B

b *See:* bit.

B A procedural language used in non-numerical computations; primarily designed for systems programming. *Note:* B is based on BCPL and is a precursor to C. (C) 610.13-1993w

babble The aggregate crosstalk from a large number of interfering channels. *See also:* signal-to-noise ratio. (SP) 151-1965w

back (motor or generator) (turbine or drive end) The end that carries the largest coupling or driving pulley. *See also:* armature. (PE) [9]

back-annotation The annotation of information from further downstream steps (toward fabrication) in the design process. *See also:* back-annotation file. (C/DA) 1481-1999

back-annotation file A file containing information to be read by a tool for the purpose of back-annotation, for example Physical Design Exchange Format (PDEF) and Standard Parasitic Exchange Format (SPEF) files. *See also:* back-annotation; timing annotation. (C/DA) 1481-1999

backbone network A network designed to interconnect lower speed distribution channels, devices, or clusters of dispersed users. (C) 610.7-1995

back-connected device A device in which the current-carrying conductors are fastened to the studs in the rear of the mounting base. (SWG/PE) C37.100-1992

back-connected fuse (high-voltage switchgear) A fuse in which the current-carrying conductors are fastened to the studs in the rear of the mounting base. (SWG/PE) C37.40-1993

back-connected switch A switch in which the current-carrying conductors are connected to studs in back of the mounting base. (SWG/PE) C37.100-1981s

back contact (1) (electric power apparatus relaying) A contact that is closed when the relay is reset. *Synonym: b* contact. (SWG/PE/PSR) C37.90-1978s, C37.100-1981s

(2) (utility-consumer interconnections relaying) A contact that is closed when the relay is de-energized. (PE/PSR) C37.95-1973s

back course (navigation aid terms) [instrument landing system (ILS)] The course that is located on the opposite side of the localizer from the runway. (AES/GCS) 172-1983w

back edge By convention, the edge of the module closest to the backplane. (C/MM) 1101.2-1992

backed stamper (phonograph techniques) (mechanical recording) A thin metal stamper that is attached to a backing material, generally a metal disk of desired thickness. *See also:* phonograph pickup. (NESC/SP) [32], [86]

backend Pertaining to one part of a process which has two parts, the frontend and the backend; the frontend usually denotes what the user sees and the backend denotes some special process. *Contrast:* backend; frontend. *See also:* backend computer. (C) 610.10-1994w

backend computer A specialized computer that is attached to another computer, known as a frontend, or host, computer that handles the interface to the users while the backend computer performs functions such as database access, simulation, or vector processing. *Synonyms:* backend processor; backend machine. *Contrast:* front end computer. *See also:* bifunctional machine. (C) 610.10-1994w

backend machine *See:* backend computer.

backend processor *See:* backend computer.

backfeed To energize a section of a power network that is supplied from a source other than its normal source. (SWG/PE) C37.100-1992

backfill Materials such as sand, crushed stone, or soil, that are placed to fill an excavation. (NESC) C2-1997

back filter A filter inserted in the power line feeding an equipment to be surge tested; this filter has a dual purpose

— of preventing the applied surge from being fed back to the power source where it may [*might*, according to the word usage in this guide] cause damage.
— of eliminating loading effects of the power source on the surge generator.

See also: decoupling network. (SPD/PE) C62.45-1992r

backfire antenna An antenna consisting of a radiating feed, a reflector element, and a reflecting surface such that the antenna functions as an open resonator, with radiation from the open end of the resonator. (AP/ANT) 145-1993

back flashover (lightning) A flashover of insulation resulting from a lightning stroke to part of a network or electric installation that is normally at ground potential. *See also:* direct-stroke protection. (T&D/PE/SPD) [10], C62.23-1995, 1243-1997, 1410-1997

back-flashover rate The annual outage rate on a circuit or tower-line length basis caused by back flashover on a transmission line. (PE/T&D) 1243-1997

back focal length (laser maser) The distance from the last optical surface of a lens to the focal point. (LEO) 586-1980w

background (1) (x-ray energy spectrometers) (associated with a spectral peak from a semiconductor detector) Non-ideal spectral response that results from radiation that is not part of the monoenergetic line of interest. (NPS/NID) 759-1984r

(2) (test, measurement, and diagnostic equipment) Those effects present in physical apparatus or surrounding environment that limit the measurement or observation of low-level signals or phenomena; commonly referred to as noise (background acoustical noise, background electromagnetic radiation, background ionizing radiation). (MIL) [2]

(3) (nuclear power plants) Spectral data including peaks not caused by the source but rather resulting from radioactive decay occurring in the surrounding environment or resulting from cosmic-ray interactions in or adjacent to the detector. *See also:* baseline. (NI) N42.14-1991

(4) (software) (job scheduling) The computing environment in which low-priority processes or those not requiring user interaction are executed. *Contrast:* foreground. *See also:* background processing. (C) 610.12-1990

(5) (micrographics) The portion of a document that does not contain lettering or other information. (C) 610.2-1987

(6) (image processing and pattern recognition) A connected component of a region's complement such that the connected component completely surrounds the region.

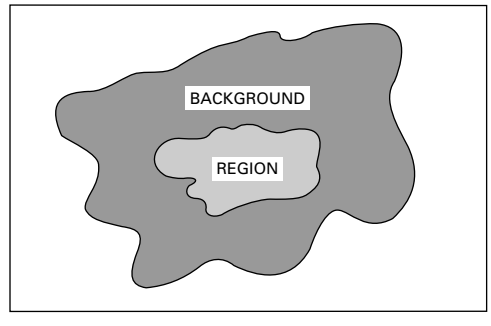


illustration of background

(C) 610.4-1990w

(7) (ambient) The spectrum of X or gamma rays originating from materials other than the radionuclide being measured. (NPS) 325-1996

(8) (under a peak) The background from all sources under a peak being measured, including Compton and degraded-energy counts from higher energy and ambient background events. (NPS) 325-1996

(9) Ambient signal response, recorded by measuring instruments, that is independent of radioactivity contributed by the radionuclides being measured in the sample. (NI) N42.23-1995

background check source A sealed vial of liquid-scintillation solution containing no added radioactive material. (NI) N42.15-1990, N42.16-1986

background count rate (liquid-scintillation counters) (in radioactivity counters) Count rate recorded by the instrument when measuring a background check source. (NI) N42.15-1990, N42.16-1986

background counts Counts caused by ionizing radiation coming from sources other than that to be measured and by any electronic disturbance in the circuitry that is used to record the counts. (NI/NPS) 309-1999

background fields Any electric or magnetic field that does not originate from the VDT under test. (EMC) 1140-1994r

background image The part of a display image that can not be modified. *Contrast:* foreground image. *See also:* form overlay. (C) 610.6-1991w

background ionization voltage (surge arresters) A high-frequency voltage appearing at the terminals of the apparatus to be tested that is generated by ionization extraneous to the apparatus. *Note:* While this voltage does not add arithmetically to the radio influence or internal ionization voltage, it affects the sensitivity of the test. *See also:* surge arrester. (PE/IA/APP) [8], [79]

background job *See:* background process group.

