic compatibility. (EMC) [53], C63.12-1987

atmospheric radio wave A radio wave that is propagated by reflection in the atmosphere. *Note:* It may include either the ionospheric wave or the tropospheric wave, or both. *See also:* radiation. (EEC/PE) [119]

atmospherics Transient bursts of electromagnetic radiation arising from natural electrical disturbances in the lower atmosphere. *Notes:* 1. In the past, the term *static* was used to include atmospherics and other radio noise. The term *sferics* is in current use. 2. Below 1 Hz, noise is primarily of geomagnetic origin; above 1 Hz it is due to lightning. (AP/PROP) 211-1997

atmospheric transmissivity The ratio of the directly transmitted flux incident on a surface after passing through unit thickness of the atmosphere to the flux which would be incident on the same surface if the flux had passed through a vacuum. (ED) [127]

ATOLL *See:* Acceptance Test or Launch Language.

atomic A term that describes the constraints placed on accesses of a data format; the read, write, and lock accesses are performed indivisibly. (C/MM) 1596.5-1993

atomic condition The basic qualification condition in a query, consisting of the name of a data item, a logical operation, and a value; for example, LASTNAME = 'Jones'. *See also:* item condition; record condition. (C) 610.5-1990w

atomic data element A data element that cannot be broken into constituent data elements. *Contrast:* composite data element. (C) 610.5-1990w

atomic transaction(s) (1) Transactions that are indivisible with respect to other transactions. Other concurrent transactions will either see the state of memory as it was before the atomic transaction or after, but not a mixture. For example, a write4 transaction is atomic if no observer of the same address can see a mixture of old and new byte values, and two write4's for the same address are atomic with respect to each other if one overwrites the other without mixing bytes. (C/MM) 1212.1-1993

(2) A transaction is atomic (or indivisible) if the only system states on which other transactions can act (which are visible to other transactions) are states prior to the commencement of the transaction and states after the completion of the transaction. (C/BA) 896.3-1993w

atomic type A data type, each of whose members consists of a single, nondecomposable data item. *Synonym:* primitive type. *Contrast:* composite type. (C) 610.12-1990

ATR switch *See:* anti-transmit-receive switch.

ATR tube *See:* anti-transmit-receive tube.

attach The term *attach* is used consistently to express the relationship between an end station, a Bridge, or a Bridge Port and the physical or logical communications elements by which it is interconnected with the other Bridges in a Bridged Local Area Network. *Note:* In particular: an end station, a Local Bridge, or a LAN Port is said to attach to a LAN; a Remote Bridge is said to attach to a LAN, a Group, or a Cluster, a Virtual Port is said to attach to a Group, a Subgroup, or a Cluster. Where other uses are encountered, they are to be interpreted in a similar sense. (C/LM) 802.1G-1996

attached A worker is connected to an anchorage when utilizing a fall protection system to prevent or arrest a fall. (T&D/PE) 1307-1996

attached part A visible part of a simulated entity that may not move relative to the entity, but that may or may not be present. For example, a bomb on an aircraft wing station. (DIS/C) 1278.1-1995

attached peer PHY A peer cable PHY at the other end of a particular physical connection from the local PHY. (C/MM) 1394-1995

attached slave A slave that in the previous primary address cycle recognized its address and address type and as a result will participate in the ensuing data cycles. (NID) 960-1993

attachment (electric and electronics parts and equipment) A basic part, subassembly, or assembly designed for use in conjunction with another assembly, unit, or set, contributing to the effectiveness thereof by extending or varying the basic function of the assembly, unit, or set. A typical example is an ultra-high-frequency (UHF) converter for a very-high-frequency (VHF) receiver. (GSD) 200-1975w

attachment plug A device that, by insertion in a receptacle, establishes connection between the conductors of an attached cord and the conductors connected permanently to the receptacle. (IA/MT) 45-1998

attachments Accessories to be attached to switchgear apparatus, as distinguished from auxiliaries. (SWG/PE) C37.100-1992

attachment unit interface (AUI) (1) (broadband local area networks) The cable, connectors, and transmission reception circuitry used to interconnect the physical layer signaling and MAU. (LM/C) 802.7-1989r

(2) In a local area network, the interface between the medium attachment unit (MAU) and the data terminal equipment (DTE) within a data station. *Note:* The AUI carries encoded signals and provides for duplex data transmission. (C) 610.7-1995

(3) In 10 Mb/s CSMA/CD, the interface between the medium attachment unit (MAU) and the data terminal equipment (DTE) within a data station. Note that the AUI carries encoded signals and provides for duplex data transmission. (LM/C) 802.3-1998

attachment unit interface cable A cable that connects a workstation to a transceiver. *Note:* This term is contextually specific to IEEE Std 802.3, clause 7. *See also:* drop cable; coaxial cable; transceiver cable. (C) 610.7-1995

attack time (1) (electroacoustics) The interval required, after a sudden increase in input signal amplitude to a system or transducer, to attain a stated percentage (usually 63%) of the ultimate change in amplification or attenuation due to this increase. (SP) 151-1965w

(2) *See also:* build-up time. (COM/TA) 1329-1999

attempted domain The MD to which a tracing domain attempts but fails to transfer a communique or report. (C/PA) 1224.1-1993w

attempted MTA The MTA to which a tracing MTA attempts but fails to transfer a communique or report. (C/PA) 1224.1-1993w

attempts Occur when the system recognizes an off-hook that is long enough to be a valid originating or incoming call request. The system usually returns a wink on trunks with per-trunk-signaling and returns dial tones to lines. (COM/TA) 973-1990w

attendant (telephone switching systems) A private branch exchange or centrex operator. (COM) 312-1977w

attended operation A central office that normally has maintenance staff on duty. (C) 610.7-1995

attention cycle A single cycle in which a master indicates the start and acknowledge in the same cycle. (C/MM) 1196-1987w

attention key (ATTN) A control key that causes an attention or input-output interrupt signal to be generated, thereby causing the processing unit to cease processing. *Synonyms:* break key; program attention key. *See also:* escape key. (C) 610.10-1994w

attenuating pad *See:* pad.

attenuation (1) (data transmission) A general term used to denote a decrease in signal magnitude in transmission from one point to another. Attenuation may be expressed as a scalar ratio of the input magnitude to the output magnitude or in decibels. (PE) 599-1985w

(2) (fiber optics) In an optical waveguide, the diminution of average optical power. *Note:* In optical waveguides, attenuation results from absorption, scattering, and other radiation. Attenuation is generally expressed in decibels (dB). However, attenuation is often used as a synonym for attenuation coefficient, expressed as dB/km. This assumes the attenuation coefficient is invariant with length. *See also:* transmission loss; extrinsic joint loss; attenuation coefficient; Rayleigh scattering; equilibrium mode distribution; leaky mode; coupling loss; material scattering; waveguide scattering; spectral window; macrobend loss; differential mode attenuation; microbend loss. (Std100) 812-1984w

(3) (laser maser) The decrease in the radiant flux as it passes through an absorbing or scattering medium. (LEO) 586-1980w

(4) (quantity associated with a traveling waveguide or transmission-line wave) (waveguide) The decrease with distance in the direction of propagation. *Note:* Attenuation of power is usually measured in terms of decibels or decibels per unit length. *See also:* loss. (MTT) 147-1979w, 146-1980w

(5) (A) A decrease in signal magnitude between two points or between two frequencies. **(B)** The reciprocal of gain. *Note:* It may be expressed as a scalar ratio or in decibels as 20 times the log of that ratio. A decrease with time is usually called "damping" or "subsidence." *See also:* subsidence ratio. (CS/PE/EDPG) [3]

(6) (broadband local area networks) The quantity of reduction of a defined parameter, expressed in dB. (LM/C) 802.7-1989r

(7) (germanium spectrometers) The net loss at the detector of primary photons of a given energy resulting from their interaction with matter either due to the occurrence of scattering or absorption in the sample or in material between the sample and the detector crystal. (NI) N42.14-1991

(8) A loss or decrease of signal power in a transmission, usually measured in decibels. (C) 610.7-1995

(9) (A) A decrease in the magnitude of current, voltage, or power of a transmitted signal due to loss through a communication medium. *See also:* equalization. **(B)** A decrease in the magnitude of current, voltage, or power of a signal during transmission from one point to another. (C) 610.10-1994

(10) A general term used to denote a decrease in signal magnitude in transmission from one point to another. (PE/EDPG/PSC) 1050-1996, 789-1988w

(11) (of an electromagnetic wave) The decrease in magnitude of a field with distance or with changes in the path in excess of the decrease due to a geometrical spreading factor. *See also:* spreading factor. (AP/PROP) 211-1997

attenuation band (uniconductor waveguide) Rejection band. *See also:* waveguide. (MTT) 147-1979w, 146-1980w

attenuation coefficient (1) (fiber optics) The rate of diminution of average optical power with respect to distance along the waveguide. Defined by the equation

$$P(z) = P(0)10^{(\alpha z/10)}$$

where $P(z)$ is the power at distance z along the guide and $P(0)$ is the power at $z = 0$; α is the attenuation coefficient in dB/km if z is in km. From this equation,

$$\alpha z = -10 \log_{10}[P(z)/P(0)].$$

This assumes that α is independent of z; if otherwise, the definition must be given in terms of incremental attenuation as:

$$P(z) = P(0)10^{-\left[\int_0^z \frac{\alpha(z)dz}{10}\right]}$$

or, equivalently,

$$\alpha(z) = -10d/dz \log_{10}[P(z)/P(0)]$$

See also: axial propagation constant; attenuation; attenuation constant. (Std100) 812-1984w

(2) *See also:* attenuation constant. (AP/PROP) 211-1997

attenuation constant (α) (1) (waveguide) The rate of decrease in amplitude of a field component (or of voltage or current) of a traveling wave in a uniform transmission line at a given frequency in the direction of propagation as a function of distance; the real part of the propagation constant. (MTT) 146-1980w

(2) The magnitude of the attenuation vector. *Synonym:* attenuation coefficient. *See also:* propagation vector. (AP/PROP) 211-1997

attenuation, current *See:* current attenuation.

attenuation distortion (1) (A) (frequency distortion) (data transmission) Either a departure in a circuit or system from uniform amplification or attenuation over the frequency range required for transmission, or the effect of such departure on a transmitted signal. **(B) (frequency response)** The relative attenuation at any frequency with respect to that at a reference frequency. (PE/COM/TA) 599-1985, 1007-1991

(2) The change in attenuation at any frequency with respect to that at a reference frequency. (COM/TA) 743-1995

attenuation equalizer (data transmission) A corrective network that is designed to make the absolute value of the transfer impedance, with respect to two chosen pairs of terminals, substantially constant for all frequencies within a desired range. (PE) 599-1985w

attenuation-limited operation (fiber optics) The condition prevailing when the received signal amplitude (rather than distortion) limits performance. *See also:* distortion-limited operation; bandwidth-limited operation. (Std100) 812-1984w

attenuation range (a_H) The difference in level in dB between maximum inserted switched loss and the full removal of that switched loss. If the send to receive is not the same as send to transmit, then the larger of the two is the attenuation range. (COM/TA) 1329-1999

attenuation ratio (radio-wave propagation) The magnitude of the propagation ratio. (AP) 211-1977s

attenuation vector ($\vec{\alpha}$) The imaginary part of the propagation vector, $\vec{k}$. The attenuation vector points in the direction of maximum decrease in magnitude. *See also:* propagation vector. (AP/PROP) 211-1997

attenuation vector in physical media The real part of the propagation vector. (AP/ANT) 145-1983s

attenuation, voltage *See:* voltage attenuation.

attenuator A two-port device that provides a fixed amount of signal loss over a wide range of frequencies (attenuation). These devices have identical attenuation in either direction. (LM/C) 802.7-1989r

attenuator tube (electron tube) A gas-filled radio-frequency switching tube in which a gas discharge, initiated and regulated independently of radio-frequency power, is used to control this power by reflection or absorption. *See also:* gas tube. (ED) 161-1971w, [45]

attenuator, waveguide *See:* waveguide attenuator.

attitude (1) (navigation aid terms) The position of a body as determined by the inclination of the axes to some frame of reference. (AES/GCS) 172-1983w

(2) (communication satellite) Orientation of a satellite vehicle with respect to a reference coordinate system. Deviations of the satellite axes from the reference system are called roll, pitch, and yaw. The reference system is generally an orbital reference system with the *x*-axis (roll axis) in the orbital plane in direction of the satellite motion, the *y*-axis (pitch axis) normal to the orbital plane, and the *z*-axis (yaw axis) in the orbital plane in direction of the center of the earth. (COM) [19]

