McGraw-Hill Dictionary of

COMPUTERS

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A

A AND NOT B gate *See* AND NOT gate.

A battery The battery that supplies power for filaments or heaters of electron tubes in battery-operated equipment.

ABC *See* automatic brightness control.

abend An unplanned program termination that occurs when a computer is directed to execute an instruction or to process information that it cannot recognize. Also known as bomb; crash.

abnormal glow discharge A discharge of electricity in a gas tube at currents somewhat higher than those of an ordinary glow discharge, at which point the glow covers the entire cathode and the voltage drop decreases with increasing current.

abnormal statement An element of a FORTRAN V (UNIVAC) program which specifies that certain function subroutines must be called every time they are referred to.

abrupt junction A *pn* junction in which the concentration of impurities changes suddenly from acceptors to donors.

abs A special function occurring in ALGOL, which yields the absolute value, or modulus, of its argument.

absolute address The numerical identification of each storage location which is wired permanently into a computer by the manufacturer.

absolute addressing The identification of storage locations in a computer program by their physical addresses.

absolute code A code used when the addresses in a program are to be written in machine language exactly as they will appear when the instructions are executed by the control circuits.

absolute programming Programming with the use of absolute code.

absolute-value computer A computer that processes the values of the variables rather than their increments.

absorber A material or device that takes up and dissipates radiated energy; may be used to shield an object from the energy, prevent reflection of the energy, determine the nature of the radiation, or selectively transmit one or more components of the radiation.

absorption circuit A series-resonant circuit used to absorb power at an unwanted signal frequency by providing a low impedance to ground at this frequency.

absorption control *See* absorption modulation.

absorption modulation A system of amplitude modulation in which a variable-impedance device is inserted in or coupled to the output circuit of the transmitter. Also known as absorption control; loss modulation.

absorption wavemeter A frequency- or wavelength-measuring instrument consisting of a calibrated tunable circuit and a resonance indicator.

abstract automata theory The mathematical theory which characterizes automata by three sets: input signals, internal states, and output signals; and two functions: input functions and output functions.

accelerating electrode An electrode used in cathode-ray tubes and other electron tubes to increase the velocity of the electrons that contribute the space current or form a beam.

accelerating potential The energy potential in electron-beam equipment that imparts additional speed and energy to the electrons.

acceleration time The time required for a magnetic tape transport or any other mechanical device to attain its operating speed.

acceleration voltage The voltage between a cathode and accelerating electrode of an electron tube.

accentuation The enhancement of signal amplitudes in selected freuency bands with respect to other signals.

accentuator A circuit that provides for the first part of a process for increasing the strength of certain audio frequencies with respect to others, to help these frequencies override noise or to reduce distortion. Also known as accentuator circuit.

accentuator circuit *See* accentuator.

accept A data transmission statement which is used in FORTRAN when the computer is in conversational mode, and which enables the programmer to input, through the teletypewriter, data the programmer wishes stored in memory.

acceptor An impurity element that increases the number of holes in a semiconductor crystal such as germanium or silicon; aluminum, gallium, and indium are examples. Also known as acceptor impurity; acceptor material.

acceptor atom An atom of a substance added to a semiconductor crystal to increase the number of holes in the conduction band.

acceptor circuit A series-resonant circuit that has a low impedance at the frequency to which it is tuned and a higher impedance at all other frequencies.

acceptor impurity *See* acceptor.

acceptor material *See* acceptor.

access The reading of data from storage or the writing of data into storage.

access arm The mechanical device which positions the read/write head on a magnetic storage unit.

access-control register A storage device which controls the word-by-word transmission over a given channel.

access-control words Permanently wired instructions channeling transmitted words into reserved locations.

access gap *See* memory gap.

access mechanism The mechanism of positioning reading or writing heads onto the required tracks of a magnetic disk.

access method A set of programming routines which links programs and the data that these programs transfer into and out of memory.