background level (sound measurement) Any sound at the points of measurement other than that of the machine being tested. It also includes the sound of any test support equipment. (PE/EM) 85-1973w

background noise (1) (A) (radio noise from overhead power lines and substations) The total system noise independent of the presence or absence of radio noise from the power line or substation. *Note:* Background noise is presumed to be reduced to a level of insignificance. **(B)** The total of all sources of interference in a system used for the production, detection, measurement, or recording of a signal, independent of the presence of the signal. *Note:* Ambient noise detected, measured, or recorded with the signal becomes part of the background noise. *See also:* ambient noise. (T&D/PE) 430-1986, 539-1990

(2) (data transmission) Noise due to audible disturbances or periodic random occurrence, or both. (PE) 599-1985w

(3) Noise due to audible disturbances of periodic and/or random occurrence. *See also:* modulation. (AP/ANT) 145-1983s

(4) (electroacoustics) (recording and reproducing) The total system noise in the absence of a signal. *See also:* phonograph pickup. (SP) [32]

(5) (receivers) The noise in the absence of signal modulation on the carrier. 188-1952w

(6) (telephone practice) The total system noise independent of the presence or absence of a signal. (PE/PSR) C37.93-1976s

(7) (communication satellite) That part of the receiving system noise power produced by noise sources in the celestial background of the radiation pattern of the receiving antenna. Typical sources are the galaxy (galactic noise), the sun, and radio stars. (COM) [25]

background process A process that is a member of a background process group. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

background process group Any process group, other than a foreground process group, that is a member of a session that has established a connection with a controlling terminal. *Synonym:* background job. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

background processing (software) The execution of a low-priority process while higher priority processes are not using computer resources, or the execution of processes that do not require user interaction. *Contrast:* foreground processing. (C) 610.12-1990

background response (radiation detectors) Response caused by ionizing radiation coming from sources other than that to be measured. *See also:* ionizing radiation. (NPS) 398-1972r

background return *See:* clutter.

backing (rotating machinery) (planar structure) A fabric, mat, film, or other material used in intimate conjunction with a prime material and forming a part of the composite for mechanical support or to sustain or improve its properties. (PE) [9]

backing lamp *See:* backup lamp.

backlash (1) (general) A relative movement between interacting mechanical parts, resulting from looseness. *See also:* industrial control; feedback control system. (IA/PE/EDPG/APP/IAC) [61], [93], [69], [60]

(2) (signal generators) The difference in actual value of a parameter when the parameter is set to an indicated value by a clockwise rotation of the indicator, and when it is set by a counterclockwise rotation. *See also:* signal generator. (IM/HFIM) [40]

(3) (tunable microwave tube) The amount of motion of the tuner control mechanism (in a mechanically tuned oscillator) that produces no frequency change upon reversal of the motion. (ED) 158-1962w, [45]

back light (illuminating engineering) Illumination from behind the subject in a direction substantially parallel to a vertical plane through the optical axis of the camera. (EEC/IE) [126]

back lobe A radiation lobe whose axis makes an angle of approximately 180 degrees with respect to the beam axis of an antenna. *Note:* By extension, a radiation lobe in the half-space opposed to the direction of peak directivity. (AP/ANT) 145-1993

back office application (BOA) Intelligent transportation system (ITS) or other application that resides and executes on the back office equipment (BOE). BOAs exchange messages with the onboard equipment (OBE) via the resource manager. (SCC32) 1455-1999

back office equipment (BOE) Computer equipment that hosts the applications and data required for some intelligent transportation system (ITS) function. Data is exchanged with the OBE via the vehicle-to-roadside communications (VRC) controller. (SCC32) 1455-1999

back out *See:* roll back.

back pitch (rotating machinery) The coil pitch at the nonconnection end of a winding (usually in reference to a wave winding). (PE) [9]

backplane (1) The printed circuit board that contains the connectors and interconnect traces. (C/MM) 961-1987r

(2) A printed circuit board (pcb) on which connectors are mounted, into which boards or plug-in units are inserted. (C/MM) 1000-1987r

(3) A printed-circuit board (pcb) with 96-pin connectors and signal paths that bus (connect corresponding) connector pins. Some systems have a single pcb, J1 backplane. It provides the signal paths needed for basic operation. Other systems also have an optional second pcb, J2 backplane. It provides the additional 96-pin connectors and signal paths needed for wider data and address transfers. Still others have a single pcb, J1/J2 backplane, which provides the signal conductors and connectors of the J1 and J2 backplanes. (C/BA) 1014-1987

(4) A circuit board with one or more bus connectors that provides signals for communication between bus modules, and provides certain resources to the connected modules. (C/MM) 1196-1987w

(5) The physical mechanism by which signals are routed between agents. (C/MM) 1296-1987s

(6) A board that holds the connectors into which SCI modules can be plugged. In ring-based SCI systems, the backplane may contain wiring that connects the output link of one module to the input link of the next. In switch-based SCI systems, the backplane may merely provide mechanical mounting for connectors that are connected by cables to the switch circuitry; or, part of the switch circuitry may be implemented on the backplane. Usually the backplane provides power connections, power status information and physical position information to the module. (C/MM) 1596-1992

(7) An electronic circuit board and connectors used to interconnect modules together electrically. The backplane connects selected pins of the connectors, thus providing the medium for the transfer of signals needed for the operation of the bus.

(C/BA) 1014.1-1994w, 896.4-1993w, 896.2-1991w, 896.3-1993w

(8) An assembly, typically a PCB, with 96-pin connectors and signal paths that bus the connector pins. VXIbus systems will have up to three sets of bussed connectors, called the J1, J2, and J3 backplanes. (MM/C) 1155-1992

(9) A subassembly that holds the connectors into which one or more boards can be plugged. In addition to providing bus signal connections, the backplane usually provides power connections, power status information, and physical position information to the board. (C/MM) 1212-1991s

(10) Motherboard comprising connectors for the modules of a system and wiring interconnecting those modules. The intermodule wiring of the MTM-Bus is expected to be on this motherboard. (C/TT) 1149.5-1995

(11) Circuit board (typically printed) at the rear of a crate which, by means of its attached connectors, mates with the modules and constitutes the crate segment.

(NID) 960-1993

(12) (A) The circuitry and mechanical elements used to connect the circuit boards within a computer system. *Note:* This circuitry is usually limited to terminating the bus signals, and sometimes generating central clocks or providing an arbiter. **(B)** The main circuit board of a computer into which other circuit boards are plugged. *Contrast:* motherboard.

(C) 610.10-1994

(13) An electronic and/or fiber optic interconnected set of connectors used to connect modules together electrically and/or optically. (The backplane connects selected pins of the connectors, thus providing the medium for the transfer of signals needed for the operation of the bus. Note that a backplane may contain zero or more backplane buses as well as other communications and power interconnects.).

(C/BA) 14536-1995

(14) A board that holds the connectors into which SCI modules can be plugged. In ring-based SCI systems, the backplane may contain wiring that connects the output link of one module to the input link of the next. Usually the backplane provides power connections, power status information, and physical position information to the module.

(C/MM) 1596.3-1996

(15) An electronic circuit board and connectors used to interconnect modules together electrically. The backplane connects selected pins of the connectors, thus providing the medium for the transfer of signals needed for the operation of the bus. (C/BA) 896.10-1997

backplane bus (1) A means to connect circuit modules using common signal traces on a backplane and a standard set of rules.