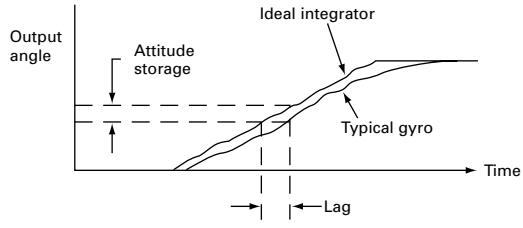
attitude control (navigation aid terms) Devices or system that automatically regulates and corrects attitude. (AES/GCS) 172-1983w

attitude-effect error (navigation aid terms) A manifestation of polarization error; an error in indicated bearing that is dependent upon the attitude of the vehicle with respect to the direction of signal propagation. *See also:* heading-effect error. (AES/GCS) 172-1983w

attitude gyro-electric indicator An electrically driven device that provides a visual indication of an aircraft's roll and pitch attitude with respect to the earth. *Note:* It is used in highly maneuverable aircraft and differs from the gyro-horizon electric indicator in that the gyro is not limited by stops and has complete freedom about the roll and pitch axes. (EEC/PE) [119]

attitude stabilized satellite (communication satellite) A satellite with at least one axis maintained in a specified direction, namely, toward the center of the earth, the sun, or a specified point in space. (COM) [19]

attitude storage (gyros) The transient deviation of the output of a rate-integrating gyro from that of an ideal integrator when the gyro is subjected to an input rate. It is a function of the gyro characteristic time. *See also:* float storage; torque-command storage.



attitude storage

(AES/GYAC) 528-1994

ATTN *See:* attention key.

attribute (1) (data management) In a relation, a named characteristic, property, or description of an entity. *Note:* Also known as data element, data field, data item or column in a table. *Synonym:* data field. *See also:* column. (C) 610.5-1990w

(2) (computer graphics) A characteristic of an item; for example, the item's color, size, or type. *Note:* In computer graphics, an attribute may be represented by the text or numeric data associated with the item. (C) 610.6-1991w, 610.5-1990w, 610.12-1990

(3) A property of a managed object or a property of an association among OSI entities. An attribute has an associated value, which may have a simple or complex structure. (LM/C) 802.10-1992

(4) A predefined characteristic that provides a property of a class. Properties are inherited from a class to its subclasses. (C/SE) 1420.1-1995

(5) A single piece of information stored in the APS environment. (C/PA) 1351-1994w

(6) A component of an object, possessing a name and one or more values. (PA/C) 1387.2-1995

(7) A property or fact about the entities in an entity set. (PE/EDPG) 1150-1991w

(8) A component of an object, comprised of an integer denoting the type of the attribute and an ordered sequence of one or more attribute values, each accompanied by an integer denoting the syntax of the value. (C/PA) 1328-1993w, 1238.1-1994w, 1224.1-1993w, 1327-1993w, 1224-1993w

(9) Used alone, means directory attribute. (C/PA) 1224.2-1993w, 1327.2-1993w, 1326.2-1993w, 1328.2-1993w

(10) A measurable physical or abstract property of an entity. (C/SE) 1061-1998

(11) (A) A kind of property associated with a set of real or abstract things (people, objects, places, events, ideas, combinations of things, etc.) that is some characteristic of interest. An attribute expresses some characteristic that is generally common to the instances of a class. **(B)** An attribute is a function from the instances of a class to the instances of the value class of the attribute. **(C)** The name of the attribute is the name of the role that the value class plays in describing the class, which may simply be the name of the value class (as long as using the value class name does not cause ambiguity). (C/SE) 1320.2-1998

(12) A documenting characteristic of an entity. (SCC32) 1489-1999

(13) an inherent characteristic of an item ascribing an inherent quality. (SCC32) 1488-2000

attribute data element A data element within a record that represents a property, feature, or characteristic of the subject of that record; for example, the data element "date of birth" in a record containing "name," "address," and "date of birth" of a person. *Contrast:* primary data element. (C) 610.5-1990w

attribute name A role name for the value class of the attribute. (C/SE) 1320.2-1998

attributes Measurable characteristics of a primitive. (C/SE) 1045-1992

attribute syntax A definition of the set of values that a directory attribute may assume. It includes the datatype, in ASN.1, and, usually, one or more matching rules by which values may be compared. *Synonym:* directory syntax. (C/PA) 1328.2-1993w, 1327.2-1993w, 1224.2-1993w, 1326.2-1993w

attribute type Used alone, means directory attribute type. *See also:* OM attribute; OM attribute type. (C/PA) 1328.2-1993w, 1224.2-1993w, 1326.2-1993w, 1327.2-1993w

attribute value (1) Used alone, means directory attribute value. *See also:* OM attribute value. (C/PA) 1328.2-1993w, 1327.2-1993w, 1326.2-1993w, 1224.2-1993w

(2) (C/PA) 1224.2-1993w

attribute value assertion (1) A proposition, which may be true, false, or undefined, according to the specified matching rules for the type, concerning the presence in an entry of an attribute value (or a distinguished value) of a particular type. *Note:* An attribute value assertion consists of an attribute type and a single value. Loosely, it is true if one of the values of the given attribute in the entry matches the given value. (C/PA) 1327.2-1993w, 1328.2-1993w, 1224.2-1993w

(2) A proposition, which may be true, false, or undefined, about the values (or perhaps only the distinguished values) of an entry. *Note:* An attribute value assertion consists of an attribute type and a single value. Loosely, it is true if one of the values of the given attribute in the entry matches the given value. (C/PA) 1326.2-1993w

attribute value syntax *See:* OM syntax.

ATV *See:* all terrain vehicle.

AU *See:* access unit.

audible busy signal An audible signal connected to the calling line to indicate that the called line is in use. *Synonym:* busy tone. (EEC/PE) [119]

audible cab indicator A device (usually an air whistle, bell, or buzzer) located in the cab of a vehicle equipped with cab signals or continuous train control designed to sound when the cab signal changes to a more restrictive indication. (EEC/PE) [119]

audible noise Any undesired sound. *Synonym:* acoustic noise. (T&D/PE) 539-1990

audible signal device (protective signaling) A general term for bells, buzzers, horns, whistles, sirens, or other devices that produce audible signals. *See also:* protective signaling. (EEC/PE) [119]

audience Persons who are expected to need a given software user document. (C/SE) 1063-1987r

audio (data transmission) Pertaining to frequencies corresponding to a normally audible sound wave. *Note:* These frequencies range roughly from 15 Hz to 20 000 Hz. (PE) 599-1985w

audio frequency (1) (general) Any frequency corresponding to a normally audible sound wave. *Notes:* 1. Audio frequencies range roughly from 15 Hz to 20 000 Hz. 2. This term is frequently shortened to audio and used as a modifier to indicate a device or system intended to operate at audio frequencies; for example, an audio amplifier. (AP/CHM/SP/ANT) 145-1983s, [51], [32]
(2) (interference terminology) Components of noise having frequencies in the audio range. *See also:* signal. (IE) [43]
(3) (overhead power lines) Any frequency corresponding to a normally audible sound wave. This usually covers the range from 20 Hz to 20 kHz. (T&D/PE) 539-1990

audio-frequency distortion The form of wave distortion in which the relative magnitudes of the different frequency components of the wave are changed on either a phase or amplitude basis. (VT) [37]

audio-frequency harmonic distortion The generation in a system of integral multiples of a single audio-frequency input signal. *See also:* modulation. (AP/ANT) 145-1983s

audio-frequency noise Any unwanted disturbance in the audio-frequency range. (SP) 151-1965w

audio-frequency oscillator (audio oscillator) A nonrotating device for producing an audio-frequency sinusoidal electric wave, whose frequency is determined by the characteristics of the device. *See also:* oscillatory circuit. (SP) 151-1965w

audio-frequency peak limiter A circuit used in an audio-frequency system to cut off peaks that exceed a predetermined value. (AP/ANT) 145-1983s

audio-frequency response (receiver performance) The measure of the relative departure of all audio-frequency signal levels within a specified bandwidth, from a specified reference frequency signal power level. (VT) 184-1969w

audio-frequency spectrum (audio spectrum) The continuous range of frequencies extending from the lowest to the highest audio frequency. (SP) 151-1965w

audio-frequency transformer A transformer for use with audio-frequency currents. (CHM) [51]

audiogram (threshold audiogram) A graph showing hearing level as a function of frequency. (SP) [32]

audio input power (transmitter performance) The input power level to the modulator, expressed in decibels referred to a one milliwatt power level. *See also:* audio-frequency distortion. (VT) [37]

audio input signal (transmitter performance) That composite input to the transmitter modulator that consists of frequency components normally audible to the human ear. *See also:* audio-frequency distortion. (VT) [37]

audiometer An instrument for measuring hearing level. *See also:* instrument. (SP) [32]

audio oscillator *See:* audio-frequency oscillator.

audio output power (receiver) The audio-frequency power dissipated in a load across the output terminals. (VT) [37]

audio power output (receiver performance) The measure of the audio-frequency energy dissipated in a specified output load. (VT) 184-1969w

audio response device An output device capable of generating spoken language. (C) 610.10-1994w

audio-tone channel *See:* voice-frequency carrier telegraph.

audit (1) (software) An independent examination of a work product or set of work products to assess compliance with specifications, standards, contractual agreements, or other criteria. *See also:* physical configuration audit; functional configuration audit. (C) 610.12-1990
(2) A planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence, the adequacy of and compliance with established procedures, instructions, drawings, and other applicable documents, and the effectiveness of implementation. An audit should not be confused with surveillance or inspection activities performed for the sole purpose of process control or product acceptance. (NI/PE/NP) N42.23-1995, [124]
(3) An independent examination of a software product, software process, or set of software processes to assess compliance with specifications, standards, contractual agreements, or other criteria. (C/SE) 1028-1997

auditable data (1) (valve actuators) Information which is documented and organized in a readily understandable and traceable manner that permits independent verification of inferences or conclusions based on the information. *Note:* Examples of information include product catalog information, dimensional drawings, bills of material, engineering specifications, installation and calibration instructions and manuals, maintenance manuals, test reports, and analyses. (PE/NP) 382-1985, 627-1980r
(2) (nuclear power generating station) Technical information that is documented and organized in a readily understandable and traceable manner that permits independent auditing of the inferences or conclusions based on the information. (PE/NP) 323-1974s

audit command language (ACL) A high-order programming language used widely in audit applications. (C) 610.13-1993w

auditory sensation area (A) The region enclosed by the curves defining the threshold of feeling and the threshold of audibility, each expressed as a function of frequency. **(B)** The part of the brain (temporal lobe of the cortex) that is responsive to auditory stimuli. (SP) [32]

audit trail A manual or computerized record that can be used to trace the transactions affecting the contents of a record or a file. (C) 610.2-1987

AUDYSIM *See:* Autodynamics simulation language.

augend A number to which another number (the addend) is added to produce a result (the sum). (C) 1084-1986w

augment (information processing) An independent variable, for example, in looking up a quantity in a table, the number or any of the numbers, that identifies the location of the desired value. (C) [20]

AUI (Attachment Unit Interface) *See:* attachment unit interface.

AUI cable *See:* attachment unit interface cable.

***A* unit** A motive power unit so designed that it may be used as the leading unit of a locomotive, with adequate visibility in a forward direction, and that includes a cab and equipment for full control and observation of the propulsion power and brake applications for the locomotive and train. *See also:* electric locomotive. (EEC/PE) [119]

aural harmonic A harmonic generated in the auditory mechanism. (SP) [32]

aural radio range *See:* A-N radio range.

aural transmitter The radio equipment used for the transmission of the aural (sound) signals from a television broadcast station. *See also:* television. (AP/BT/ANT) 145-1983s, 182A-1964w

aurora Collective name of optical, electrical, and magnetic phenomena, generally at high latitudes, resulting from direct excitation of the upper atmosphere by energetic particles. (AP/PROP) 211-1997

auroral (power fault effects) Electrical voltages and currents on or around the earth, due to emission of particle energy from the sun. *See also:* susceptibility. (PE/PSC) 367-1979

auroral absorption The increased attenuation of radio waves propagating through the D and E regions of the ionosphere when additional ionization is produced by precipitating charged particles usually associated with the visual aurora. (AP/PROP) 211-1997

auroral attenuation (radio-wave propagation) The attenuation of radio waves propagating through the D and E regions of the ionosphere when additional ionization is produced by an aurora. (AP/PROP) 211-1990s

auroral effects Electrical voltages and currents on the earth due to emission of particle energy from the sun. (PE/PSC) 367-1996

auroral hiss Audio-frequency electromagnetic noise associated with auroras. (AP/PROP) 211-1997

auroral oval *See:* auroral zone.

auroral zone An annular region situated between approximately 60° and 70° geomagnetic latitude, north or south, in which auroras are frequently present. *Synonym:* auroral oval. (AP/PROP) 211-1997

austenitic The face-centered cubic crystal structure of ferrous metals. (IA) [59]

authentication (1) The process of validating a user or process to verify that the user or process is not a counterfeit. (C/PA) 1003.2d-1994

(2) The service used to establish the identity of one station as a member of the set of stations authorized to associate with another station. (C/LM) 8802-11-1999

(3) *See also:* data origin authentication. (LM/C) 802.10-1998

author and keyword in context index A variation of a keyword in context (KWIC) index in which author and keyword entries are combined and presented in a KWIC format. *Contrast:* word and author index. (C) 610.2-1987

authoring language (1) A high level programming language used to develop courseware for computer-assisted instruction. *See also:* authoring system. (C) 610.2-1987, 610.12-1990

(2) An application-oriented programming language used to develop courseware for computer-assisted instruction. (C) 610.13-1993w

authoring system A programming system that incorporates an authoring language. (C) 610.2-1987, 610.12-1990

authorities (monitoring radioactivity in effluents) Any governmental agencies or recognized scientific bodies that by their charter define regulations or standards dealing with radiation protection. (NI) N42.18-1980r

authority A geographical or political division created specifically for the purpose of providing transportation service. (VT) 1476-2000, 1475-1999

authority having jurisdiction (1) The organization, office, or individual that has the responsibility and authority for approving equipment, installations, or procedures. (IA) 515-1997

(2) That entity that defines the contractual (including specification) requirements for the procurement. (VT/RT) 1473-1999, 1475-1999, 1474.1-1999, 1476-2000

authorization The process of verifying that a user or process has permission to use a resource in the manner requested. To assure security, the user or process would also need to be authenticated before granting access. (C/PA) 1003.2d-1994

authorized bandwidth (mobile communication) The frequency band containing those frequencies upon which a total of 99% of the radiated power appears. *See also:* mobile communication system. (VT) [37]

auto alarm A radio receiver that automatically produces an audible alarm when a prescribed radio signal is received. (EEC/PE) [119]

autoanswer A capability of a terminal, modem, computer, or similar device to respond to an incoming call over the switched network, and to establish a data connection with a remote device without operator intervention. *See also:* autodial. (C) 610.7-1995

autochanger *See:* jukebox.