access mode A programming clause in COBOL which is required when using a random-access device so that a specific record may be read out of or written into a mass storage bin.

access time The time period required for reading out of or writing into the computer memory.

accounting machine A machine that produces tabulations or accounting records of a specified unvarying format.

accounting package A set of special routines that allow collection of information about the usage level of various components of a computer system by each production program.

accumulated total punching A checking procedure to ensure that no punch-card item has been dropped from a file.

accumulating reproducer An electromechanical device which reads a sorted deck of cards and creates a set of subtotals on additional cards according to some preset criterion.

accumulator A specific register, in the arithmetic unit of a computer, in which the result of an arithmetic or logical operation is formed; here numbers are added or subtracted, and certain operations such as sensing, shifting, and complementing are performed. Also known as accumulator register; counter.

accumulator jump instruction An instruction which programs a computer to ignore the previously established program sequence depending on the status of the accumulator. Also known as accumulator transfer instruction.

accumulator register *See* accumulator.

accumulator shift instruction A computer instruction which causes the word in a register to be displaced a specified number of bit positions to the left or right.

accumulator transfer instruction *See* accumulator jump instruction.

accuracy control system Any method which attempts error detection and control, such as random sampling and squaring.

ac/dc receiver A radio receiver designed to operate from either an alternating- or direct-current power line. Also known as universal receiver.

acorn tube An ultra-high-frequency electron tube resembling an acorn in shape and size.

acoustic amplifier A device that amplifies mechanical vibrations directly at audio and ultrasonic frequencies. Also known as acoustoelectric amplifier.

acoustic bridge A device, based on the principle of the electrical Wheatstone bridge, used for analysis of deafness.

acoustic convolver *See* convolver.

acoustic delay line A device in which acoustic signals are propagated in a medium to make use of the sonic propagation time to obtain a time delay for the signals. Also known as sonic delay line.

acoustic detector The stage in a receiver at which demodulation of a modulated radio wave into its audio component takes place.

acoustic memory A computer memory that uses an acoustic delay line, in which a train of pulses travels through a medium such as mercury or quartz.

acoustic mode The type of crystal lattice vibrations which for long wavelengths act like an acoustic wave in a continuous medium, but which for shorter wavelengths approach the Debye frequency, showing a dispersive decrease in phase velocity.

acoustic phonon A quantum of excitation of an acoustic mode of vibration.

acoustic receiver The complete equipment required for receiving modulated radio waves and converting them into sound.

acoustic-wave amplifier An amplifier in which the charge carriers in a semiconductor are coupled to an acoustic wave that is propagated in a piezoelectric material, to produce amplification.

acoustoelectric amplifier *See* acoustic amplifier.

acoustoelectric effect The development of a direct-current voltage in a semiconductor or metal by an acoustic wave traveling parallel to the surface of the material. Also known as electroacoustic effect.

acquire 1. Of acquisition radars, the process of detecting the presence and location of a target in sufficient detail to permit identification. 2. Of tracking radars, the process of positioning a radar beam so that a target is in that beam to permit the effective employment of weapons. Also known as target acquisition.

action entries The lower right-hand portion of a decision table, indicating which of the various possible actions result from each of the various possible conditions.

action period The period of time during which data in a Williams tube storage device can be read or new data can be written into this storage.

action portion The lower portion of a decision table, comprising the action stub and action entries.

action stub The lower left-hand portion of a decision table, consisting of a single column listing the various possible actions (transformations to be done on data and materials).

activate To treat the filament, cathode, or target of a vacuum tube to increase electron emission.

activated cathode A thermionic cathode consisting of a tungsten filament to which thorium has been added, and then brought to the surface, by a process such as heating in the absence of an electric field in order to increase thermionic emission.

activation The process of treating the cathode or target of an electron tube to increase its emission. Also known as sensitization.

activation record A variable part of a program module, such as data and control information, that may vary with different instances of execution.

active area The area of a metallic rectifier that acts as the rectifying junction and conducts current in the forward direction.