(C/BA) 896.3-1993w, 896.2-1991w, 896.4-1993w, 896.10-1997

(2) A means in a backplane to connect corresponding signals of circuit modules using a standard set of electrical, timing, and logical rules. (C/BA) 14536-1995

backplane capacity The minimum and maximum number of backplane slots permitted. (C/BA) 896.2-1991w

backplane interface logic (1) Special logic that takes into account the characteristics of the backplane; its signal line impedance, propagation time, termination values, etc. The specification prescribes certain rules for the design of this logic based on the maximum length of the backplane and its maximum number of printed-circuit board (pcb) slots.

(C/BA) 1014-1987

(2) (VSB bus structure) Special interface logic that takes into account the characteristics of the backplane. The VSB specification prescribes certain requirements for the design of this logic, which takes into account the signal line impedance, propagation times, termination values, the maximum length of the backplane, and the number of slots allowed.

(MM/C) 1096-1988w

backplane interface standard A set of specifications that define physical and electrical attributes, and some functional and protocol properties, of electronic modules for interconnection to a common backplane interface.

(C/BA) 14536-1995

backplane PHY *See:* backplane physical layer.

backplane physical layer The version of the physical layer applicable to the Serial Bus backplane environment.

(C/MM) 1394-1995

backplane slot The backplane connections devoted to a single module. (C/BA) 14536-1995

back plate (camera tubes) (signal plate) The electrode in an iconoscope or orthicon camera tube to which the stored charge image is capacitively coupled. *See also:* television.

(BT/AV) [34]

back porch (1) (monochrome composite picture signal). The portion that lies between the trailing edge of a horizontal synchronizing pulse and the trailing edge of the corresponding blanking pulse.

(2) (National Television System Committee composite color-picture signal). The portion that lies between the color burst and the trailing edge of the corresponding blanking pulse. *See also:* television. (BT/AV) [34]

backquote The character "`", also known as a *grave accent.*

(C/PA) 9945-2-1993

back relay contacts Sometimes used for relay contacts, normally closed. (EEC/REE) [87]

backscatter (1) The scattering of waves back toward the source.

(AP/PROP) 211-1997

(2) Energy reflected or scattered in a direction opposite to that of the incident wave. (AES) 686-1997

backscatter coefficient A normalized measure of radar return from a distributed scatterer. For area targets, such as ground or sea clutter, it is defined as the average *monostatic* radar cross section per unit surface area. *Note:* The backscatter coefficient for area targets, often expressed in decibels and denoted by σ^0, is dimensionless but is sometimes written in units of m^2/m^2 for clarity. For volume scatter, such as that from rain, chaff, or deep snow cover, it is defined as the average monostatic radar cross section per unit volume and is expressed in units of m^2/m^3 or m^{-1}. The volume backscatter coefficient is often expressed in decibels and denoted by the symbol η_v. (AES) 686-1997

backscatter cross section *See:* radar cross section.

backscattering (fiber optics) The scattering of light into a direction generally reverse to the original one. *See also:* reflection; Rayleigh scattering; reflectance. (Std100) 812-1984w

backscattering coefficient (echoing area) (data transmission) Of an object for an incident plane wave is 4π the ratio of the reflected power per unit solid angle ϕ_r in the direction of the source to the power per unit area (W_1) in the incident wave:

$$B = 4\pi \frac{\phi_r}{W_1} = 4\pi r^2 \frac{W_r}{W_1}$$

where (W_r) is the power per unit area at distance r. *Note:* For large objects, the backscattering coefficient of an object is approximately the product of its interception area and its scat-

tering gain in the direction of the source, where the interception area is the projected geometrical area and the scattering gain is the reradiated power gain relative to an isotropic radiator. (PE) 599-1985w

backscattering cross section (1) The scattering cross-section in the direction towards the source. *See also:* backscattering coefficient; radar cross section. (RS/ANT)

(2) (radar) *See also:* monostatic cross section; radar cross section.

(AES/AP/RS/ANT/PROP) 686-1990, 145-1993, 211-1997

back-shunt keying A method of keying a transmitter in which the radio-frequency energy is fed to the antenna when the telegraph key is closed and to an artificial load when the key is open. *See also:* radio transmission.

(AP/BT/ANT) 145-1983s, 182A-1964w

backslash The character "\", also known as a *reverse solidus*. (PA/C) 9945-2-1993

⟨`backspace`⟩ A character that normally causes printing (or displaying) to occur one column position previous to the position about to be printed. The ⟨`backspace`⟩ shall be the character designated by `'\b'` 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 backspace function. The ⟨`backspace`⟩ character defined here is not necessarily the ERASE special character defined in POSIX.1. (C/PA) 9945-2-1993

backspace character (BS) A format effector character that causes the print or display position to move one position backward along the line without producing the printing or display of any graphic. (C) 610.5-1990w

backstop, relay *See:* relay backstop.

backswing (pulse transformers) (last transition overshoot) The maximum amount by which the instantaneous pulse value is below the zero axis in the region following the fall time. It is expressed in amplitude units or as a percentage of A_M. *See also:* input pulse shape.

(PEL/MAG/ET) 390-1987r, 391-1976w

back-to-back capacitor bank switching Switching a capacitor bank with and in close electrical proximity to one or more other capacitor banks.power systems relaying. (PE) C37.99-2000

back-to-back switching The switching of a capacitor bank that is connected in parallel with one or more other capacitor banks. (T&D/PE) 1036-1992

back-to-back test A test of a bipolar station in which the transmission terminals of two converters are temporarily jumpered in the station. One converter is run as rectifier while the other converter is run as inverter. (PE/SUB) 1378-1997

back-to-back testing Testing in which two or more variants of a program are executed with the same inputs, the outputs are compared, and errors are analyzed in case of discrepancies. *See also:* mutation testing. (C) 610.12-1990

backup (supervisory control, data acquisition, and automatic control) Provision for an alternate means of operation if the primary system is not available.

(SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) (A) (software) A system, component, file, procedure, or person available to replace or help restore a primary item in the event of a failure or externally-caused disaster. **(B)** To create or designate a system, component, file, procedure, or person as in definition (A) above.

(C) 610.5-1990, 610.12-1990

backup air-gap device An air-gap device connected in parallel with a sealed gas-tube device, having a higher breakdown voltage than the gas tube, which provides a secondary means of protection in the event of a venting to atmosphere by the primary gas-tube device.

(SPD/PE) C62.31-1987r, C62.32-1981s

backup current-limiting fuse (1) A fuse capable of interrupting all currents from the maximum rated interrupting current down to the rated minimum interrupting current. *See also:* function Class-A (back-up) current-limiting fuse.

(SWG/PE) C37.40-1993

(2) A fuse capable of interrupting all currents from the rated maximum interrupting current down to the rated minimum interrupting current. (SWG/PE) C37.100-1992

backup, degraded *See:* degraded backup.

backup gap (series capacitor) A supplementary gap that may be set to sparkover at a voltage level higher than the protective level of the primary protective device, and that is normally placed in parallel with the primary protective device.

(PE/T&D) 824-1985s

backup lamp (illuminating engineering) A lighting device mounted on the rear of a vehicle for illuminating the region near the back of the vehicle while moving in reverse. It normally can be used only while backing up. (EEC/IE) [126]

backup overcurrent protective device or apparatus (nuclear power generating station) A device or apparatus that performs the circuit interrupting function in the event the primary protective device or apparatus fails or is out of service.