Autocoder An early symbolic programming language developed for programming computers. (C) 610.13-1993w

autocondensation (electrotherapy) A method of applying alternating currents of frequencies exceeding 100 kilohertz to limited areas near the surface of the human body through the use of one very large and one small electrode, the patient becoming part of the capacitor. *See also:* electrotherapy. (EMB) [47]

autoconduction (electrotherapy) A method of applying alternating currents, of frequencies exceeding 100 kHz for therapeutic purposes, by electromagnetic induction, the patient being placed inside a large solenoid. *See also:* electrotherapy. (EMB) [47]

autodial A capability of a terminal, modem, computer, or similar device to place a call over the switched network, and to establish a data connection without operator intervention. *See also:* autoanswer. (C) 610.7-1995

Autodynamics simulation language A simulation language used in dynamic simulation applications. (C) 610.13-1993w

autodyne reception A system of heterodyne reception through the use of a device that is both an oscillator and a detector. (EEC/PE) [119]

autoerection (gyros) The process by which gimbal axis friction causes the spin axis of a free gyro to tend to align with the axis about which the case is rotated. The resulting drift rate is a function of the angular displacement between the spin axis and the rotation axis. (AES/GYAC) 528-1994

auto ignition Ignition without a pilot source. (DEI) 1221-1993w

automated data medium *See:* machine-readable medium.

automated data processing *See:* automatic data processing.

automated design tool (software) A software tool that aids in the synthesis, analysis, modeling, or documentation of a software design. Examples include simulators, analytic aids design representation processors, and documentation generators. *See also:* simulator; design; documentation. (C/SE) 729-1983s

automated dictionary In machine-aided translation, an automated lexicon in which entries are single words. *Contrast:* automated glossary. (C) 610.2-1987

automated glossary In machine-aided translation, an automated lexicon in which entries may consist of multiple words. *Synonym:* terminology bank. *Contrast:* automated dictionary. (C) 610.2-1987

automated guideway transit Any guided transit mode with fully automated operation (i.e. no crew on the train). The term usually refers, however, only to guided modes with small and medium-sized vehicles that operate on exclusive right-of-way. (VT) 1475-1999

automated language processing The application of data processing, word processing, and machine-aided translation to the processing or translation of natural languages. (C) 610.2-1987

automated lexicon A computer-resident table of source language and target language equivalents that serves as the central component in a machine-aided translation system. *See also:* automated dictionary; automated glossary. (C) 610.2-1987

automated library A robotic (electromechanical) library. (C/SS) 1244.1-2000

automated office *See:* electronic office.

automated teller machine (ATM) An unattended terminal-type device that offers simple banking services such as cash withdrawals, transfer of funds between accounts, and account balance inquiry. *Synonym:* customer-bank communication terminal. (C) 610.2-1987

automated test case generator *See:* automated test generator.

automated test data generator *See:* automated test generator.

automated test generator (software) A software tool that accepts as input a computer program and test criteria, generates test input data that meet these criteria, and, sometimes, determines the expected results. *See also:* data; computer program. (C/SE) 729-1983s

automated thesaurus In machine-aided translation, a computer-resident thesaurus used in conjunction with an automated lexicon to handle words with multiple meanings. (C) 610.2-1987

automated verification system (A) (software) A software tool that accepts as input a computer program and a representation of its specification, and produces, possibly with human help, a proof or disproof of the correctness of the program. **(B) (software)** Any software tool that automates part or all of the verification process. (C) 610.12-1990

automated verification tools (software) A class of software tools used to evaluate products of the software development process. These tools aid in the verification of such characteristics as correctness, completeness, consistency, traceability, testability, and adherence to standards. Examples are design analyzers, automated verification systems, static analyzers, dynamic analyzers, and standards enforcers. *See also:* tool; verification; automated verification system; testability; dynamic analyzer; static analyzer; software development process; correctness; design analyzer. (C/SE) 729-1983s

automatic (1) Pertaining to a function, operation, process, or device that, under specified conditions, functions without intervention by a human operator. (C/SUB/PE) 610.2-1987, 610.10-1994w, C37.1-1987s

(2) Self-acting, operating by its own mechanism when actuated by some impersonal influence—as, for example, a change in current strength; not manual; without personal intervention. Remote control that requires personal intervention is not automatic, but manual. (NESC/T&D) C2-1997, C2.2-1960

(3) Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature, or mechanical configuration. *See also:* nonautomatic. (NESC/NEC/IA/ICTL/IAC) [60], [86]

(4) Pertaining to a process or device that, under specified conditions, functions without intervention by a human operator. (SWG/PE) C37.100-1992

automatic abstracting In library automation, the automatic selection of words and phrases from a document to produce an abstract. (C) 610.2-1987

automatic acceleration (1) (automatic train control) Acceleration under the control of devices that function automatically to maintain, within relatively close predetermined values or schedules, current passing to the traction motors, the tractive force developed by them, the rate of vehicle acceleration, or similar factors affecting acceleration. *See also:* multiple-unit control; electric drive. (EEC/PE) [119]

(2) Acceleration under the control of devices that function automatically to raise the motor speed. *See also:* multiple-unit control; electric drive. (IA/IAC) [60]

Automatically Programmed Tools (APT) (1) A problem-oriented programming language used for programming numerically controlled machine tools. (C) 610.13-1993w

(2) A programming system using English-like symbolic descriptions of part and tool geometry and tool motion for numerical control. (C) 610.2-1987

automatically regulated (rotating machinery) Applied to a machine that can regulate its own characteristics when associated with other apparatus in a suitable closed-loop circuit. (PE) [9]

automatically reset relay *See:* self-reset relay.

automatic approach control A system that integrates signals, received by localizer and glide path receivers, into the automatic pilot system, and guides the airplane down the localizer and glide path beam intersection. (EEC/PE) [119]

automatic bias nulling A circuit or system technique for setting the mean value of sensor output, averaged over a defined time period, to zero, or to some defined value. (AES/GYAC) 528-1994

automatic block signal system A series of consecutive blocks governed by block signals, cab signals, or both, operated by electric, pneumatic, or other agency actuated by a train or by certain conditions affecting the use of a block. *See also:* block-signal system. (EEC/PE) [119]

automatic cab signal system A system that provides for the automatic operation of cab signals. *See also:* automatic train control. (EEC/PE) [119]

automatic calendar A component of some office automation systems that allows users to store their appointments in a database and to set up meetings by requesting a search for an available meeting time in each of the participants' calendars. (C) 610.2-1987

automatic call distribution (ACD) A service that evenly distributes calls among incoming end user lines. (AMR/SCC31) 1390-1995, 1390.2-1999, 1390.3-1999

automatic call distributor (telephone switching systems) The facility for allotting incoming traffic to idle operators or attendants. (COM) 312-1977w

automatic capacitor control equipment A piece of equipment that provides automatic control for functions related to capacitors, such as their connection to and disconnection from a circuit in response to predetermined conditions such as voltage, load, or time. (SWG/PE) C37.100-1992

automatic carriage (1) A control mechanism for a typewriter or other output device that can automatically control the feeding, spacing, skipping and ejecting of paper and preprinted forms. (C) [20], 610.10-1994w

(2) Pertaining to a function, operation, process, or device that, under specified conditions, functions without intervention by a human operator. (C) 610.10-1994w

automatic chart-line follower (navigation aid terms) A device that automatically derives error signals proportional to the deviation of the position of a vehicle from a predetermined course line drawn on a chart. (AES/GCS) 172-1983w

automatic check A check that is built into a device in order to verify the accuracy of information transmitted, manipulated, or stored by that device. *Synonyms:* built-in check; hardware check. (C) 610.5-1990w, 610.10-1994w

automatic circuit closer (supervisory control, data acquisition, and automatic control) A self-controlled device for automatically interrupting and reclosing an alternating-current circuit, with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation. (SUB/PE) C37.1-1987s

automatic circuit recloser A self-controlled device for automatically interrupting and reclosing an alternating-current circuit, with a predetermined sequence of opening and reclosing followed by resetting, hold-closed, or lockout operation. *Note:* When applicable, it includes an assembly of control elements required to detect overcurrents and control the recloser operation. (SWG/SUB/PE) C37.1-1987s, C37.100-1992

automatic combustion control A method of combustion control that is effected automatically by mechanical or electric devices. (T&D/PE) [10]

automatic component interconnection matrix A hardware system for connecting inputs and outputs of parallel computing components according to a predetermined program. *Note:* This system, which may consist of a matrix of mechanical and/or electronic switches, replaces the manual program patch boards and patch cords on analog computers. *Synonym:*

autopatch. *See also:* problem board.
(C) 610.10-1994w, 165-1977w

automatic computer* A computer that can perform a sequence of operations without intervention by a human operator.
(C) [20], 610.10-1994w

* Deprecated.

automatic control (1) (excitation systems for synchronous machines) In excitation control system usage, automatic control refers to maintaining synchronous machine terminal voltage without operator action, over the operating range of the synchronous machine within its capabilities. *Note:* Voltage regulation under automatic control may be modified by the action of reactive or active load compensators or by var control elements; or may be constrained by the action of various limiters included in the excitation system. *See also:* control.
(EDPG) 421.1-1986r

(2) (analog computer) In an analog computer, a method of computer operation using auxiliary automatic equipment to perform computer-control state selections, switching operations, or component adjustments in accordance with previously selected criteria. Such auxiliary automatic equipment usually consists of programmable digital logic that is part of the analog, a separate digital computer, or both. The case of the digital computer controlling the analog computer is an example of a hybrid computer. (C) 165-1977w

(3) (electrical controls) An arrangement that provides for switching or otherwise controlling, or both, in an automatic sequence and under predetermined conditions, the necessary devices comprising an equipment. *Note:* These devices thereupon maintain the required character of service and provide adequate protection against all usual operating emergencies.
(SWG/PE) [56]

(4) (computers) Describes a control system capable of operating without external or human intervention. *See also:* process control; numerical control. (C) 610.2-1987

(5) An arrangement of electrical controls that provides for switching or otherwise controlling or both in an automatic sequence and under predetermined conditions the necessary devices comprising a piece of equipment. These devices thereupon maintain the required character of service and provide adequate protection against all unusual operating emergencies. (SWG/PE/SUB) C37.100-1992, C37.1-1987s

automatic control equipment (1) (station control and data acquisition) Equipment that provides automatic control of power apparatus in response to predetermined conditions.
(SUB/PE) C37.1-1979s

(2) Equipment that provides automatic control for a specified type of power circuit or apparatus.
(SWG/PE) C37.100-1992

automatic controller (electrical heating applications to melting furnaces and forehearths in the glass industry) (process control) A device that operates automatically to regulate a controlled variable in response to a command and a feedback signal. *Note:* The term originated in process control usage. Feedback elements and final control elements may also be part of the device. *See also:* automatic controller.
(IA/PE/PSE/EDPG) 446-1987s, 668-1987w, [3]

automatic control system A control system that operates without human intervention. *See also:* feedback control system.
(IM/PE/EDPG) [120], [3]

automatic current limiting (power supplies) An overload protection mechanism that limits the maximum output current to a preset value, and automatically restores the output when the overload is removed. *See also:* short-circuit protection.
(AP/ANT) [35]

automatic data processing Data processing performed by a computer system. *Synonyms:* automated data processing; electronic data processing. (C) 610.2-1987

automatic detection and tracking (ADT) In a surveillance radar, the computer-based ADT of targets based on target locations obtained from scan-to-scan. *See also:* track-while-scan. (AES) 686-1997

automatic direct-control telecommunications system (telephone switching systems) A system in which the connections are set directly in response to pulsing from the originating calling device. (COM) 312-1977w

automatic direction finder (navigation aid terms) A direction finder that automatically and continuously provides a measure of the direction of arrival of the received signal. Data are usually displayed visually. (AES/GCS) 172-1983w

automatic dispatching system (electric power system) A controlling means for maintaining the area control error or station control error at zero by automatically loading generating sources; it also may include facilities to load the sources in accordance with a predetermined loading criterion.
(PE/PSE) 94-1970w

automatic equalizer *See:* adaptive equalizer.