active component *See* active element.

active computer When two or more computers are installed, the one that is on-line and processing data.

active device A component, such as an electron tube or transistor, that is capable of amplifying the current or voltage in a circuit.

active electronic countermeasures The major subdivision of electronic countermeasures concerning electronic jamming and electronic deceptions.

active element Any generator of voltage or current in an impedance network. Also known as active component.

active filter A filter that uses an amplifier with conventional passive filter elements to provide a desired fixed or tunable pass or rejection characteristic.

active jamming *See* jamming.

active leg An electrical element within a transducer which changes its electrical characteristics as a function of the application of a stimulus.

active logic Logic that incorporates active components which provide such functions as level restoration, pulse shaping, pulse inversion, and power gain.

active master file A relatively active computer master file, as determined by usage data.

active master item A relatively active item in a computer master file, as determined by usage data.

active material The material of the cathode of an electron tube that emits electrons when heated.

active region The region in which amplifying, rectifying, light emitting, or other dynamic action occurs in a semiconductor device.

active substrate A semiconductor or ferrite material in which active elements are formed; also a mechanical support for the other elements of a semiconductor device or integrated circuit.

active transducer A transducer whose output is dependent upon sources of power, apart from that supplied by any of the actuating signals, which power is controlled by one or more of these signals.

activity The use or modification of information contained in a file.

activity level **1.** The value assumed by a structural variable during the solution of a programming problem. **2.** A measure of the number of times that use or modification is made of the information contained in a file.

activity ratio The ratio between used or modified records and the total number of records in a file.

actual argument The variable which replaces a dummy argument when a procedure or macroinstruction is called up.

actual decimal point The period appearing on a printed report as opposed to the virtual point defined only by the data structure within the computer.

actual instruction *See* effective instruction.

actual key A data item in COBOL computer language which can be used as an address.

acyclic feeding A method employed by alphanumeric readers in which the trailing edge or some other document characteristic is used to activate the feeding of the succeeding document.

acyclic machine *See* homopolar generator.

adapter A device which converts bits of information received serially into parallel bit form for use in the inquiry buffer unit.

adaptive system A system that can change itself to meet new requirements.

adaptive system theory The branch of automata theory dealing with adaptive, or self-organizing, systems.

ADCON *See* address constant.

adconductor cathode A cathode in which adsorbed alkali metal atoms provide electron emission in a glow or arc discharge.

adder **1.** A computer device that can form the sum of two or more numbers or quantities. **2.** A circuit in which two or more signals are combined to give an output-signal amplitude that is proportional to the sum of the input-signal amplitudes. Also known as adder circuit.

adder circuit *See* adder.

adding circuit A circuit that performs the mathematical operation of addition.

adding machine A device which performs the arithmetical operation of addition and subtraction.

addition item An item which is to be filed in its proper place in a computer.

addition record A new record inserted into an updated master file.

addition table The part of memory that holds the table of numbers used in addition in a computer employing table look-up techniques to carry out this operation.

address The number or name that uniquely identifies a register, memory location, or storage device in a computer.

address computation The modification by a computer of an address within an instruction, or of an instruction based on results obtained so far. Also known as address modification.

address constant A value, or its expression, used in the calculation of storage addresses from relative addresses for computers. Abbreviated ADCON. Also known as base address; presumptive address; reference address.

address conversion The use of an assembly program to translate symbolic or relative computer addresses.

address counter A counter which increments an initial memory address as a block of data is being transferred into the memory locations indicated by the counter.

address field The portion of a computer program instruction which specifies where a particular piece of information is located in the computer memory.

address format A description of the number of addresses included in a computer instruction.

address-free program A computer program in which all addresses are represented as displacements from the expected contents of a base register.

address generation An addressing technique which facilitates addressing large storages and implementing dynamic program relocation; the effective main storage address is obtained by adding together the contents of the base register of the index register and of the displacement field.

addressing mode The specific technique by means of which a memory reference instruction will be spelled out if the computer word is too small to contain the memory address.