(PE/NP) 317-1976s

backup path Secondary transmission path in trunk cabling and concentrator, normally used for token ring signal transmission only when there is a failure on the main ring path.

(C/LM) 8802-5-1998

backup programmer (software) The assistant leader of a chief programmer team; responsibilities include contributing significant portions of the software being developed by the team, aiding the chief programmer in reviewing the work of other team members, substituting for the chief programmer when necessary, and having an overall technical understanding of the software being developed. *See also:* chief programmer.

(C) 610.12-1990

backup protection (as applied to a relay system) A form of protection that operates independently of specified components in the primary protective system. It may duplicate the primary protection or may be intended to operate only if the primary protection fails or is temporarily out of service.

(SWG/PE/PSR) C37.100-1992, C37.90-1978s

backup zone The protected zone of a relay that is not the primary protection. It is usually time delayed (e.g., zones 2 and 3 of a distance relay). In addition, the backup zone will usually remove more of the system elements than required by the operation of the primary zone of protection.

(PE/PSR) C37.113-1999

Backus-Naur form A recursive metalanguage used to specify or describe the syntax of a language in which each symbol, by itself, represents a set of strings of symbols. *Note:* Developed by John Backus and Peter Naur, BNF was one of the first formal systems developed to specify languages. *See also:* ALPHA. (C/ATLAS) 610.13-1993w, 771-1989s

Backus-Naur format (BNF) A particular metalanguage developed by Backus and Naur. (SCC20) 771-1998

Backus-Naur notation (BNN) A general term relating to metalanguages that use the concepts developed by Backus and Naur. (SCC20) 771-1998

backus normal *See:* Backus-Naur form.

backward-acting regulator A transmission regulator in which the adjustment made by the regulator affects the quantity that caused the adjustment. *See also:* transmission regulator.

(EEC/PE) [119]

backward channel A channel, associated with the forward channel, used for supervisory or error control signals, but with a direction of transmission opposite to that of the forward channel in which user information is being transferred. *Note:* In the case of simultaneous transfer of user information in both directions, this definition applies with respect to the data source under consideration. *Synonym:* reverse channel.

(C) 610.10-1994w

backward diode (nonlinear, active, and nonreciprocal waveguide components) A semiconductor device used primarily as a detector or mixer. Quantum-mechanical tunneling in this

diode results in a current-voltage characteristic in which the reverse current is greater than the forward current for equal applied voltages of opposite polarity. (MTT) 457-1982w

backward execution *See:* reversible execution.

backward read To read data from a sequential storage medium in a reverse direction; for example, to read a magnetic tape from the end to the beginning. (C) 610.10-1994w

backward recovery (1) The reconstruction of a file to a given state by reversing all changes made to the file since it was in that state. *Contrast:* forward recovery; inline recovery. (C) 610.5-1990w, 610.12-1990

(2) A type of recovery in which a system program database or other system resource is restored to a previous state in which it can perform required functions. (C) 610.12-1990

backward supervision The use of supervisory sequences from a secondary station or node to a primary station or node. *Contrast:* forward supervision. (C) 610.7-1995

backward wave (traveling-wave tubes) A wave whose group velocity is opposite to the direction of electron-stream motion. *See also:* amplifier. (ED) 161-1971w

backward-wave oscillator *See:* carcinotron.

backward-wave structure (BW) (microwave tubes) A slow-wave structure whose propagation is characterized on an ω/β diagram (sometimes called a Brillouin diagram) by a negative slope in the region $0 < \beta < \pi$ (in which the phase velocity is therefore of opposite sign to the group velocity). (ED) [45]

back wave A signal emitted from a radio telegraph transmitter during spacing portions of the code characters and between the code characters. *See also:* radio transmission. (BT) 182A-1964w

bactericidal effectiveness (illuminating engineering) The capacity of various portions of the ultraviolet spectrum to destroy bacteria, fungi, and viruses. *Synonym:* germicidal effectiveness. (EEC/IE) [126]

bactericidal efficiency of radiant flux (illuminating engineering) The ratio of the bactericidal effectiveness of that wavelength to that of wavelength 265.0 nm (nanometers), which is rated as unity. (EEC/IE) [126]

bactericidal exposure (illuminating engineering) The product of bactericidal flux density on a surface and time. It usually is measured in bactericidal microwatt-minutes per square centimeter or bactericidal watt-minutes per square foot. *Synonym:* germicidal exposure. (EEC/IE) [126]

bactericidal flux (illuminating engineering) Radiant flux evaluated according to its capacity to produce bactericidal effects. It is usually measured in microwatts of ultraviolet radiation weighted in accordance with its bactericidal efficiency. Such quantities of bactericidal flux would be in bactericidal microwatts. *Note:* Ultraviolet radiation of wavelength 253.7 nm (nanometers) is usually referred to as "ultraviolet microwatts" or "UV watts." These terms should not be confused with "bactericidal microwatts" because the radiation has not been weighted in accordance with the values given in the table under erythemal flux density. *Synonym:* germicidal flux. (EEC/IE) [126]

bactericidal flux density (illuminating engineering) The bactericidal flux per unit area of the surface being irradiated. It is equal to the quotient of the incident bactericidal flux divided by the area of the surface when the flux is uniformly distributed. It is usually measured in microwatts per square centimeter or watts per square foot of bactericidally weighted ultraviolet radiation (bactericidal microwatts per square centimeter or bactericidal watts per square foot). *Synonym:* germicidal flux density. (EEC/IE) [126]

badge number A numeric character code assigned to a badge. (PE/NP) 692-1997

badge reader A reader capable of reading information on specially coded badges or cards. (C) 610.10-1994w

baffle (1) (audio and electroacoustics) A shielding structure or partition used to increase the effective length of the transmission path between two points in an acoustic system; as, for example, between the front and back of an electroacoustic transducer. *Note:* In the case of a loudspeaker, a baffle is often used to increase the acoustic loading of the diaphragm. (SP) [32]

(2) (illuminating engineering) A single opaque or translucent element to shield a source from direct view at certain angles, or to absorb unwanted light. (EEC/IE) [126]

(3) (gas tube) An auxiliary member, placed in the arc path and having no separate external connection. *Note:* A baffle may be used for:

a) Controlling the flow of mercury vapor or mercury particles,
b) Controlling the flow of radiant energy,
c) Forcing a distribution of current in the arc path,
d) Deionizing the mercury vapor following conduction. It may be of either conducting or insulating material.

See also: electrode. (ED) [45]

bag A kind of collection class whose members are unordered but in which duplicates are meaningful. *Contrast:* list; set. (C/SE) 1320.2-1998

bag-type construction (dry cell) (primary cell) A type of construction in which a layer of paste forms the principal medium between the depolarizing mix, contained within a cloth wrapper, and the negative electrode. *See also:* electrolytic cell. (EEC/PE) [119]

baker board *See:* lineperson's platform.

balance beam (of a relay) A lever form of relay armature, one end of which is acted upon by one input and the other end restrained by a second input. (SWG/PE/PSR) C37.100-1992, C37.90-1978s

balance check In an analog computer, the computer-control state in which all amplifier summing junctions are connected to the computer zero reference level (usually signal ground) to permit zero balance of the operational amplifiers. (C) 610.10-1994w, 165-1977w

balanced (1) (general) Used to signify proper relationship between two or more things, such as stereophonic channels.