automatic equipment (for a specified type of power circuit or apparatus) Equipment that provides automatic control.
(SWG/PE) C37.100-1981s

automatic extraction or induction turbine, or both—condensing or noncondensing (control systems for steam turbine-generator units) Steam is extracted from or inducted into one or more stages with means for controlling the pressure(s) of the extraction or induction steam, or both.
(PE/EDPG) 122-1985s

automatic extraction turbine (control systems for steam turbine-generator units) (condensing or noncondensing) Steam is extracted from one or more stages with means for controlling the pressure(s) of the extracted steam.
(PE/EDPG) 122-1985s

automatic feedback control system A feedback control system that operates without human intervention. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

automatic-feed punch A card punch or keypunch into which cards are fed automatically. *Contrast:* hand-feed punch.
(C) 610.10-1994w

automatic fire-alarm system A fire-alarm system for automatically detecting the presence of fire and initiating signal transmission without human intervention. *See also:* protective signaling. (EEC/PE) [119]

automatic fire detector (fire protection devices) A device designed to detect the presence of fire and initiate action.
(NFPA) [16]

automatic flight control system An autopilot or automatic pilot. A system that controls the attitude, direction, and speed of a vehicle and directs it to travel along a selected course in response to manual or electronic commands. Stabilizes the dynamic response of the vehicle. (AES/GCS) 172-1983w

automatic frequency control (data transmission) An arrangement whereby the frequency of an oscillator or the tuning of a circuit is automatically maintained within specified limits with respect to a reference frequency. (PE) 599-1985w

automatic-frequency-control synchronization A process for locking the frequency (phase) of a local oscillator to that of an incoming synchronizing signal by the use of a comparison device whose output continuously corrects the local-oscillator frequency (phase). (EEC/PE) [119]

automatic gain control (AGC) (1) (general) A process or means by which gain is automatically adjusted in a specified manner as a function of input or other specified parameters.
(SP/BT/AV) 151-1965w, [34]

(2) (data transmission) A method of automatically obtaining a substantially constant output of some amplitude characteristic of the signal over a range of variation of that characteristic at the input. The term is also applied to a device for accomplishing this result. (PE) 599-1985w

(3) A circuit or algorithm that varies gain as a function of the input signal amplitude. (COM/TA) 1329-1999

automatic generation control (1) Any supplementary control that automatically adjusts the power output levels of electric generators within a control area. Automatic generation control schemes can include one or more control subsystem(s),

such as load frequency control, economic dispatch, environmental dispatch control, security dispatch control, and the like. (PE/PSE) 858-1993w, 94-1991w

(2) The regulation of the power output of electric generators within a prescribed area in response to change in system frequency, tie-line loading, or the relation of these to each other, so as to maintain the scheduled system frequency or the established interchange with other areas within predetermined limits or both. (PE/PSE) [54]

automatic grid bias Grid-bias voltage provided by the difference of potential across resistance(s) in the grid or cathode circuit due to grid or cathode current or both. *See also:* radio receiver. (AP/ANT) 145-1983s

automatic hold (analog computer) Attainment of the hold condition automatically through amplitude comparison of a problem variable or through an overload condition. *See also:* electronic analog computer. (C) 165-1977w

automatic holdup alarm system An alarm system in which the signal transmission is initiated by the action of the robber. *See also:* protective signaling. (EEC/PE) [119]

automatic hyphenation In text formatting, hyphenation in which all line-ending and word break decisions are made automatically. Word break decisions may be made using syllabication algorithms or a dictionary containing commonly used words and their syllables. *See also:* manual hyphenation; semi-manual hyphenation. (C) 610.2-1987

automatic-identified outward dialing (telephone switching systems) A method of automatically obtaining the identity of a calling station from a private branch exchange over a separate data link for use in automatic message accounting. (COM) 312-1977w

automatic index An index produced by automatic indexing. *See also:* selective listing in combination index; word index; permutation index; keyword out of context index; keyword in context index. (C) 610.2-1987

automatic indexing Automated production of an index by selecting keywords and organizing them according to the type of index being produced. *Note:* Methods include assigned indexing and derivative indexing. *See also:* word index; keyword in context index; permutation index; selective listing in combination index; keyword out of context index. (C) 610.2-1987

automatic indirect-control telecommunications system (telephone switching systems) A system in which the pulsing from the originating calling device is stored in a register temporarily associated with the call, for the subsequent establishing of connections. (COM) 312-1977w

automatic interlocking An arrangement of signals, with or without other signal appliances, that functions through the exercise of inherent powers as distinguished from those whose functions are controlled manually, and that are so interconnected by means of electric circuits that their movements must succeed one another in proper sequence. *See also:* interlocking. (EEC/PE) [119]

automatic keying device A device that, after manual initiation, controls automatically the sending of a radio signal that actuates the auto alarm. *Note:* The prescribed signal is a series of twelve dashes, each of four seconds duration, with one-second intervals between dashes, transmitted on the radiotelegraph distress frequency in the medium-frequency band. This signal is used only to proceed distress calls or urgent warnings. (EEC/PE) [119]

automatic line sectionalizer (1) (supervisory control, data acquisition, and automatic control) A self-contained circuit-opening device that automatically opens the main electrical circuit through it after sensing and responding to a predetermined number of successive main current impulses equal to or greater than a predetermined magnitude. It opens while the main electrical circuit is de-energized. It may also have a provision to be manually operated to interrupt loads. (SWG/PE/SUB) C37.1-1987s

(2) A self-contained circuit-opening device that automatically opens the main electrical circuit through it after sensing and responding to a predetermined number of successive main current impulses equal to or greater than a predetermined magnitude. It opens while the main electrical circuit is de-energized. It may also have provision to be manually operated to interrupt loads. *Note:* When applicable, it includes an assembly of control elements required to detect overcurrents and control the sectionalizer operation. (SWG/PE) C37.100-1992

automatic load (armature current division) The effect of a control function or a device to automatically divide armature currents in a prescribed manner between two or more motors or two or more generators connected to the same load. *See also:* feedback control system. (IA/ICTL/IAC/APP) [60], [75]

automatic load (level) control (ALC) (power-system communication) A method of automatically maintaining the peak power of a single-sideband suppressed-carrier transmitter at a constant level. *See also:* radio transmitter. (PE) 599-1985w

automatic load throwover equipment (1) (supervisory control, data acquisition, and automatic control) (transfer or switchover) Equipment that automatically transfers a load to another source of power when the original source to which it has been connected fails, and that automatically restores the load to the original source under desired conditions. *Note:* The restoration of the load to the preferred source from the emergency source upon reenergization of the preferred source after an outage may be of the continuous circuit restoration type or interrupted circuit restoration type.

a) *Equipment of the nonpreferential type*. Equipment that automatically restores the load to the original source only when the other source, to which it has been connected, fails.

b) *Fixed preferential type*. Equipment in which the original source always serves as the preferred source and other source as the emergency source. The automatic transfer equipment will restore the load to the preferred source upon its reenergization.

c) *Selective preferential source*. Equipment in which either source may serve as the preferred or the emergency source of preselection as desired, and which will restore the load to the preferred source upon its reenergization.

d) *Semiautomatic load throwover equipment*. Equipment that automatically transfers a load to another (emergency) source of power when the original (preferred) source to which it has been connected fails, but requires manual restoration of the load to the original source. (PE/SUB) C37.1-1987s

(2) Equipment that automatically transfers a load to another source of power when the original source to which it has been connected fails, and that automatically restores the load to the original source under desired conditions. *Note:* The restoration of the load to the preferred source from the emergency source upon reenergization of the preferred source after an outage may be of the continuous circuit restoration type or interrupted circuit restoration type. *See also:* equipment of the selective preferential type; equipment of the nonpreferential type; semiautomatic load throw-over equipment; equipment of the fixed preferential type. (SWG/PE) C37.100-1992

automatic machine control equipment Equipment that provides automatic control for functions related to rotating machines or power rectifiers. (SWG/PE) C37.100-1992

automatic message accounting (AMA) (telephone switching systems) An arrangement for automatically collecting, recording, and processing information relating to calls for billing purposes. (COM) 312-1977w

automatic number identification (ANI) (1) (telephone switching systems) The automatic obtaining of a calling station directory or equipment number for use in automatic message accounting. (COM) 312-1977w

(2) The local access and transport area (LATA) or interLATA billing number of the calling party. (AMR/SCC31) 1390-1995, 1390.2-1999

(3) A network service that delivers the phone number/billing number of the calling party. (SCC31) 1390.3-1999

automatic opening (1) (supervisory control, data acquisition, and automatic control) (station control and data acquisition) The opening of a switching device under predetermined conditions without operator intervention. (SUB/PE) C37.1-1987s, C37.1-1979s

(2) (tripping) The opening of a switching device under predetermined conditions without the intervention of an attendant. (SWG/PE) C37.100-1992

automatic operation (1) (elevators) Operation wherein the starting of the elevator car is effected in response to the momentary actuation of operating devices at the landing, and/or of operating devices in the car identified with the landings, and/or in response to an automatic starting mechanism, and wherein the car is stopped automatically at the landings. *See also:* control. (EEC/PE) [119]

(2) (of a switching device) The ability to complete an assigned sequence of operations by automatic control without the assistance of an attendant. (SWG/PE) C37.100-1992

automatic outage An outage occurrence that results from automatic operation of switching devices. (PE/PSE) 859-1987w

automatic pagination In text formatting, the automatic arrangement or rearrangement of text according to preset page layout parameters such as margin width and lines per page. *Note:* May also include the assignment and placement of page numbers on the pages. *Synonyms:* repagination; pagination. (C) 610.2-1987

automatic phase control (television) A process or means by which the phase of an oscillator signal is automatically maintained within specified limits by comparing its phase to the phase of an external reference signal and thereby supplying correcting information to the controlled source or a device for accomplishing this result. *Note:* Automatic phase control is sometimes used for accurate frequency control and under these conditions is often called automatic frequency control. *See also:* television. (EEC/PE) [119]

automatic pilot (electronic navigation) Equipment that automatically controls the attitude of a vehicle about one or more of its rotational axes (pitch, roll, and yaw), and may be used to respond to manual or electronic commands. *See also:* navigation. (AES) [42]

automatic-pilot servo motor A device that converts electric signals to mechanical rotation so as to move the control surfaces of an aircraft. (EEC/PE) [119]

automatic programmed tools (APT) (numerically controlled machines) A computer-based numerical control programming system that uses English-like symbolic descriptions of part and tool geometry and tool motion. (PE/EEC/TR) [57], [74]

automatic programming (analog computer) A method of computer operation using auxiliary automatic equipment to perform computer control state selections, switching operations, or component adjustments in accordance with previously selected criteria. *See also:* electronic analog computer. (C) 165-1977w

Automatic Programming and Scaling of Equations A programming language similar to FORTRAN, characterized by its ability to describe equation-oriented specifications used in continuous simulation models. (C) 610.13-1993w

automatic punch *See:* card punch.

automatic reclosing equipment (1) (supervisory control, data acquisition, and automatic control) (station control and data acquisition) Equipment that initiates automatic closing of a switching device under predetermined conditions without operator intervention. (PE/SUB) C37.1-1987s, C37.1-1979s