addressing system A labeling technique used to identify storage locations within a computer system.

address interleaving The assignment of consecutive addresses to physically separate modules of a computer memory, making possible the very-high-speed access of a sequence of contiguously addressed words, since all modules operate nearly simultaneously.

addressless instruction format *See* zero address instruction format.

address modification *See* address computation.

address part That part of a computer instruction which contains the address of the operand, of the result, or of the next instruction.

address register A register wherein the address part of an instruction is stored by a computer.

address sort routine A debugging routine which scans all instructions of the program being checked for a given address.

address track A path on a magnetic tape, drum, or disk on which are recorded addresses used in the retrieval of data stored on other tracks.

address translation The assignment of actual locations in a computer memory to virtual addresses in a computer program.

add-subtract time The time required to perform an addition or subtraction, exclusive of the time required to obtain the quantities from storage and put the sum or difference back into storage.

add time The time required by a computer to perform an addition, not including the time needed to obtain the addends from storage and put the sum back into storage.

add-to-memory technique In direct-memory-access systems, a technique which adds a data word to a memory location; permits linear operations such as data averaging on process data.

ADF *See* automatic direction finder.

A display A radar oscilloscope display in cartesian coordinates; the targets appear as vertical deflection lines; their Y coordinates are proportional to signal intensity; their X coordinates are proportional to distance to targets.

adjacency A condition in character recognition in which two consecutive graphic characters are separated by less than a specified distance.

adjacent-channel selectivity The ability of a radio receiver to respond to the desired signal and to reject signals in adjacent frequency channels.

adjusted decibel A unit used to show the relationship between the interfering effect of a noise frequency, or band of noise frequencies, and a reference noise power level of −85 dBm. Abbreviated dBa. Also known as decibel adjusted.

Administrative Terminal System A system developed by the International Business Machine Corporation to enable the handling by computer of texts that would otherwise require copying by a typist. Abbreviated ATS.

ADPE *See* automatic data-processing equipment.

advanced signal-processing system A portable data-processing system for military use; its complete configuration may consist of the analyzer unit, a postprocessing unit (for data-processing and control tasks), and an advanced signal-processing display unit. Also known as Proteus.

advance feed tape Computer tape punched so that the leading edges of its feed holes will line up with the leading edges of the data holes in the tape usage device.

aerial *See* antenna.

aerospace electronics The field of electronics as applied to aircraft and spacecraft.

AFC *See* automatic frequency control.

a format A nonexecutable statement in FORTRAN which permits alphanumeric characters to be transmitted in a manner similar to numeric data.

AGC *See* automatic gain control.

agenda **1.** The sequence of control statements required to carry out the solution of a computer problem. **2.** A collection of programs used for manipulating a matrix in the solution of a problem in linear programming.

agendum call card A punch card that contains one item in an agenda for manipulation of a matrix in the solution of a linear programming problem.

aggressive device A unit of a computer that can initiate a request for communication with another device.

A indicator *See* A scope.

air cell A cell in which depolarization at the positive electrode is accomplished chemically by reduction of the oxygen in the air.

air-core coil An inductor without a magnetic core.

aircraft antenna An airborne device used to detect or radiate electromagnetic waves.

air gap 1. A gap or an equivalent filler of nonmagnetic material across the core of a choke, transformer, or other magnetic device. 2. A spark gap consisting of two electrodes separated by air.

airwave A radio wave used in radio and television broadcasting.

alarm signal The international radiotelegraph alarm signal transmitted to actuate automatic devices that sound an alarm indicating that a distress message is about to be broadcast.

Alaska Integrated Communications Exchange A network of radio stations, generally using scatter-propagation equipment, that links early-warning radar stations. Also known as Alice; White Alice.

algebraic manipulation language A programming language used in the solution of analytic problems by symbolic computation.