(2) (data transmission) In communication practice, signifies electrically alike and symmetrical with respect to ground, or arranged to provide conjugate conductors between certain sets of terminals. (PE) 599-1985w

(3) (to ground) The state of impedance on a two-wire circuit when the impedance-to-ground of one wire is equal to the impedance-to-ground of the other wire. *Contrast:* unbalanced. *See also:* balun. (C) 610.7-1995

(4) Pertaining to a relationship between two or more objects that are alike or symmetrical in some respect. *Contrast:* unbalanced. (C) 610.10-1994w

balanced amplifier (push-pull amplifier) An amplifier in which there are two identical signal branches connected so as to operate in phase opposition and with input and output connections each balanced to ground. (AP/BT/PE/ANT) 145-1983s, 182-1961w, 599-1985w

balanced cable (1) A cable consisting of one or more metallic symmetrical cable elements (twisted pairs or quads).local area networks. (LM/C) 802.3u-1995s, 8802-12-1998

(2) A cable consisting of one or more metallic symmetrical cable elements (twisted pairs or quads).

balanced capacitance (between two conductors) (mutual capacitance between two conductors) The capacitance between two conductors when the changes in the charges on the two are equal in magnitude but opposite in sign and the potentials of the other $n - 2$ conductors are held constant. *See also:* direct capacitances. (IM/HFIM) [40]

balanced circuit (1) (measuring longitudinal balance of telephone equipment operating in the voice band) A circuit in which two branches are electrically alike and symmetrical with respect to a common reference point, usually ground. (COM/TA) 455-1985w

(2) (signal-transmission system) A circuit, in which two branches are electrically alike and symmetrical with respect to a common reference point, usually ground. *Note:* For an

applied signal difference at the input, the signal relative to the reference at equivalent points in the two branches must be opposite in polarity and equal in amplitude. (IM/HFIM) [40]

(3) (electric power system) A circuit in which there are substantially equal currents, either alternating or direct, in all main wires and substantially equal voltages between main wires and between each main wire and neutral (if one exists). *See also:* center of distribution. (T&D/PE) [10]

balanced conditions (1) (rotating machinery) (time domain) A set of polyphase quantities (phase currents, phase voltages, etc.) that are sinusoidal in time, that have identical amplitudes, and that are shifted in time with respect to each other by identical phase angles.

(2) (space domain) In space, a set of coils (for example, of a rotating machine) each having the same number of effective turns, with their magnetic axes shifted by identical angular displacements with respect to each other. *Notes:* 1. The impedance (matrix) of a balanced machine is balanced. A balanced set of currents will produce a balanced set of voltage drops across a balanced set of impedances. 2. If all sets of windings of a machine are balanced and if the magnetic structure is balanced, the machine is balanced. *See also:* asynchronous machine. (PE) [9]

balanced currents (waveguide) (on a balanced line) Currents flowing in the two conductors of a balanced line, which, at every point along the line, are equal in magnitude and opposite in direction. (MTT) 146-1980w

balanced duplexer (radar) (nonlinear, active, and nonreciprocal waveguide components) A dualized network using two quadrature hybrids on each side of a pair of self-switching elements used to interconnect the transmitter, receiver, and antenna in a radar. *See also:* duplexer. (MTT) 457-1982w

balanced error (A) A set of error values in which the maximum and minimum are opposite in sign and equal in magnitude. *Contrast:* unbalanced error. **(B)** A set of error values whose average is zero. *Contrast:* unbalanced error. (C) 1084-1986

balanced line (waveguide) (two conductor) A transmission line consisting of two conductors in the presence of ground capable of being operated in such a way that the voltages on the two conductors at all transverse planes are equal in magnitude and opposite in direction. The ground may be a conducting sheath, forming a shielded transmission line. (MTT) 146-1980w

balanced line system (waveguide) A system consisting of a generator and a balanced line, and load-adjusted so that the voltages of the two conductors at all transverse planes are equal in magnitude and opposite in polarity with respect to ground. (MTT) 146-1980w

balanced merge A merge in which the subsets to be merged are equally distributed among half of the available storage, then the subsets are merged onto the other half of storage. *Contrast:* unbalanced merge. (C) 610.5-1990w

balanced merge sort A merge sort in which the sorted subsets created by internal sorts are equally distributed among half of the available storage, the subsets are merged onto the other half of the available storage, and this process is repeated until all the items are in one sorted set. *Contrast:* unbalanced merge sort. (C) 610.5-1990w

balanced mixer (1) (single, double) A type of mixer that forms from two signals A & B a third signal C having the form $C = (a+A)(b+B)$. "Single balanced" implies $a = 0$, $b \neq 0$; "double balanced" implies $a = b = 0$. *Note:* Such mixers can suppress a RF carrier and/or a local oscillator in their output spectrum. *Synonym:* balanced modulator. (CAS) [13]

(2) A hybrid junction with crystal receivers in one pair of uncoupled arms the arms of the remaining pair being fed from a signal source and a local oscillator. *Note:* The resulting intermediate-frequency signals from the crystals are added in such a manner that the effect of local-oscillator noise is minimized. *See also:* radio receiver; hybrid junction; converter; waveguide. (AP/ANT) [35], [84]

balanced modulator (signal-transmission system) A modulator, specifically a push-pull circuit, in which the carrier and modulating signal are so introduced that after modulation takes place the output contains the two sidebands without the carrier. *See also:* modulation. (AP/ANT) 145-1983s

balanced oscillator An oscillator in which, at the oscillator frequency, the impedance centers of the tank circuit are at ground potential and the voltages between either end and their centers are equal in magnitude and opposite in phase. *See also:* oscillatory circuit. (AP/BT/ANT) 145-1983s, 182A-1964w

balanced polyphase load A load to which symmetrical currents are supplied when it is connected to a system having symmetrical voltages. *Note:* The term "balanced polyphase load" is applied also to a load to which two currents having the same wave form and root-mean-square value and differing in phase by 90 electrical degrees are supplied when it is connected to a quarter-phase (or two-phase) system having voltages of the same wave form and root-mean-square value. *See also:* generating station. (T&D/PE) [10]

balanced polyphase system A polyphase system in which both the currents and voltages are symmetrical. *See also:* alternating-current distribution. (T&D/PE) [10]

balanced relay armature An armature that is approximately in equilibrium with respect to both static and dynamic forces. (EEC/REE) [87]

balanced telephone-influence factor (three-phase synchronous machine) The ratio of the square root of the sum of the squares of the weighted root-mean-square values of the fundamental and the nontriple series of harmonics to the root-mean-square value of the normal no-load voltage wave. (PE) [9]

balanced termination (system or network having two output terminals) A load presenting the same impedance to ground for each of the output terminals. *See also:* network analysis. (MTT) 146-1980w

balanced three-wire system A three-wire system in which no current flows in the conductor connected to the neutral point of the supply. *See also:* three-wire system; alternating-current distribution. (T&D/PE) [10]

balanced tree *See:* height-balanced tree.