(2) Automatic equipment that provides for reclosing a switching device as desired after it has opened automatically under abnormal conditions. *Note:* Automatic reclosing equipment may be actuated by conditions sensed on either or both sides of the switching device as designed. (SWG/PE) C37.100-1992

automatic repeat request A protocol that uses positive or negative acknowledgment with retransmission techniques to ensure reliability. *Note:* The sender automatically repeats the request if it does not receive an answer. (C) 610.7-1995

automatic reset A function which operates to automatically reestablish specific conditions. (SWG/PE) C37.100-1981s

automatic-reset manual release of brakes (control) A manual release that, when operated, will maintain the braking surfaces in disengagement but will automatically restore the braking surfaces to their normal relation as soon as electric power is again applied. *See also:* feedback control system. (IA/ICTL/IAC) [60]

automatic reset relay (A) A stepping relay that returns to its home position either when it reaches a predetermined contact position, or when a pulsing circuit fails to energize the driving coil within a given time. May either pulse forward or be spring reset to the home position. **(B)** An overload relay that restores the circuit as soon as an overcurrent situation is corrected. (EEC/REE) [87]

automatic-reset thermal protector (rotating machinery) A thermal protector designed to perform its function by opening the circuit to or within the protected machine and then automatically closing the circuit after the machine cools to a satisfactory operating temperature. *See also:* starting-switch assembly. (PE) [9]

automatic reversing Reversing of an electric drive, initiated by automatic means. *See also:* electric drive. (IA/ICTL/IAC) [60]

automatic selective control or transfer relay (power system device function numbers) A relay that operates to select automatically between certain sources or conditions in an equipment, or performs a transfer operation automatically. (SUB/PE) C37.2-1979s

automatic send/receive (ASR) (A) A teletypewriter with a keyboard, printer, and paper tape punch/reader, allowing tape to be produced and edited off-line for automatic transmission. **(B)** A keyboard/printer device that uses asynchronous set-serial connection to a computer. (C) 610.10-1994

automatic signal A signal controlled automatically by the occupancy or certain other conditions of the track area that it protects. (EEC/PE) [119]

automatic smoke alarm system An alarm system designed to detect the presence of smoke and to transmit an alarm automatically. *See also:* protective signaling. (EEC/PE) [119]

automatic speed adjustment Speed adjustment accomplished automatically. *See also:* electric drive; automatic. (IA/ICTL/IAC) [60]

automatic starter A starter in which the influence directing its performance is automatic. (IA/MT) 45-1998

automatic station (1) (supervisory control, data acquisition, and automatic control) (station control and data acquisition) A station that operates in automatic control mode. *Note:* An automatic station may go in and out of operation in response to predetermined voltage, load, time, or other conditions, or in response to a remote or locally manually operated control device. (SWG/SUB/PE) C37.1-1987s, C37.100-1992

(2) A station (usually unattended) that under predetermined conditions goes into operation by an automatic sequence; that thereupon by automatic means maintains the required character of service within its capability; that goes out of operation by automatic sequence under other predetermined conditions; and includes protection against the usual operating emergencies. *Note:* An automatic station may go in and out of operation in response to predetermined voltage, load, time, or other conditions, or in response to supervisory control or to

a remote or local manually operated control device. (SWG/PE) C37.100-1992

automatic switchboard A switchboard in which the connections are made by apparatus controlled from remote calling devices. (COM) [48]

automatic switching system (telephone switching systems) The switching entity for an automatic telecommunication system. (COM) 312-1977w

automatic system A system in which the operations are performed by electrically controlled devices without the intervention of operators. (COM) [49]

automatic telecommunications exchange (telephone switching systems) A telecommunications exchange in which connections between stations are automatically established as a result of signals produced by calling devices. (COM) 312-1977w

automatic telecommunications system (telephone switching systems) A system in which connections between stations are automatically established as a results of signals produced by calling devices. (COM) 312-1977w

automatic telegraphy That form of telegraphy in which transmission or reception of signals, or both, are accomplished automatically. *See also:* telegraphy. (COM) [49]

automatic test equipment (ATE) (1) (test, measurement, and diagnostic equipment) Equipment that is designed to conduct analysis of functional or static parameters to evaluate the degree of performance degradation and may be designed to perform fault isolation of unit malfunctions. The decision-making, control, or evaluative functions are conducted with minimum reliance on human intervention. (MIL/SCC20) [2], 993-1997

(2) A system providing a test capability for the automatic testing of one or more units under test (UUTs). The ATE system consists of a controller, test resource devices, and peripherals. The controller directs the testing process and interprets the results. The test resource devices provide stimuli, measurements, and physical interconnections. The peripherals, such as displays, keyboards, printers, mass storage, etc., supply the necessary capability for information management. (ATLAS) 1232-1995

(3) Equipment on which an implementation of the tests, test methods, and test sequences to be performed on a unit under test (UUT) to verify conformance with its test specification with or without fault diagnosis may be executed with minimum reliance on human intervention. (SCC20) 771-1998

(4) Equipment that is designed to conduct analysis of functional or static parameters to evaluate the degree of performance degradation and that may be designed to perform fault isolation of unit malfunctions. (SCC20) 1226-1998

automatic test equipment control software (test, measurement, and diagnostic equipment) Software used during execution of a test program, which controls the nontesting operations of the ATE. This software is used to execute a test procedure but does not contain any of the stimuli or measurement parameters used in testing the unit under test (UUT). Where test software and control software are combined in one inseparable program, that program will be treated as test software, not control software. (MIL) [2]

automatic test equipment oriented language (test, measurement, and diagnostic equipment) A computer language used to program an automatic test equipment to test units under test (UUTs), whose characteristics imply the use of a specific ATE system or family of ATE systems. (MIL) [2]

automatic test equipment support software (test, measurement, and diagnostic equipment) Computer programs that aid in preparing, analyzing, and maintaining test software. Examples are: ATE compilers, translation analysis programs, and punch/print programs. (MIL) [2]

automatic test pattern generator (ATPG) Any tool that generates test information for a device based on structural analysis of the device. (C/TT) 1450-1999

automatic test system (ATS) Includes the automatic test equipment (ATE) as well as all support equipment, software, test programs, and adapters. (SCC20) 1226-1998

automatic threshold variation A constant-false-alarm-rate (CFAR) technique in which the detection decision threshold is varied continuously in proportion to the incoming IF and video noise level. (AES/RS) 686-1990

automatic throw-over equipment *See:* automatic transfer equipment.

automatic throw-over equipment of the fixed preferential type *See:* automatic transfer equipment.

automatic throw-over equipment of the nonpreferential type *See:* automatic transfer equipment.

automatic throw-over equipment of the selective-preferential type *See:* automatic transfer equipment.

automatic ticketing (telephone switching systems) An arrangement for automatically recording information relating to calls, for billing purposes. (COM) 312-1977w

automatic track follower *See:* automatic chart-line follower.

automatic tracking (1) Tracking in which a system employs some feedback mechanism, for example a servo or computer, to follow automatically some characteristic of a signal or target, such as range angle, Doppler frequency, or phase. *See also:* tracking radar; tracking. (AES/GCS) 172-1983w

(2) Tracking with the use of electronic circuitry rather than a human operator in which a system employs some feedback mechanism, (e.g., a servo or computer) to follow automatically some characteristic of a signal or target, such as range, angle, Doppler frequency, or phase. *See also:* tracking; tracking radar. (AES) 686-1997

automatic train control (ATC) (1) (train control) (automatic speed control) A system or an installation so arranged that its operation on failure to forestall or acknowledge will automatically result in either one or the other or both of the following conditions:

a) Automatic train stop: The application of the brakes until the train has been brought to a stop; and
b) Automatic speed control: The application of the brakes when the speed of the train exceeds a prescribed rate and continued until the speed has been reduced to a predetermined and prescribed rate.

(EEC/PE) [119]

(2) The system for automatically controlling train movement, enforcing train safety, and directing train operations. ATC must include automatic train protection (ATP) and may include automatic train operation (ATO) and/or automatic train supervision (ATS). (VT/RT) 1475-1999, 1474.1-1999

automatic train control application An application of the brake by the automatic train control device. (EEC/PE) [119]

automatic train operation (ATO) The subsystem within the automatic train control system that performs any or all of the functions of speed regulation, programmed stopping, door control, performance level regulation, or other functions otherwise assigned to the train operator. (VT/RT) 1474.1-1999, 1475-1999

automatic train protection (ATP) The subsystem within the automatic train control (ATC) system that maintains fail-safe protection against collisions, excessive speed, and other hazardous conditions through a combination of train detection, train separation, and interlocking. (VT/RT) 1475-1999, 1474.1-1999

automatic train stop A wayside system that works in conjunction with equipment installed on the vehicle to apply the brakes at designated restrictions or on a dispatcher's signal, should the operator not respond properly. (VT) 1475-1999

automatic train supervision (ATS) The subsystem within the automatic train control (ATC) system that monitors trains, adjusts the performance of individual trains to maintain schedules, and provides data to adjust service to minimize the inconveniences otherwise caused by irregularities. *Note:* The

ATS subsystem also typically includes manual and automatic routing functions. (VT/RT) 1475-1999, 1474.1-1999

automatic transfer equipment (A) Equipment that automatically transfers a load to another source of power when the original source to which it has been connected fails, and that will automatically retransfer the load to the original source under desired conditions. *Notes:* 1. It may be of the nonpreferential, fixed-preferential, or selective-preferential type. 2. Compare with transfer switch where transfer is accomplished without current interruption. **(B)** (of the fixed preferential type) Automatic transfer equipment in which the original source always serves as the preferred source and the other source as the emergency source. The automatic transfer equipment will retransfer the load to the preferred source upon its reenergization. *Note:* The restoration of the load to the preferred source from the emergency source upon the reenergization of the preferred source after an outage may be of the continuous-circuit restoration type or the interrupted-circuit restoration type. **(C)** (of the non-preferential type) Automatic transfer equipment that automatically retransfers the load to the original source only when the other source, to which it has been connected, fails. **(D)** (of the selective-preferential type) Automatic transfer equipment in which either source may serve as the preferred or the emergency source of preselection as desired, and which will retransfer the load to the preferred source upon its reenergization. *Note:* The restoration of the load to the preferred source from the emergency source upon the reenergization of the preferred source after an outage may be of the continuous-circuit restoration type or the interrupted-circuit restoration type. (SWG/PE) C37.100-1992

automatic transfer switch (emergency and standby power) Self-acting equipment for transferring one or more load conductor connections from one power source to another. (IA/PSE) 446-1995

automatic transformer control equipment Equipment that provides automatic control for functions relating to transformers, such as their connection, disconnection or regulation in response to predetermined conditions such as system load, voltage or phase angle. (SWG/PE) C37.100-1992

automatic triggering (oscilloscopes) A mode of triggering in which one or more of the triggering-circuit controls are preset to conditions suitable for automatically displaying repetitive waveforms. *Note:* The automatic mode may also provide a recurrent trigger of recurrent sweep in the absence of triggering signals. *See also:* oscillograph. (IM/HFIM) [40]

automatic tripping *See:* automatic opening.

automatic video noise leveling A constant-false-alarm-rate (CFAR) technique in which the receiver gain is readjusted to maintain a constant video noise level. The noise level is sampled at the receiver output at the end of each range sweep, prior to the next transmission. The resulting receiver gain is fixed throughout the next sweep. Under some jamming conditions, a fixed video noise can be maintained at the display. (AES) 686-1997

automatic voltage-current crossover (power supplies) The characteristic of a power supply that automatically changes the method of regulation from constant voltage to constant current (or vice versa) as dictated by varying load conditions. (AES) [41]

automatic volume control (data transmission) A method of automatically obtaining a substantially constant audio output volume over a range of input volume. The term is also applied to a device for accomplishing this result. (PE) 599-1985w

automation (1) (A) The implementation of a process by automatic means. **(B)** The theory, art, or technique of making a process more automatic. **(C)** The investigation, design, development, and application of methods of rendering processes automatic, self-moving, or self-controlling. (C) 610.2-1987

(2) Computerization of data or of a process that uses that data. (PE/EDPG) 1150-1991w

autonavigator (navigation aid terms) Navigation equipment that includes means for coupling the output navigational data derived from the navigation sensors to the control system of the vehicle. (AES/GCS) 172-1983w

auto-negotiation (1) A link pulse signalling scheme at the PMD sublayer, whereby devices at each end of a link segment can determine the modes of operation of devices at the other end. (C/LM) 802.9a-1995w

(2) The algorithm that allows two devices at either end of a link segment to negotiate common data service functions. (C/LM) 802.3-1998

autonomous system A collection of gateways and networks administered by one administrative entity. (C) 610.7-1995

autopatch *See:* automatic component interconnection matrix.

autopilot *See:* automatic flight control system; automatic pilot.

autopilot coupler (electronic navigation) (navigation) (navigation aid terms) The means used to link the navigation system-receiver output to the automatic pilot. (AES/RS/GCS) 686-1982s, 172-1983w

autoradar plot (electronic navigation) A particular chart comparison unit using a radar presentation of position. *See also:* navigation. (AES) [42]

autorecovery The process of restoring installed software to the state it was in prior to the invocation, and subsequent failure during execution, of the `swinstall` utility. (C/PA) 1387.2-1995

autorefresh A RAM-refresh protocol in which controller-provided *refreshNow* signals schedule the timing for RAM refresh cycles and RAM-local hardware specifies refresh-cycle addresses. *See also:* refresh. (C/MM) 1596.4-1996

autoregulation induction heater An induction heater in which a desired control is effected by the change in characteristics of a magnetic charge as it is heated at or near its Curie point. *See also:* coupling; induction heating; dielectric heater. (IA) 54-1955w

autoselect The automatic selection, within a utility, of software beyond that directly specified by the user in order to meet the dependencies of the user-specified software. (C/PA) 1387.2-1995

autotrack (communication satellite) The capability of a space communications receiver antenna to automatically track an orbiting satellite vehicle, for example, by using a monopulse system. (COM) [19]

autotransformer A transformer in which part of one winding is common to both the primary and the secondary circuits associated with that winding. (PE/TR) C57.15-1999

autotransformer, individual-lamp *See:* specialty transformer.