ALGOL An algorithmic and procedure-oriented computer language used principally in the programming of scientific problems.

algorithmic language A language in which a procedure or scheme of calculations can be expressed accurately.

algorithm translation A step-by-step computerized method of translating one programming language into another programming language.

alias An alternative entry point in a computer subroutine at which its execution may begin, if so instructed by another routine.

Alice *See* Alaska Integrated Communications Exchange.

alignment The process of adjusting components of a system for proper interrelationship, including the adjustment of tuned circuits for proper frequency response and the time synchronization of the components of a system.

all-diffused monolithic integrated circuit Microcircuit consisting of a silicon substrate into which all of the circuit parts (both active and passive elements) are fabricated by diffusion and related processes.

allocate To place a portion of a computer memory or a peripheral unit under control of a computer program, through the action of an operator, program instruction, or executive program.

allowed energy bands The restricted regions of possible electron energy levels in a solid.

alloy junction A junction produced by alloying one or more impurity metals to a semiconductor to form a *p* or *n* region, depending on the impurity used. Also known as fused junction.

alloy junction diode A junction diode made by placing a pill of doped alloying material on a semiconductor material and heating until the molten alloy melts a portion of the semiconductor, resulting in a *pn* junction when the dissolved semiconductor recrystallizes. Also known as fused-junction diode.

alloy-junction transistor A junction transistor made by placing pellets of a *p*-type impurity such as indium above and below an *n*-type wafer of germanium, then heating until the impurity alloys with the germanium to give a *pnp* transistor. Also known as fused-junction transistor.

all-pass network A network designed to introduce a phase shift in a signal without introducing an appreciable reduction in energy of the signal at any frequency.

all-purpose computer A computer combining the specific capabilities of a general-purpose computer and a special-purpose, scientific or business computer.

all-wave receiver A radio receiver capable of being tuned from about 535 kilohertz to at least 20 megahertz; some go above 100 megahertz and thus cover the FM band also.

alphabetic coding 1. Abbreviation of words for computer input. 2. A system of coding with a number system of base 26, the letters of the alphabet being used instead of the cardinal numbers.

alphabetic shift The status of a card punch when the program control is off (star wheels are raised).

alphabetic string *See* character string.

alpha cutoff frequency The frequency at the high end of a transistor's range at which current amplification drops 3 decibels below its low-frequency value.

alphameric characters *See* alphanumeric characters.

alphameric typebar A metal bar containing the alphabet, the ten numerical characters, and the ampersand, in use in electromechanical accounting machines.

alphanumeric characters All characters used by a computer, including letters, numerals, punctuation marks, and such signs as $, @, and #. Also known as alphameric characters.

alphanumeric display device A device which visibly represents alphanumeric output information from some signal source.

alphanumeric instruction The name given to instructions which can be read equally well with alphabetic or numeric kinds of fields of data.

alphanumeric reader A device capable of reading alphabetic, numeric, and special characters and punctuation marks.

alphascope An interactive alphanumerical input/output device that consists of a cathode-ray tube, keyboard, method of generating characters, method of refreshing the display, and communications equipment, and that forms part of a computer-based system requiring a short response time for retrieving answers to queries from a computer random-access memory.

alteration switch A hand-operated switch mounted on the console of a computer, used to feed a single bit of information into a program. Also known as sense switch.

alternate track The disk track used if, after a disk volume is initialized, a defective track is sensed by the system.

alternating-current coupling A coupling which passes alternating-current signals but blocks direct-current signals.

alternating-current/direct-current Pertaining to electronic equipment capable of operation from either an alternating-current or direct-current primary power source.

alternating-current dump The removal of all alternating-current power from a computer intentionally, accidentally, or conditionally.

alternating-current erase The use of an alternating current to energize a tape recorder erase head in order to remove previously recorded signals from a tape.

alternating-current erasing head In magnetic recording, an erasing head which uses alternating current to produce the magnetic field necessary for erasing.

alternating-current magnetic biasing Biasing with alternating current, usually well above the signal frequency range, in magnetic tape recording.

alternating-current transmission In 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 for only a short time.

altitude delay Synchronization delay introduced between the time of transmission of the radar pulse and the start of the trace on the indicator to eliminate the altitude/height hole on the plan position indicator–type display.

altitude hole The blank area in the center of a plan position indicator–type radarscope display caused by the time interval between transmission of a pulse and the receipt of the first ground return.

altitude signal The radio signals returned to an airborne electronics device by the ground or sea surface directly beneath the aircraft.