balanced voltages (1) (waveguide) (on a balanced line) Voltages relative to ground on the two conductors of a balanced line which, at every point along the line, are equal in magnitude and opposite in polarity. (MTT) 146-1980w

(2) (signal-transmission system) The voltages between corresponding points of a balanced circuit (voltages at a transverse plane) and the reference plane relative to which the circuit is balanced. *See also:* signal. (IE) [43]

balanced wire circuit (data transmission) One whose two sides are electrically alike and symmetrical with respect to ground and other conductors. The term is commonly used to indicate a circuit whose two sides differ only by chance. (PE) 599-1985w

balancer That portion of a direction-finder that is used for the purpose of improving the sharpness of the direction indication. *See also:* radio receiver. (EEC/PE) [119]

balance relay A relay that operates by comparing the magnitudes of two similar input quantities. *Note:* The balance may be effected by counteracting electromagnetic forces on a common armature, or by counteracting magnetomotive forces in a common magnetic circuit, or by similar means, such as springs, levers, etc. (SWG/PE) C37.100-1992

balance test (rotating machinery) A test taken to enable a rotor to be balanced within specified limits. *See also:* rotor. (PE) [9]

balancing (1) Adjusting the gains and losses in each path of a system to achieve proper cable plant characteristics. (LM/C) 802.7-1989r

(2) (analog computer) (of an operational amplifier) The act of adjusting the output level of an operational amplifier to coincide with its input reference level, usually ground or zero voltage, in the "balance check" computer-control state. This operation may not be required in some amplifiers, and there may be no provision for performing it. (C) 165-1977w

balancing network An electric network designed for use in a circuit in such a way that two branches of the circuit are made substantially conjugate; that is, such that an electromotive force inserted in one branch produces no current in the other branch. *See also:* network analysis. (PE) 599-1985w

ballast (1) (fluorescent lamps or mercury lamps) Devices that by means of inductance, capacitance, or resistance, singly or in combination, limit the lamp current of fluorescent or mercury lamps to the required value for proper operation, and also, where necessary, provide the required starting voltage and current and, in the case of ballasts for rapid-start lamps, provide for low-voltage cathode heating. *Note:* Capacitors for power-factor correction and capacitor-discharge resistors may form part of such a ballast. (EEC/LB) [95], [94]

(2) (fixed-impedance type) (reference ballast) Designed for use with one specific type of lamp that, after adjustment during the original calibration, is expected to hold its established impedance through normal use. (EEC/LB) [96], [97]

(3) (variable-impedance type) An adjustable inductive reactor and a suitable adjustable resistor in series. *Note:* 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, or rechecked, each time the unit is used. (EEC/LB) [96], [97]

(4) (illuminating engineering) A device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current, and wave form) for starting and operating. (EEC/IE) [126]

(5) (electric power systems in commercial buildings) An electrical device that is used with one or more discharge lamps to supply the appropriate voltage to a lamp for starting, to control lamp current while it is in operation, and, usually, to provide for power factor correction. (IA/PSE) 241-1990r

ballast factor (illuminating engineering) The fractional loss of task illuminance due to use of a ballast other than the standard one. (EEC/IE) [126]

ballast leakage The leakage of current from one rail of a track circuit to another through the ballast, ties, earth, etc. (EEC/PE) [119]

ballast resistance The resistance offered by the ballast, ties, earth, etc., to the flow of leakage current from one rail of a track circuit to another. (EEC/PE) [119]

ballast section (railroads) The section of material, generally trap rock, that provides support under railroad tracks. (NESC) C2-1997

ballast tube (ballast lamp) A current-controlling resistance device designed to maintain substantially constant current over a specified range of variation in the applied voltage or the resistance of a series circuit. (EEC/PE) [119]

ball bearing (rotating machinery) A bearing incorporating a peripheral assembly of balls. *See also:* bearing. (PE) [9]

ball burnishing Burnishing by means of metal balls. *See also:* electroplating. (EEC/PE) [119]

ballistic deficit (germanium gamma-ray detectors) The loss in signal amplitude that occurs when the charge collection time in a detector is a significant fraction of the amplifier's differentiating time constant. (NPS) 325-1996

ballistic focusing (microwave tubes) A focusing system in which static electric fields cause an initial convergence of the beam, and the electron trajectories are thereafter determined by momentum and space charge forces only. (ED) [44]

ballistic munition Any munition that follows a ballistic trajectory. (DIS/C) 1278.1-1995

ball lightning A type of lightning discharge reported from visual observations to consist of luminous, ball-shaped regions of ionized gases. *Note:* In reality ball lightning may or may not exist. *See also:* direct-stroke protection. (T&D/PE) [10]

balun (1) In networking, a passive device with distributed electrical constants used to couple a balanced system or device to an unbalanced system or device. For example, a transformer used to connect balanced twisted-pair cables to unbalanced coaxial cables. *Note:* Derived from "balance to unbalance" transformer. (C/CHM) 610.7-1995, [51]

(2) A network for the transformation from an unbalanced transmission line or system to a balanced line or system, or vice versa. (IM/HFIM) [40]

BAM *See:* basic access method.

banana plug A single-conductor plug with a spring metal tip that somewhat resembles a banana in shape. (IM) [120]

band (1) A group of circular recording tracks, on a moving storage device such as a drum or disc. *See also:* channel. (C/MIL) [2]

(2) (data transmission) Range of frequency between two defined limits. (PE) 599-1985w

(3) A group of tracks on a magnetic drum or a magnetic disk which are read or written as a group. (C) 610.10-1994w

band I The frequency band 5 Hz to 2 kHz. (EMC) 1140-1994r

band II The frequency band 2 kHz to 400 kHz. (EMC) 1140-1994r

band-edge The highest or lowest frequency passed for a defined range of frequencies. The band-edge frequencies are normally identified to be the half power points of a frequency band. (LM/C) 802.7-1989r

band, effective *See:* effective band.

band-elimination filter (1) A network designed to eliminate a band or frequencies. Its frequency response has a single pass band bounded by two attenuation bands. (CAS) [13]

(2) (signal-transmission system) A filter that has a single attenuation band, neither of the cutoff frequencies being zero or infinite. *See also:* filter; rejection filter. (SP/PE) 151-1965w, 599-1985w

band gap (charged-particle detectors) (in a semiconductor) The energy difference between the bottom of the conduction band and the top of the valence band. (NPS) 325-1996, 300-1988r

banding insulation (rotating machinery) Insulation between the winding overhang and the binding bands. (PE) [9]

band of regulated voltage (synchronous machines) The band or zone, expressed in percent of the rated value of the regulated voltage, within which the excitation system will hold the regulated voltage of an electric machine during steady or gradually changing conditions over a specified range of load. (PE/EDPG) 421-1972s, 421.1-1986r

band-pass (broadband local area networks) A range of frequencies that express the difference between the lowest and highest frequencies of interest. The band-pass frequencies are normally associated with frequencies that define the half power points. (LM/C) 802.7-1989r

band-pass filter (1) (data transmission) A wave filter that has a single transmission band, neither of the cutoff frequencies being zero or infinite. *See also:* optical filter. (PE) 599-1985w

(2) (broadband local area networks) A filter that allows passage of a desired range of frequencies and attenuates frequencies outside the desired range. (LM/C) 802.7-1989r

band-pass tube *See:* broadband tube.