autotransformer starter A starter that includes an autotransformer to furnish a reduced voltage for starting a motor. It includes the necessary switching mechanism and is frequently called a compensator or autostarter. (IA/MT) 45-1998

autotransformer starting (rotating machinery) The process of starting a motor at reduced voltage by connecting the primary winding to the supply initially through an autotransformer and reconnecting the winding directly to the supply at rated voltage for the running conditions. *See also:* asynchronous machine. (PE) [9]

auxiliaries (1) (collective) (generating stations electric power system) For more than one auxiliary, that is, auxiliaries bus, auxiliaries power transformer, etc. (PE/EDPG) 505-1977r

(2) Accessories to be used with switchgear apparatus but not attached to it, as distinguished from attachments. (SWG/PE) C37.100-1992

auxiliary (1) (controller) (thyristor) Apparatus peripheral to the main power flow but necessary for the operation of the controller. (IA/IPC) 428-1981w

(2) (generating stations electric power system) Any item not directly a part of a specified component or system but required for its functional operation. (PE/EDPG) 505-1977r

auxiliary anode An anode located adjacent to the pool cathode in an ignitron to facilitate the maintenance of a cathode spot under conditions adverse to its maintenance by the main anode circuit. *See also:* electronic controller. (IA/ICTL/IAC) [60]

auxiliary branch (self-commutated converters) (converter circuit elements) A branch other than a principal branch. *Note:* Examples of auxiliary branches are regenerative branches and turn-off branches. (IA/SPC) 936-1987w

auxiliary building (radiological monitoring instrumentation) Building(s) near or adjacent to the reactor containment building in which primary system support equipment is housed. (NI) N320-1979r

auxiliary burden (capacitance potential device) A variable burden furnished, when required, for adjustment purposes. *See also:* outdoor coupling capacitor. (PE/EM) 43-1974s

auxiliary bus A relatively low capacity narrow bus used for miscellaneous functions for which the primary bus is not suited, or for which an alternate module access is needed. (C/BA) 14536-1995

auxiliary capacitance (capacitance potential devices) The capacitance between the network connection and ground, if present. *Synonym:* shunt capacitance. *See also:* outdoor coupling capacitor. (PE/EM) 43-1974s

auxiliary circuit breaker (ac high-voltage circuit breakers) The circuit breaker used to disconnect the current circuit from direct connection with the test circuit breaker. (SWG/PE) C37.081-1981r, C37.083-1999, C37.100-1992

auxiliary circuits (1) All control, indicating, and measuring circuits. (SUB/PE) C37.122-1993, C37.122.1-1993 **(2)** All control, indicating and measuring circuits. (SWG/PE) C37.100-1992

auxiliary compartment That portion of the switchgear assembly that is assigned to the housing of auxiliary equipment, such as potential transformers, control power transformers, or other miscellaneous devices. (SWG/PE) C37.20.1-1993r, C37.20.2-1993

auxiliary console In a computer system with more than one console, an alternate console used primarily to supervise operations within the computer. *Contrast:* master console. (C) 610.10-1994w

auxiliary device (1) (auxiliary devices for motors) Components installed either integrally within the motor, located adjacent to or mounted on the motor, or attached to its terminals for the purpose of monitoring the operating conditions or protecting the motor. (IA/PC) 303-1984s **(2)** Any electrical device other than motors and motor starters necessary to fully operate the machine or equipment. (IA/PKG) 333-1980w

auxiliary device to an instrument A separate piece of equipment used with an instrument to extend its range, increase its accuracy, or otherwise assist in making a measurement or to perform a function additional to the primary function of measurement. (EEC/PE) [119]

auxiliary equipment (Class 1E motor) (nuclear power generating station) Equipment that is not part of the motor but is necessary for the operation of the motor and will be installed within the containment. *See also:* ancillary equipment. (PE/NP) 380-1975w

auxiliary function (numerically controlled machine) A function of a machine other than the control of the coordinates of a workpiece or tool. Includes functions such as miscellaneous, feed, speed, tool selection, etc. *Note:* Not a preparatory function. (IA) [61]

auxiliary generator A generator, commonly used on electric motive power units, for serving the auxiliary electric power requirements of the unit. *See also:* traction motor. (EEC/PE) [119]

auxiliary generator set A device usually consisting of a commonly mounted electric generator and a gasoline engine or gas turbine prime mover designed to convert liquid fuel into electric power. *Note:* It provides the aircraft with an electric power supply independent of the aircraft propulsion engines. (EEC/PE) [119]

auxiliary ground electrode A ground electrode with certain design or operating constraints. Its primary function may be other than conducting the ground fault current into the earth. (PE/SUB) 80-2000

auxiliary lead (rotating machinery) A conductor joining an auxiliary terminal to the auxiliary device. (PE) [9]

auxiliary means A system element or group of elements that changes the magnitude but not the nature of the quantity being measured to make it more suitable for the primary detector. In a sequence of measurement operations, it is usually placed ahead of the primary detector. *See also:* measurement system. (EEC/PE) [119]

auxiliary motor or motor generator (power system device function numbers) One used for operating auxiliary equipment, such as pumps, blowers, exciters, rotating magnetic amplifiers, etc. (SUB/PE) C37.2-1979s

auxiliary operation Any operation that is performed by equipment that is not under continuous control of the central processing unit. (C) [20], 610.10-1994w, [85]

auxiliary power (thyristor) The power used by the controller to perform its various auxiliary functions, as opposed to the principal power. (IA/IPC) 428-1981w **(2) (A) (thyristor power converter)** (General) The power required for fans or blowers, relays, breaker control, phase loss detection, etc. **(B) (thyristor power converter)** Input power used by the thyristor converter to perform its various auxiliary functions as opposed to the power that may be flowing between the ac supply and the load. (IA/IPC) 444-1973

auxiliary power supply A power source supplying power other than load power as required for the proper functioning of a device. *See also:* electronic controller. (IA/ICTL/IAC) [60]

auxiliary power transformer A transformer having a fixed phase position used for supplying excitation for the rectifier station and essential power for the operation of rectifier equipment auxiliaries. *See also:* transformer. (Std100) C57.18-1964w

auxiliary relay A relay whose function is to assist another relay or control device in performing a general function by supplying supplementary actions. *Notes:* 1. Some of the specific functions of an auxiliary relay are as follows: (a) Reinforcing contact current-carrying capacity of another relay or device. (b) Providing circuit seal-in functions. (c) Increasing available number of independent contacts. (d) Providing circuit-opening instead of circuit-closing contacts or vice-versa. (e) Providing time delay in the completion of a function. (f) Providing simple functions for interlocking or programming. 2. The operating coil of the contacts of an auxiliary relay may be used in the control circuit of another relay or other control device. *Example:* An auxiliary relay may be applied to the auxiliary contact circuits of a circuit breaker in order to coordinate closing and tripping control sequences. 3. A relay that is auxiliary in its functions even though it may derive its driving energy from the power system current or voltage is a form of auxiliary relay. *Example:* A timing relay operating from current or potential transformers. 4. Relays that, by direct response to power system input quantities, assist other relays to respond to such quantities with greater discrimination are NOT auxiliary relays. *Example:* Fault detector relay. 5. Relays that are limited in function by a control circuit, but are actuated primarily by system input quantities, are NOT auxiliary relays. *Example:* Torque-controlled relays. (SWG/PE) C37.100-1992

auxiliary relay contacts Contacts of lower current capacity than the main contacts: used to keep the coil energized when the original operating circuit is open, to operate an audible or visual signal indicating the position of the main contacts, or to establish interlocking circuits, etc. (EEC/REE) [87]

auxiliary relay driver A circuit that supplies an input to an auxiliary relay. (SWG/PE) C37.100-1992

auxiliary rope-fastening device (elevators) A device attached to the car or counterweight or to the overhead dead-end rope-hitch support that will function automatically to support the car or counterweight in case the regular wire-rope fastening fails at the point of connection to the car or counterweight or at the overhead dead-end hitch. *See also:* elevator. (EEC/PE) [119]

auxiliary secondary terminals The auxiliary secondary terminals provide the connections to the auxiliary secondary winding, when furnished. *See also:* auxiliary secondary winding. (PE/EM) 43-1974s

auxiliary secondary winding (capacitance potential device) The auxiliary secondary winding is an additional winding that may be provided in the capacitance potential device when practical considerations permit. *Note:* It is a separate winding that provides a potential that is substantially in phase with the potential of the main winding. The primary purpose of this winding is to provide zero-sequence voltage by means of a broken delta connection of three single-phase devices. *See also:* outdoor coupling capacitor; auxiliary secondary terminals. (PE/EM) 43-1974s

auxiliary storage (1) (computers) A storage that supplements another storage. (C) [20], [85]
(2) A type of secondary storage that is available to a processor only through input-output channels; for example, storage on magnetic tape or a disk drive. *Synonym:* peripheral storage. *Contrast:* main storage. *See also:* paging device. (C) 610.10-1994w

auxiliary supporting features (1) (nuclear power generating station) Installed systems or components that provide services, such as cooling, illumination, and energy supply and that are required by the post accident monitoring instrumentation to perform its functions. (PE/NP) 497-1981w
(2) Systems or components that provide services (such as cooling, lubrication, and energy supply) required for the safety systems to accomplish their safety functions. (PE/NP) 603-1998

auxiliary switch (1) A switch mechanically operated by the main device for signaling, interlocking, or other purposes. *Note:* Auxiliary switch contacts are classed as follows: *a, b, aa, bb,* LC, etc., for the purpose of specifying definite contact positions with respect to the main device. (SWG/PE) C37.100-1992
(2) A switch that is mechanically operated by the main switching device for signaling, interlocking, or other purposes. *Note:* Auxiliary switch contacts are classified as a, b, aa, bb, LC, etc., for the purpose of specifying definite contact positions with respect to the main device. (IA/PSP) 1015-1997

auxiliary terminal (rotating machinery) A termination for parts other than the armature or field windings. (PE) [9]

auxiliary wayside system A back-up or secondary train control system capable of providing full or partial automatic train protection for trains not equipped with trainborne communications-based train control (CBTC) equipment, and/or trains with partially or totally inoperative trainborne CBTC equipment. The auxiliary wayside system may include trainborne equipment and may also provide broken rail detection. (VT/RT) 1474.1-1999

auxiliary winding (single-phase induction motor) A winding that produces poles of a magnetic flux field that are displaced from those of the main winding, that serves as a means for developing torque during starting operation, and that, in some types of design, also serves as a means for improvement of performance during running operation. An auxiliary winding may have a resistor or capacitor in series with it and may be connected to the supply line or across a portion of the main winding. *See also:* asynchronous machine. (PE) [9]

availability (1) (emergency and standby power) The fraction of time within which a system is actually capable of performing its mission. (IA/SMC/C/BA/PSE) 446-1995, [63], 896.9-1994w
(2) (supervisory control, data acquisition, and automatic control) The ratio of uptime to total time (uptime plus downtime). (PE/SUB) C37.1-1994
(3) (software) The degree to which a system or component is operational and accessible when required for use. Often expressed as a probability. (C) 610.12-1990
(4) (nuclear power generating station) The characteristic of an item expressed by the probability that it will be operational at a randomly selected future instant in time. (PE/NP) 380-1975w, 352-1975s, 577-1976r, 933-1999
(5) Relates to the accessibility of information to the operator on a "continuous," "sequence," or "as called for" basis. (PE/NP) 566-1977w
(6) (telephone switching systems) The number of outlets of a group that can be reached from a given inlet in a switching stage or network. (COM) 312-1977w
(7) The ability of an item—under combined aspects of its reliability, maintainability, and maintenance support—to perform its required function at a stated instant of time or over a stated period of time. *Note:* The term "availability" is also used as an availability characteristic denoting either the probability of performing at a stated instant of time or the probability related to an interval of time. (R) [29]
(8) Availability = service time/reporting period time. (PE/PSE) 859-1987w
(9) The probability that a system will be able to execute a function accurately at any given time. (C/BA) 896.3-1993w
(10) The ratio of uptime and uptime plus downtime. (SWG/PE) C37.100-1992
(11) As applied either to the performance of individual components or to that of a system, it is the long-term average fraction of time that a component or system is in service and satisfactorily performing its intended function. An alternative and equivalent definition for availability is the steady-state probability that a component or system is in service. (IA/PSE) 493-1997, 399-1997

availability factor The ratio of the time a generating unit or piece of equipment is ready for, or in service to, the total time interval under consideration. *See also:* generating station. (T&D/PE) [10]

availability model (software) A model used for predicting, estimating, or assessing availability. *See also:* availability. (C/SE) 729-1983s

available (power system measurement) (electric generating unit reliability, availability, and productivity) The state in which a unit is capable of providing service, whether or not it is actually in service and regardless of the capacity level that can be provided. (PE/PSE) 762-1987w

available accuracy (noise temperature of noise generators) An accuracy that is readily available to the public at large, such as may be announced in calibration service bulletins or instrument catalogs. This term shall not include accuracies that may be obtainable at any echelon by employing special efforts and expenditures over and above those invested in producing the advertised or announced accuracies, nor shall it include accuracies of calibration or measurement services that are not readily available to any and all customers and clients. (IM) 294-1969w