AM *See* amplitude modulation.

amateur radio A radio used for two-way radio communications by private individuals as leisure-time activity. Also known as ham radio.

ambiguity The condition in which a synchro system or servosystem seeks more than one null position.

ambiguity error An error in reading a number represented in a digital display that can occur when this representation is changing; for example, the number 699 changing to 700 might be read as 799 because of imprecise synchronization in the changing of digits.

amendment record *See* change record.

AM field signature The characteristic pattern of an alternating magnetic field, as displayed by detection and classification equipment.

amorphous memory array An array of memory switches made of amorphous material.

amorphous semiconductor A semiconductor material which is not entirely crystalline, having only short-range order in its structure.

amplification factor In a vacuum tube, the ratio of the incremental change in plate voltage to a given small change in grid voltage, under the conditions that the plate current and all other electrode voltages are held constant.

amplified back bias Degenerative voltage developed across a fast time-constant circuit within a stage of an amplifier and fed back into a preceding stage.

amplifying delay line Delay line used in pulse-compression systems to amplify delayed signals in the super-high-frequency region.

amplitron Crossed-field continuous cathode reentrant beam backward-wave amplifier for microwave frequencies.

amplitude discriminator *See* pulse-height discriminator.

amplitude distortion *See* frequency distortion.

amplitude-frequency distortion *See* frequency distortion.

amplitude gate A circuit which transmits only those portions of an input signal which lie between two amplitude boundary level values. Also known as slicer; slicer amplifier.

amplitude limiter *See* limiter.

amplitude-limiting circuit *See* limiter.

amplitude modulation Abbreviated AM. **1.** Modulation in which the aplitude of a wave is the characteristic varied in accordance with the intelligence to be transmitted. **2.** In telemetry, those systems of modulation in which each component frequency f of the transmitted intelligence produces a pair of sideband frequencies at carrier frequency plus f and carrier minus f.

amplitude response The maximum output amplitude obtainable at various points over the frequency range of an instrument operating under rated conditions.

amplitude selector *See* pulse-height selector.

amplitude separator A circuit used to isolate the portion of a waveform with amplitudes above or below a given value or between two given values.

amplitude suppression ratio Ratio, in frequency modulation, of the undesired output to the desired output of a frequency-modulated receiver when the applied signal has simultaneous amplitude and frequency modulation.

amplitude versus frequency distortion The distortion caused by the nonuniform attenuation or gain of the system, with respect to frequency under specified terminal conditions.

analog A physical variable which remains similar to another variable insofar as the proportional relationships are the same over some specified range; for example, a temperature may be represented by a voltage which is its analog.

analog adder A device with one output voltage which is a weighted sum of two input voltages.

analog channel A channel on which the information transmitted can have any value between the channel limits, such as a voice channel.

analog comparator **1.** A comparator that checks digital values to determine whether they are within predetermined upper and lower limits. **2.** A comparator that produces high and low digital output signals when the sum of two analog voltages is positive and negative, respectively.

analog computer A computer is which quantities are represented by physical variables; problem parameters are translated into equivalent mechanical or electrical circuits as an analog for the physical phenomenon being investigated.

analog data Data represented in a continuous form, as contrasted with digital data having discrete values.

analog device A control device that operates with variables represented by continuously measured voltages or other quantities.

analog indicator A device in which the result of a measurement is indicated by a pointer deflection or other visual quantity.

analog multiplexer A multiplexer that provides switching of analog input signals to allow use of a common analog-to-digital converter.