band pressure level For a specified frequency band, the sound pressure level for the sound contained within the restricted band. The reference pressure must be specified. *Note:* The band may be specified by its lower and upper cutoff frequencies or by its geometric center frequency and bandwidth. The width of the band may be indicated by a modifying prefix,

e.g., octave band (sound pressure) level, half-octave band level, third-octave band level, 50-Hz band level. (PE/T&D) 539-1990

band printer An element printer in which type slugs are carried on a flexible band. (C) 610.10-1994w

band spreading (A) The spreading of tuning indicators over a wide scale range to facilitate tuning in a crowded band of frequencies. *See also:* radio receiver. **(B)** The method of double-sideband transmission in which the frequency band of the modulating wave is shifted upward in frequency so that the sidebands produced by modulation are separated in frequency from the carrier by an amount at least equal to the bandwidth of the original modulating wave, and second-order distortion products may be filtered from the demodulator output. *See also:* radio receiver. (EEC/PE) [119]

band-stop filter (broadband local area networks) A band-stop or band reject filter attenuates a desired range of frequencies and passes frequencies that are higher and lower than the rejection band. (LM/C) 802.7-1989r

band switch A switch used to select any one of the frequency bands in which an electric transmission apparatus may operate. (EEC/PE) [119]

bandwidth (1) (amplitude-modulation broadcast receivers) As applied to the selectivity of a radio receiver, the bandwidth is the width of a selectivity graph at a specified level on the scale of ordinates. (CE) 186-1948w

(2) (device) The range of frequencies within which performance, with respect to some characteristic, falls within specific limits. *See also:* radio receiver. (T&D/PE/VT) 539-1990, [37]

(3) (signal-transmission system) The range of frequencies within which performance, with respect to some characteristic, falls within specific limits. *Notes:* 1. For systems capable of transmitting at zero frequency the frequency at which the system response is less than that at zero frequency by a specified ratio. For carrier-frequency systems: the difference in the frequencies at which the system response is less than that at the frequency of reference response by a specified ratio. For both types of systems, bandwidth is com m only defined at the points where the response is three decibels less than the reference value (0.707 root-mean-square voltage ratio). *See also:* equivalent noise bandwidth. (IE) [43]

(4) (wave) The least frequency interval outside of which the power spectrum of a time-varying quantity is everywhere less than some specified fraction of its value at a reference frequency. Warning: This definition permits the spectrum to be less than the specified fraction within the interval. *Note:* Unless otherwise stated, the reference frequency is that at which the spectrum has its maximum value. 188-1952w

(5) (burst) (burst measurements). The smallest frequency interval outside of which the integral of the energy spectrum is less than some designated fraction of the total energy of the burst. *See also:* burst. (SP) 265-1966w

(6) (of an antenna) The range of frequencies within which the performance of the antenna, with respect to some characteristics, conforms to a specified standard. (AP/ANT) [35], 145-1993

(7) (facsimile) The difference in hertz between the highest and the lowest frequency components required for adequate transmission of the facsimile signals. *See also:* facsimile. (COM) 168-1956w

(8) (excitation systems) The interval separating two frequencies between which both the gain and the phase difference (of sinusoidal output referred to sinusoidal input) remain within specified limits. *Note:* For control systems and many of their components, the lower frequency often approaches zero. *See also:* feedback control system. (IA/IM/PE/ICTL/APP/EDPG/IAC) [69], [120], [93], [60], 421A-1978s

(9) (pulse terminology) The two portions of a pulse waveform that represents the first nominal state from which a pulse departs and to which it ultimately returns. Typical closed-loop frequency response of an excitation control system with the synchronous machine open circuited.

(10) (oscilloscopes) The difference between the upper and lower frequency at which the response is 0.707 (−3 dB) of the response at the reference frequency. Usually both upper and lower limit frequencies are specified rather than the difference between them. When only one number appears, it is taken as the upper limit. *Notes:* 1. The reference frequency shall be at least 20 times greater for the lower bandwidth limit and at least 20 times less for the upper bandwidth limit than the limit frequency. The upper and lower reference frequencies are not required to be the same. In cases where exceptions must be made, they shall be noted. 2. This definition assumes the amplitude response to be essentially free of departures from a smooth roll-off characteristic. 3. If the lower bandwidth limit extends to zero frequency, the response at zero frequency shall be equal to the response at the reference frequency, not −3 dB from it. (IM/HFIM) [40]

(11) (dispersive and nondispersive delay lines) A specified frequency range over which the amplitude response does not vary more than a defined amount. *Note:* Typically, amplitude range is 1 dB bandwidth, 3 dB bandwidth. (UFFC) [22]

(12) (A) (analog computer) Of a signal, the difference between the limiting frequencies encountered in the signal. **(B) (analog computer)** Of a device, the range of frequencies within which performance in respect to some characteristic falls within specific limits. (C) 165-1977

(13) (data transmission) The range of frequencies within which performance, with respect to some characteristic, falls within specific limits. Bandwidth is commonly defined at the points where the response is three decibels less than the reference value. (PE) 599-1985w

(14) (broadband local area networks) The frequency range that a component, circuit, or system passes or uses. For example, voice transmission by telephone requires a bandwidth of about 3000 Hz (3 kHz). A television channel occupies a bandwidth of 6 000 000 Hz (6 MHz). Cable systems occupy 5−300 MHz or higher of the electromagnetic spectrum. (LM/C) 802.7-1989r

(15) The range of frequencies, expressed in hertz, that can pass over a given channel. *See also:* pass band. (C) 610.7-1995

(16) A specified frequency range over which the amplitude response does not vary more than a defined amount. *Note:* Typically, amplitude variations to specify bandwidth are 1 dB or 3 dB (dispersive and nondispersive delay lines). (UFFC) 1037-1992w

(17) (fiber optics) *See also:* fiber bandwidth. 812-1984w

bandwidth allocation protocols The protocols used to allocate bandwidth on a ringlet. This involves inhibiting send-packet transmissions from one or more nodes when another node is being starved (never gets an opportunity to transmit its send packet). (C/MM) 1596-1992

bandwidth balancing mechanism A procedure to facilitate effective sharing of the bandwidth, whereby a node occasionally skips the use of empty Queued Arbitrated (QA) slots. (LM/C) 8802-6-1994

bandwidth, coherent *See:* dispersive bandwidth.

bandwidth, dispersive *See:* dispersive bandwidth.

bandwidth, effective *See:* effective bandwidth.

bandwidth, frequency selective *See:* frequency selective bandwidth.

bandwidth-limited operation (fiber optics) The condition prevailing when the system bandwidth, rather than the amplitude (or power) of the signal, limits performance. The condition is reached when the system distorts the shape of the waveform beyond specified limits. For linear systems, bandwidth-limited operation is equivalent to distortion-limited operation. *See also:* attenuation-limited operation; distortion-limited operation. (Std100) 812-1984w

bandwidth reuse A ring segmentation feature that multiplies the overall data throughput capacity of the spaceborne fiber-optic data bus (SFODB) network by allowing independent

ring segments to use the same dedicated data bandwidth. (C/BA) 1393-1999

bang snuffer (nonlinear, active, and nonreciprocal waveguide components). A switch used in radar receivers to suppress carrier leakage during the transmit period. *See also:* gate. (MTT) 457-1982w

bank (A) (navigation) Lateral inclination of an aircraft in flight. *See also:* list. **(B)** An aggregation of similar devices (for example, transformers, lamps, etc.) connected together and used in cooperation. *Note:* In automatic switching, a bank is an assemblage of fixed contacts over which one or more wipers or brushes move in order to establish electric connections. *See also:* relay level. (AES/EEC/PE/GCS) 172-1983, [119]