available capacity (1) (electric generating unit reliability, availability, and productivity) The dependable capacity, modified for equipment at any time. (PE/PSE) 762-1987w
(2) The capacity for a given discharge time and end-of-discharge voltage that can be withdrawn from a cell under the specific conditions of operation. (PE/EDPG) 1115-1992

available conversion power gain (conversion transducer) The ratio of the available output-frequency power from the output terminals of the transducer to the available input-

frequency power from the driving generator with terminating conditions specified for all frequencies that may affect the result. *Notes:* 1. This applies to outputs of such magnitude that the conversion transducer is operating in a substantially linear condition. 2. The maximum available conversion power gain of a conversion transducer is obtained when the input termination admittance, at input frequency, is the conjugate of the input-frequency driving-point admittance of the conversion transducer. *See also:* transducer. (ED) 161-1971w, 196-1952w

available current (A) The current that would flow if each pole of the breaking device under consideration were replaced by a link of negligible impedance without any change of the circuit or the supply. *Synonym:* prospective current. *See also:* contactor. **(B)** (of a circuit with respect to a switching device situated therein) The current that would flow in that circuit if each pole of the switching device were to be replaced by a link of negligible impedance without any other change in the circuit or the supply. *Synonym:* prospective current. (CAS/SWG/IA/PE/ICTL/IAC) [60], [84], C37.100-1981

available generation (electric generating unit reliability, availability, and productivity) The energy that could have been generated by a unit in a given period if operated continuously at its available capacity. (PE/PSE) 762-1987w

available hours (electric generating unit reliability, availability, and productivity) The number of hours a unit was in the available state. *Note:* Available hours is the sum of service hours and reserve shutdown hours, or may be computed from period hours minus unavailable hours. *See also:* unavailable hours. (PE/PSE) 762-1987w

available line The portion of the scanning line that can be used specifically for picture signals. (COM) 168-1956w

available power (1) (hydraulic turbines) (at a port) The maximum power that can be transferred from the port to a load. *Note:* At a specified frequency, maximum power transfer will take place when the impedance of the load is the conjugate of that of the source. The source impedance must have a positive real part. *See also:* network analysis. (ED) 161-1971w, [45]

(2) (audio and electroacoustics) The maximum power obtainable from a given source by suitable adjustment of the load. *Note:* For a source this is equivalent to a constant sinusoidal electromotive force in series with an impedance independent of amplitude, the available power is the mean-square value of the electromotive force divided by four times the resistive part of the impedance of the source. (SP) 151-1965w, 196-1952w, 270-1966w

(3) (of a sound field with a given object placed in it) The power that would be extracted from the acoustic medium by an ideal transducer having the same dimensions and the same orientation as the given object. The dimensions and the orientation with respect to the sound field must be specified. *Note:* The acoustic power available to an electroacoustic transducer, in a plane-wave sound field of given frequency, is the product of the free-field intensity and the effective area of the transducer. For this purpose the effective area of an electroacoustic transducer, for which the surface velocity distribution is independent of the manner of excitation of the transducer, is set 1.4 times the product of the receiving directivity factor and the square of the wavelength of a free progressive wave in the medium. If the physical dimensions of the transducer are small in comparison with the wavelength, the directivity factor is near unity, and the effective area varies inversely as the square of the frequency. If the physical dimensions are large in comparison with the wavelength, the directivity factor is nearly proportional to the square of the frequency, and the effective area approaches the actual area of the active face of the transducer. (SP) [32]

(4) (signal generators) The power at the output port supplied by the generator into a specified load impedance. *See also:* signal generator. (IM/HFIM) [40]

available power efficiency (electroacoustics) Of an electroacoustic transducer used for sound reception, the ratio of the electric power available at the electric terminals of the transducer to the acoustic power available to the transducer. *Notes:* 1. For an electroacoustic transducer that obeys the reciprocity principle, the available power efficiency in sound reception is equal to the transmitting efficiency. 2. In a given narrow frequency band, the available power efficiency is numerically equal to the fraction of the open-circuit mean-square thermal noise voltage present at the electric terminals that contributed by thermal noise in the acoustic medium. *See also:* microphone. (SP) [32]

available power gain (1) (two-port linear transducer) At a specified frequency, the ratio of the available signal power from the output port of the transducer, to the available signal power from the input source. *Note:* The available signal power at the output port is a function of the match between the source impedance and the impedance of the input port. *See also:* network analysis. (ED) 161-1971w

(2) The maximum power gain that can be obtained from a signal source. For a source of internal impedance Z_s, $R_s jX_s$, the maximum power gain is obtained when the source is connected to a conjugate matched load; i.e., if Z_2, $R_s - jX_s$. It is sometimes called completely matched power gain or available gain. *See also:* network analysis; transducer. (CAS) [13]

available power response (electroacoustics) (electroacoustic transducer used for sound emission) The ratio of the mean-square sound pressure apparent at a distance of one meter in a specified direction from the effective acoustic center of the transducer to the available electric power from the source. *Notes:* 1. The sound pressure apparent at a distance of one meter can be found by multiplying the sound pressure observed at a remote point where the sound field is spherically divergent by the number of meters from the effective acoustic center to that point. 2. The available power response is a function not only of the transducer but also of some source impedances, either actual or nominal, the value of which must be specified. (SP) [32]

available (prospective) current (of a circuit with respect to a switching device situated therein) The current that would flow in that circuit if each pole of the switching device were to be replaced by a link of negligible impedance without any other change in the circuit or the supply. (SWG/PE) C37.100-1992

available short-circuit current (at a given point in a circuit) The maximum current that the power system can deliver through a given circuit point to any negligible-impedance short circuit applied at the given point, or at any other point that will cause the highest current to flow through the given point. *Notes:* 1. This value can be in terms of either symmetrical or asymmetrical: peak or root-mean-square current, as specified. 2. In some resonant circuits, the maximum available short-circuit current may occur when the short circuit is placed at some other point than the given one where the available current is measured. (SWG/PE/IA/PSP) C37.40-1981s, C37.100-1992, 1015-1997

available (prospective) short-circuit test current (at the point of test) The maximum short-circuit current for any given setting of a test circuit that the test power source can deliver at the point of test, with the test circuit short-circuited by a link of negligible impedance at the line terminals of the device to be tested. *Note:* This value can be in terms of either symmetrical or asymmetrical; peak or rms current, as specified. (SWG/PE) C37.100-1992, C37.40-1981s

available signal-to-noise ratio (at a point in a circuit) The ratio of the available signal power at that point to the available random noise power. *See also:* signal-to-noise ratio. (EEC/PE) [119]

available state A state that occurs when all of the following are true:

a) Bit-error ratio better than one in ten to the *n* power, for a specific number of consecutive observation periods of fixed duration.

b) Block-error ratio better than one in ten to the *n* power, for a specific number of consecutive observation periods of fixed duration.

c) A specific number of consecutive observation periods of fixed duration without a severely errored unit of time.

Note: the consecutive observation periods in a), b), and c) above are different for each case. (COM/TA) 1007-1991r

available time (electric drive) The period during which a system has the power turned on, is not under maintenance, and is known or believed to be operating correctly or capable of operating correctly. *See also:* electric drive. (IA/ICTL/IAC) [60]

(2) (A) The time during which a functional unit is on and is operating correctly or is ready to use. **(B)** In time-sharing computer systems, the time during which a system or system component is performing tasks for the user. *Contrast:* unavailable time. *See also:* makeup time. (C) 610.10-1994

avalanche The cumulative process in which charged particles accelerated by an electric field produce additional charged particles through collision with neutral gas molecules or atoms. It is therefore a cascade multiplication of ions. (NI/NPS) 309-1999

avalanche breakdown (1) (germanium gamma-ray detectors) (charged-particle detectors) (of a semiconductor device) A breakdown that is caused by the cumulative multiplication of charge carriers through field-induced impact ionization. (ED/NPS) 216-1960w, 300-1988r

(2) A breakdown caused by the cumulative multiplication of charge carriers through electric-field-induced impact ionization. (NPS) 325-1996

avalanche impedance *See:* breakdown impedance; semiconductor.

avalanche photodiode (fiber optics) A photodiode designed to take advantage of avalanche multiplication of photocurrent. *Note:* As the reverse-bias voltage approaches the breakdown voltage, hole-electron pairs created by absorbed photons acquire sufficient energy to create additional hole-electron pairs when they collide with ions; thus, a multiplication (signal gain) is achieved. *See also:* photodiode; PIN diode. (Std100) 812-1984w

average absolute burst magnitude (audio and electroacoustics) The average of the instantaneous burst magnitude taken over the burst duration. *See also:* burst; burst duration. (SP) [32]

average absolute pulse amplitude The average of the absolute value of the instantaneous amplitude taken over the pulse duration. (IM/WM&A) 194-1977w

average absolute value

$$y_{\mathrm{AAV}} = \frac{1}{T}\int_{a}^{a+T} |y|\, \mathrm{d}t$$

where y_{AAV} is the average absolute value (often called simply the average) of y, a is any instant of time, and T is the period. (PE/PSIM) 120-1989r

average active power

$$P = \frac{1}{T}\int_{t_0-T/2}^{t_0+T/2} p\, \mathrm{d}t$$

where P is the average active power at any time t_0, $p = vi$ is the instantaneous power, v and i are the instantaneous values of voltage and current, and T is the period. If both the voltage and current are sinusoidal and of the same period, P is given by

$$P = VI \cos \theta$$

where V and I are the rms values of voltage and current respectively and θ is the phase angle separating V and I. The general expression for polyphase active power in a system with m phases and n harmonics involves a summation over all harmonies in accordance with the above equation and a summation over all phases. (PE/PSIM) 120-1989r

average bundle gradient (overhead-power-line corona and radio noise) For a bundle of two or more subconductors, the arithmetic mean of the average gradients of the individual subconductors. (PE/T&D) 539-1990

average busy season *See:* average busy season busy-hour load; busy season; time-consistent traffic measures.

average busy season busy-hour load The busy-hour traffic level averaged across the busy season. Busy season data excludes Mother's Day, Christmas, or extremely high-traffic days that can be attributed to unusually severe weather or catastrophic events and are not reasonably expected to recur from year to year. Generally, but not always, the busy season data excludes weekends. *See also:* busy season; time-consistent traffic measures; busy hour. (COM/TA) 973-1990w

average crossing rate (1) (electromagnetic site survey) The average number of crossings in the positive direction of a given level v 1 per unit time. (EMC) 473-1985r

(2) (control of system electromagnetic compatibility) The average rate at which a specified level (zero if not specified) is crossed in the positive-going direction. (EMC) C63.12-1987

average current (periodic current) The value of the current averaged over a full cycle unless otherwise specified. *See also:* rectification. (IA) 59-1962w, [12]

average demand The consumption (e.g., energy, volume) recorded during the integration period divided by the integration time period. (AMR/SCC31) 1377-1997

average detector (overhead-power-line corona and radio noise) A detector, the output voltage of which is the average value of the magnitude of the envelope of an applied signal or noise. *Notes:* 1. This detector function is often identified on radio noise meters as *field intensity* (FI). [The term "field intensity" is deprecated; *field strength* should be used.] 2. FI (field strength) setting on some radio noise meters produces a reading proportional to the average value of the logarithmic detector output on the meter scale. 3. Radio noise meters of modern design do not have the detector function identified as "FI" or "field intensity." Also, modern radio noise meters have true average detector functions, but a few still have average logarithm (sometimes called "carrier") detector functions. (T&D/PE) 539-1990

average discharge current (dielectric tests) The sum of the rectified charge quantities passing through the terminals of the test object due to partial discharges during a time interval, divided by this interval. The average discharge current is expressed in coulombs per second (amperes). (PE/PSIM) 454-1973w

average electrode current (electron tube) The value obtained by integrating the instantaneous electrode current over an averaging time and dividing by the averaging time. *See also:* electrode current. (ED) 161-1971w

average forward current rating (rectifier circuit element) The maximum average value of forward current averaged over a full cycle, permitted by the manufacturer under stated conditions. (IA) [62]

average information content, per symbol (information rate from a source, per symbol) The average of the information content per symbol emitted from a source. *Note:* The term "entropy rate" is also used to designate average information content. *See also:* information theory. (IT) [7]

average inside air temperature (of enclosed switchgear) The average temperature of the surrounding cooling air that comes in contact with the heated parts of the apparatus within the enclosure. (SWG/PE) C37.100-1992

average luminance (illuminating engineering) Luminance is the property of a geometric ray. Luminance as measured by conventional meters is averaged with respect to two independent variables, area and solid angle; both must be defined for a complete description of a luminance measurement. (ED) [127]

average magner *See:* magner.

average maximum bundle gradient (overhead-power-line corona and radio noise) For a bundle of two or more subconductors, the arithmetic mean of the maximum gradients of the individual subconductors. For example, for a three-conductor bundle with individual maximum subconductor gradients of 16.5, 16.9, and 17.0 kV/cm, the average maximum bundle gradient would be (1/3) (16.5 + 16.9 + 17.0) = 16.8 kV/cm. (T&D/PE) 539-1990

average mutual information (output symbols and input symbols) Mutual information averaged over the ensemble of pairs of transmitted and received symbols. *See also:* information theory. (IT) [7]

average noise factor *See:* average noise figure.