analog multiplier A device that accepts two or more inputs in analog form and then produces an output proportional to the product of the input quantities.

analog network A circuit designed so that circuit variables such as voltages are proportional to the values of variables in a system under study.

analog recording Any method of recording in which some characteristic of the recording signal, such as amplitude or frequency, is continuously varied in a manner analogous to the time variations of the original signal.

analog signal A nominally continuous electrical signal that varies in amplitude or frequency in response to changes in sound, light, heat, position, or pressure.

analog simulation The representation of physical systems and phenomena by variables such as translation, rotation, resistance, and voltage.

analog switch **1.** A device that either transmits an analog signal without distortion or completely blocks it. **2.** Any solid-state device, with or without a driver, capable of bilaterally switching voltages or current.

analog-to-digital converter A device which translates continuous analog signals into proportional discrete digital signals.

analog-to-frequency converter A converter in which an analog input in some form other than frequency is converted to a proportional change in frequency.

analog voltage A voltage that varies in a continuous fashion in accordance with the magnitude of a measured variable.

analytical engine An early-19th-century form of mechanically operated digital computer.

analytical function generator An analog computer device in which the dependence of an output variable on one or more input variables is given by a function that also appears in a physical law. Also known as natural function generator; natural law function generator.

analyzer 1. A routine for the checking of a program. 2. One of several types of computers used to solve differential equations.

AND circuit *See* AND gate.

Anderson bridge A six-branch modification of the Maxwell-Wien bridge, used to measure self-inductance in terms of capacitance and resistance; bridge balance is independent of frequency.

AND gate A circuit which has two or more input signal ports and which delivers an output only if and when every input signal port is simultaneously energized. Also known as AND circuit; passive AND gate.

AND/NOR gate A single logic element whose operation is equivalent to that of two AND gates with outputs feeding into a NOR gate.

AND NOT gate A coincidence circuit that performs the logic operation AND NOT, under which a result is true only if statement A is true and statement B is not. Also known as A AND NOT B gate.

AND-OR circuit Gating circuit that produces a prescribed output condition when several possible combined input signals are applied; exhibits the characteristics of the AND gate and the OR gate.

AND-OR-INVERT gate A logic circuit with four inputs, a_1, a_2, b_1, and b_2, whose output is 0 only if either a_1 and a_2 or b_1 and b_2 are 1. Abbreviated A-O-I gate.

angle jamming An electronic countermeasure in which azimuth and elevation information, from a scanning fire control radar present in the modulation components on the returning echo pulse, is jammed by transmitting a pulse similar to the radar pulse but with modulation information out of phase with the returning target angle modulation information.

angle modulation The variation in the angle of a sine-wave carrier; particular forms are phase modulation and frequency modulation. Also known as sinusoidal angular modulation.

angle tracking noise Any deviation of the tracking axis from the center of reflectivity of a radar target; it is the resultant of servo noise, receiver noise, angle noise, and amplitude noise.

angular resolver *See* resolver.

annotation Any comment or note included in a program or flow chart in order to clarify some point at issue.

annular transistor Mesa transistor in which the semiconductor regions are arranged in concentric circles about the emitter.

anode 1. The collector of electrons in an electron tube. Also known as plate; positive electrode. 2. In a semiconductor diode, the terminal toward which forward current flows from the external circuit.

anode circuit Complete external electrical circuit connected between the anode and the cathode of an electron tube. Also known as plate circuit.

anode-circuit detector Detector functioning by virtue of a nonlinearity in its anode-circuit characteristic. Also known as plate-circuit detector.

anode current The electron current flowing through an electron tube from the cathode to the anode. Also known as plate current.

anode detector A detector in which rectification of radio-frequency signals takes place in the anode circuit of an electron tube. Also known as plate detector.

anode dissipation Power dissipated as heat in the anode of an electron tube because of bombardment by electrons and ions.

anode efficiency The ratio of the ac load circuit power to the dc anode power input for an electron tube. Also known as plate efficiency.

anode fall A very thin space-charge region in front of an anode surface, characterized by a steep potential gradient through the region.

anode impedance Total impedance between anode and cathode exclusive of the electron stream. Also known as plate impedance; plate-load impedance.

anode input power Direct-current power delivered to the plate (anode) of a vacuum tube by the source of supply. Also known as plate input power.

anode modulation Modulation produced by introducing the modulating signal into the anode circuit of any tube in which the carrier is present. Also known as plate modulation.

anode neutralization Method of neutralizing an amplifier in which the necessary 180° phase shift is obtained by an inverting network in the plate circuit. Also known as plate neutralization.

anode pulse modulation Modulation produced in an amplifier or oscillator by application of externally generated pulses to the plate circuit. Also known as plate pulse modulation.

anode rays Positive ions coming from the anode of an electron tube; generally due to impurities in the metal of the anode.

anode resistance The resistance value obtained when a small change in the anode voltage of an electron tube is divided by the resulting small change in anode current. Also known as plate resistance.

anode saturation The condition in which the anode current of an electron tube cannot be further increased by increasing the anode voltage; the electrons are then being drawn to the anode at the same rate as they are emitted from the cathode. Also known as current saturation; plate saturation; saturation; voltage saturation.

anode sheath The electron boundary which exists in a gas-discharge tube between the plasma and the anode when the current demanded by the anode circuit exceeds the random electron current at the anode surface.

anotron A cold-cathode glow-discharge diode having a copper anode and a large cathode of sodium or other material.

antenna circuit A complete electric circuit which includes an antenna.

antenna loading 1. The amount of inductance or capacitance in series with an antenna, which determines the antenna's electrical length. 2. The practice of loading an antenna in order to increase its electrical length.

anticapacitance switch A switch designed to have low capacitance between its terminals when open.

anticathode The anode or target of an x-ray tube, on which the stream of electrons from the cathode is focused and from which x-rays are emitted.

anticipatory staging Moving blocks of data from one storage device to another prior to the actual request for them by the program.

anticlutter gain control Device which 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.

anticoincidence circuit 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.

antifading antenna An antenna designed to confine radiation mainly to small angles of elevation to minimize the fading of radiation directed at larger angles of elevation.

antiferroelectric crystal A crystalline substance characterized by a state of lower symmetry consisting of two interpenetrating sublattices with equal but opposite electric polarization, and a state of higher symmetry in which the sublattices are unpolarized and indistinguishable.

antiferromagnetic domain A region in a solid within which equal groups of elementary atomic or molecular magnetic moments are aligned antiparallel.

antiferromagnetism A property possessed by some metals, alloys, and salts of transition elements by which the atomic magnetic moments form an ordered array which alternates or spirals so as to give no net total moment in zero applied magnetic field.

antihunt circuit A stabilizing circuit used in a closed-loop feedback system to prevent self-oscillations.

antijamming Any system or technique used to counteract the jamming of communications or of radar operation.

Anti-Submarine Detection Investigation Committee *See* asdic.

anti-transmit-receive tube A switching tube that prevents the received echo signal from being dissipated in the transmitter.

A-O-I gate *See* AND-OR-INVERT gate.

APC *See* automatic phase control.

aperture An opening through which electrons, light, radio waves, or other radiation can pass.

aperture grill picture tube An in-line gun-type picture tube in which the shadow mask is perforated by long, vertical stripes and the screen is painted with vertical phosphor stripes.

aperture plate A small part of a piece of perforated ferromagnetic material that forms a magnetic cell.

apodization A technique for modifying the response of a surface acoustic wave filter by varying the overlap between adjacent electrodes of the interdigital transducer.

A power supply *See* A supply.

Applegate diagram A graph of the electron paths in a two-cavity klystron tube, showing how electron bunching occurs.

application development language A very-high-level programming language that generates coding in a conventional programming language or provides the user of a data-base management system with a programming language that is easier to implement than conventional programming languages.