average noise figure (1) (average noise factor) (transducer) The ratio of total output noise power to the portion thereof attributable to thermal noise in the input termination, the total noise being summed over frequencies from zero to infinity, and the noise temperature of the input termination being standard (290 kelvins). *See also:* signal-to-noise ratio; noise figure. (EEC/PE) [119]

(2) (communication satellite) Of a two-port transducer the ratio of the total noise power to the input noise power, when the input termination is at the standard temperature of 290°K. *See also:* noise factor. (COM) [25]

average noise temperature The noise temperature of an antenna averaged over a specified frequency band. (AP/ANT) 145-1983s

average outgoing quality limit (AOQL) A statistical measure of outgoing quality. (ED) 1005-1998

average phasor power (single-phase two-wire, or polyphase circuit) A phasor of which the real component is the average active power and the imaginary component is the average reactive power. The amplitude of the phasor power is

$$S_{av} = [(P_{av})^2 + (Q_{av})^2]^{1/2}$$

where P_{av} and Q_{av} are the active and the reactive power, respectively. (Std100) 270-1966w

average picture level (television) The average signal level, with respect to the blanking level, during the active picture scanning time (averaged over a frame period, excluding blanking intervals) expressed as a percentage of the difference between the blanking and reference white levels. *See also:* television. (BT/AV) [34]

average power (1) (in a waveguide) For a periodic wave, the time-average of the power passing through a given transverse section of the waveguide in a time interval equal to the fundamental period. *See also:* average active power. (MTT) 146-1980w

(2) The time-averaged rate of energy transfer.

$$P_{\text{avg}} = \frac{1}{t_2 - t_1}\int_{t_1}^{t2} P(t)dt$$

where
$P(t)$ = instantaneous power
t_1 = initial time
t_2 = final time of the interval over which $P(t)$ is averaged

(NIR) C95.1-1999

average power density The instantaneous power density integrated over a source repetition period. (NIR) C95.1-1999

average power output (amplitude-modulated transmitter) The radio-frequency power delivered to the transmitter output terminals averaged over a modulation cycle. *See also:* radio transmitter. (AP/ANT) 145-1983s

average relative bias The average relative bias for a test category is calculated from the individual relative biases B_{ri} and defined as:

$$B_r = \sum_{i=1}^{N} B_{ri}/N$$

where
N = the number of test samples measured by an individual service laboratory in a given test category. The sample size N shall be at least five.

(NI) N42.23-1995

average sensing rms detector A detector circuit that rectifies the signal from the probe and is calibrated to give the correct rms value of a sinusoidal field at some given frequency. *Note:* If there are harmonics in the field, a field meter with an average sensing rms detector will not indicate the true rms value of the field if the signal from the probe is proportional to the time derivative of the field. If the detector contains a stage of integration, the error is reduced. The error will also be a function of the phase relation between the harmonic and fundamental field components. (T&D/PE) 1308-1994

average single-conductor (or subconductor) gradient The value E_{av}, obtained from

$$E_{\text{av}} = \frac{1}{2\pi}\int_0^{2\pi} E(\theta)\text{d}(\theta)$$

Approximately, the average single-conductor gradient is given by

$$E_{\text{av}} = \frac{\lambda}{2\pi\epsilon_0 r}$$

where
λ = Total charge on conductor per unit length
ϵ_0 = Permittivity of free space
r = Radius of conductor

For practical cases, the average conductor gradient is approximately equal to the arithmetic mean of the maximum and minimum conductor gradients. (T&D/PE) 539-1990

average test value ($\bar{X}_n$) $\bar{X}_n = (X_1 + X_2 + X_3 + \ldots + X_n)/n$

where
$X_1, X_2, \ldots, X_n$ are individual test values and n is the total number of units tested.

(PE/T&D) C135.61-1997

average voltage (rotating electric machinery) The value declared by the user to be the average of the system described, where externally powered. (PE/EM) 11-1980r

average water conditions (power operations) Precipitation and runoff conditions that provide water for hydroelectric energy production approximating the average amount and distribution available over a long time period, usually the period of record. (PE/PSE) 858-1987s

average winding temperature The average temperature of the winding as determined from the ohmic resistance measured across the terminals of the winding, in accordance with the cooling curve procedure specified in IEEE Std C57.12.90-1993. (PE/TR) 1276-1997

average winding temperature rise (1) The arithmetic difference between the average winding temperature and the average temperature of the air surrounding the transformer. (PE/TR) 1276-1997

(2) The arithmetic difference between the average winding temperature and the ambient temperature as determined from the change in the ohmic resistance measured across the terminals of the winding. (PE/TR) C57.134-2000

averaging time (T_{avg}) The appropriate time period over which exposure is averaged for purposes of determining compliance with a maximum permissible exposure (MPE). For exposure durations less than the averaging time, the maximum exposure, MPE', in any time interval equal to the averaging time is found from

$$MPE' = MPE\left(\frac{T_{\text{avg}}}{T_{\text{exp}}}\right)$$

where
T_{exp} = exposure duration in that interval expressed in the same units as T_{avg}. (Restrictions on peak power density limit T_{exp}.)

(NIR) C95.1-1999

averaging time, electrode current *See:* electrode-current averaging time.

aversive shock An electric shock from a steady-state or a discharge current that after one exposure would motivate people to avoid situations that they felt would lead to similar experiences. (T&D/PE) 539-1990

AVL tree *See:* Adel'son-Velskii and Landis tree.

A-weighted sound level (1) (speech quality measurements) (airborne sound measurements on rotating electric machinery) A weighted sound pressure level obtained by the use of a metering characteristic and the weighting "*A*," specified in USAS S1. 4-1961 (*General Purpose Sound Level Meters*). (PE/EM) 297-1969w, 85-1973w

(2) The representation of the sound pressure level that has as much as 40 dB of the sound below 100 Hz and a similar amount above 10 000 Hz filtered out. This level best approximates the response of the average young ear when listening to most ordinary, everyday sounds. Generally designated as dBA. (PE/SUB) 1127-1998

(3) Loudness that is measured with a sound level meter using the A-weighted response filter that is built into the meter circuitry. The A-weighting filter is commonly used to measure community noise, and it simulates the frequency response of the human ear. (PE/TR) C57.12.90-1999

A-weighted sound power level (airborne sound measurements on rotating electric machinery) The A-weighted sound power level, in decibels, is equal to the sound power level determined by weighting each of the frequency bands. (PE/EM) 85-1973w

AWG American Wire Gage. Also known as the Brown and Sharp gage, AWG was devised in 1857 by J. R. Brown. This gage has the property such that its sizes represent approximately the successive steps in the process of wire drawing. Also, its numbers are retrogressive; a larger number denotes a smaller wire corresponding to the operations of drawing. These gage numbers are not arbitrarily chosen, but follow the mathematical law upon which the gage is founded. (T&D/PE) 524a-1993r

AWK A computer language designed for file processing applications. *Note:* AWK originated in the UNIX environment and was named after its originators, Aho, Wienberger, and Kernighan. (C) 610.13-1993w

axial flow (hydroelectric power plants) Used to describe any turbine, such as a propeller type with an inlet that directs the water axially toward the runner, as contrasted with radial entry to the runner. (PE/EDPG) 1020-1988r

axial magnetic centering force (rotating machinery) The axial force acting between rotor and stator resulting from the axial displacement of the rotor from magnetic center. *Note:* Unless other conditions are specified, the value of axial magnetic centering force will be for no-load and rated voltage, and for rated no-load field current and rated frequency as applicable. (PE) [9]

axial mode (laser maser) The mode in a beamguide or beam resonator that has one or more maxima for the transverse field intensities over the cross-section of the beam. (LEO) 586-1980w

axial propagation constant (fiber optics) The propagation constant evaluated along the axis of a waveguide (in the direction of transmission). *Note:* The real part of the axial propagation constant is the attenuation constant while the imaginary part is the phase constant. *Synonym:* axial propagation wave number. *See also:* attenuation coefficient; attenuation; propagation constant; attenuation constant. (Std100) 812-1984w

axial propagation wave number *See:* axial propagation constant.

axial ratio (1) (waveguide) The ratio of the axes of the polarization ellipse. *Note:* The shape of the ellipse is defined by the axial ratio, which is the major axis/minor axis. Sometimes, the ratio is defined as the reciprocal of the above, that is, minor axis. (MTT) 146-1980w

(2) (of a polarization ellipse) The ratio of the major to minor axes of a polarization ellipse. *Note:* The axial ratio sometimes carries a sign that is taken as plus if the sense of polarization is right-handed and minus if it is left-handed. *See also:* sense of polarization. (AP/ANT) 145-1993

axial ratio pattern A graphical representation of the axial ratio of a wave radiated by an antenna over a radiation pattern cut. (AP/ANT) 145-1993

axial ray (fiber optics) A light ray that travels along the optical axis. *See also:* geometric optics; meridional ray; fiber axis; skew ray; paraxial ray. (Std100) 812-1984w

axial slab interferometry *See:* slab interferometry.

axially extended interaction tube (microwave tubes) A klystron tube utilizing an output circuit having more than one gap. (ED) [45]

axis *See:* direct axis; quadrature axis; magnetic axis.

axis-of-freedom (gyros) The axis about which a gimbal provides a degree-of-freedom. (AES/GYAC) 528-1994

axle bearing A bearing that supports a portion of the weight of a motor or a generator on the axle of a vehicle. *See also:* traction motor; bearing. (EEC/PE) [119]

axle-bearing cap The member bolted to the motor frame supporting the bottom half of the axle bearing. *See also:* bearing. (EEC/PE) [119]

axle-bearing-cap cover A hinged or otherwise applied cover for the waste and oil chamber of the axle bearing. *See also:* bearing. (EEC/PE) [119]

axle circuit The circuit through which current flows along one of the track rails to the train, through the wheels and axles of the train, and returns to the source along the other track rail. (EEC/PE) [119]

axle current The electric current in an axle circuit. (EEC/PE) [119]

axle generator An electric generator designed to be driven mechanically from an axle of a vehicle. *See also:* axle-generator system. (EEC/PE) [119]

axle-generator pole changer A mechanically or electrically actuated changeover switch for maintaining constant polarity at the terminals of an axle generator when the direction of the rotation of the armature is reversed due to a change in direction of movement of a vehicle on which the generator is mounted. *See also:* axle-generator system. (EEC/PE) [119]

axle-generator regulator A control device for automatically controlling the voltage and current of a variable-speed axle generator. *See also:* axle-generator system. (EEC/PE) [119]

axle-generator system A system in which electric power for the requirements of a vehicle is supplied from an axle generator carried on the vehicle, supplemented by a storage battery. (EEC/PE) [119]

axle-hung generator *See:* axle-hung motor.

axle-hung motor A traction motor (or generator), a portion of the weight of which is carried directly on the axle of a vehicle by means of axle bearings. *Synonym:* axle-hung generator. *See also:* traction motor. (EEC/PE) [119]

A-0 A programming language developed in 1953 for UNIVAC computers; uses three-address code instructions for solving mathematical problems. *Note:* Developed by Grace Hopper, A-0 was the first computer language for which a compiler was developed. (C) 610.13-1993w

A-0 context diagram The only context diagram that is a required for a valid IDEF0 model, the **A-0** diagram contains one box, which represents the top-level function being modeled, the inputs, controls, outputs, and mechanisms attached to this box, the full model name, the model name abbreviation, the model's purpose statement, and the model's viewpoint statement. (C/SE) 1320.1-1998

A-0 diagram *See:* A-0 context diagram.

azimuth (1) (A) (navigation aid terms) The direction of a celestial point from a terrestrial point, expressed as the angle in

the horizontal plane between a reference line and the horizontal projection of the line joining the two points. *Note:* True north is usually, but not always, implied where no reference direction is stated. **(B) (navigation aid terms)** The angle between horizontal reference direction and the horizontal of the direction of boresight of the antenna. **(C) (navigation aid terms)** Bearing. (AES/GCS) 172-1983
(2) (illuminating engineering) The angular distance between the vertical plane containing a given line or celestial body and the plane of the meridian. (ED) [127]
(3) The angle between a horizontal reference direction (usually north) and the horizontal projection of the direction of interest, measured clockwise.
(AES/PE/T&D) 686-1997, 1260-1996

azimuth discrimination *See:* angular resolution.

azimuth markers *See:* azimuth marks.

azimuth marks (1) (radar) (navigation aid terms) (markers) Calibration marks for azimuth. (AES/GCS) 172-1983w
(2) Calibration marks used on a display for azimuth. *Synonym:* azimuth markers. (AES) 686-1997

azimuth-stabilized plan-position indicator A plan-position indicator (PPI) on which the reference direction remains fixed with respect to the indicator, regardless of the vehicle orientation. (AES) 686-1997