(2) (A) One or more disk drives lined up in a row. **(B)** Any group of similar devices that are connected together for use as a single device. For example, a row of light-emitting diodes connected to form a display. **(C)** A contiguous section of addressable memory. For example, eight memory devices, each of which is 64 kB by 1; forming a 64 kB × 8 memory bank. (C) 610.10-1994

bank-and-wiper switch (telephone switching systems) A switch in which an electromagnetic ratchet or other mechanisms are used, first, to move the wipers to a desired group of terminals, and second, to move the wipers over the terminals of this group to the desired bank contacts. (EEC/PE) [119]

banked winding *See:* bank winding.

bank winding (banked winding) A compact multilayer form of coil winding, for the purpose of reducing distributed capacitance, in which single turns are wound successively in each of two or more layers, the entire winding proceeding from one end of the coil to the other, without return. (IM) [120]

bar (1) (illuminating engineering) (of lights) A group of three or more aeronautical ground lights placed in a line transverse to the axis, or extended axis, of the runway. (EEC/IE) [126]

(2) The darker element of a bar code. (PE/TR) C57.12.35-1996

bar code (1) An identification code consisting of a pattern of vertical bars whose width and spacing identifies the item marked. *Note:* The code is meant to be read by an optical input device, such as a bar code scanner. Applications include retail product pricing labels, identification of library documents, and railroad box car identification. *Synonym:* optical bar code. *See also:* universal product code. (C) 610.2-1987, 610.10-1994w

(2) An array of rectangular marks and spaces in a predetermined pattern. (PE/TR) C57.12.35-1996

bar code reader *See:* bar code scanner.

bar code symbol An array of rectangular bars and spaces which are arranged in a predetermined pattern following specific rules to represent elements of data that are referred to as characters. A bar code symbol typically contains a leading quiet zone, start character, data character(s) including a check character (if any), stop character, and a trailing quiet zone. (PE/TR) C57.12.35-1996

bar code scanner An optical scanner used to read a bar-code using reflected light. *Synonym:* bar code reader. *See also:* light pen. (C) 610.10-1994w

bare conductor A conductor having no covering or electrical insulation whatsoever. *See also:* covered conductor. (NESC/NEC) [86]

barehand work A technique of performing live maintenance on energized wires and equipment whereby one or more line workers work directly on an energized part after having been raised and bonded to the same potential as the energized wire or equipment. These line workers are normally supported by an insulating ladder, nonconductive rope, insulating aerial device, helicopter, or the energized wires or equipment being worked on. Most barehand work includes the use of insulating live tools. (T&D/PE) 516-1995

bare lamp (illuminating engineering) A light source with no shielding. *Synonym:* exposed lamp. (EEC/IE) [126]

barette (illuminating engineering) A short bar in which the lights are closely spaced so that from a distance they appear to be a linear light. *Note:* Barettes are usually less than 4.6 m (15 ft) in length. (EEC/IE) [126]

bar generator (television) A generator of pulses that are uniformly spaced in time and are synchronized to produce a stationary bar pattern on a television screen. *See also:* television. 188-1952w

Barker code A binary phase code used for pulse compression, in which a long pulse is divided into n subpulses with the phase of each subpulse being 0 or π radians. Barker coded pulses have the property that after matched filter processing there are $(n - 1)/2$ sidelobes, or $n/2$ for n even, on each side of the main response, each at a voltage level $1/n$ relative to the main response. Barker codes exist with $n = 2, 3, 4, 5, 7, 9$, and 13. *See also:* coded pulse. (AES) 686-1997

Barkhausen-Kurz oscillator An oscillator of the retarding-field type in which the frequency of oscillation depends solely upon the electron transit-time within the tube. *See also:* oscillatory circuit. (AP/ANT) 145-1983s

Barkhausen tube *See:* positive-grid oscillator tube.

barometric altimeter (navigation aid terms) Essentially an aneroid barometer, an instrument which determines atmospheric pressure and is graduated in feet above sea level. (AES/GCS) 172-1983w

barothermograph (navigation aid terms) An instrument which automatically records pressure and temperature. (AES/GCS) 172-1983w

bar pattern (television) A pattern of repeating lines or bars on a television screen. When such a pattern is produced by pulses that are equally separated in time, the spacing between the bars on the television screen can be used to measure the linearity of the horizontal or vertical scanning systems. *See also:* television. (EEC/PE) [119]

bar printer An element printer in which the members of the character set are carried on a type bar. (C) 610.10-1994w

barrel connector A double-sided male coupling that interconnects two coaxial cables. *Contrast:* end connector. (C) 610.7-1995

barrel distortion (1) A defect in a display surface that causes parallel lines to bow away from each other, causing a distorted image. *See also:* pin-cushion distortion. (C) 610.6-1991w

(2) A distortion that results in a progressive decrease in radial magnification in the reproduced image away from the axis of symmetry of the electron optical system. *Note:* For a camera tube, the reproducer is assumed to have no geometric distortion. (ED) 161-1971w

barrel plating Mechanical plating in which the cathodes are kept loosely in a container that rotates. *See also:* electroplating. (EEC/PE) [119]

barrel shifter A circuit which will shift a word a certain number of bits in either direction within a single clock cycle. (C) 610.10-1994w

barretter (waveguide components) A form of bolometer element having a positive temperature coefficient of resistivity which typically employs a power-absorbing wire or thin metal film. (MTT) 147-1979w

barrier (1) A partition for the insulation or isolation of electric circuits or electric arcs. (SWG/PE) C37.40-1993, C37.100-1992

(2) (Class 1E equipment and circuits) A device or structure interposed between redundant Class 1E equipment or circuits, or between Class 1E equipment or circuits and a potential source of damage to limit damage to Class 1E systems to an acceptable level. (PE/NP) 384-1992r

(3) Any product whose sole purpose is to act as an obstruction to the path of the animal. A barrier may have electrical insulating properties, but by design and application, its use is limited to blocking an animal's passage or an animal's contact with energized conductors or equipment. (SUB/PE) 1264-1993

(4) An obstruction composed of suitable construction and materials or a time delay mechanism that imposes a delay for an intended purpose. (PE/NP) 692-1997

barrier grid (charge-storage tubes) A grid, close to or in contact with a storage surface, which establishes an equilibrium voltage for secondary-emission charging and serves to minimize redistribution. *See also:* charge-storage tube. (ED) 158-1962w, [45]

barrier layer (fiber optics) In the fabrication of an optical fiber, a layer that can be used to create a boundary against OH^- ion diffusion into the core. *See also:* core. (Std100) 812-1984w

barrier transaction (1) Transaction that is guaranteed to become visible to other observers after all transactions created before it have become visible. (C/BA) 896.3-1993w

(2) A transaction that ensures that all previously generated write transactions have the global appearance of having been written to memory. This is used before signaling another noncoherent unit, or one in a different coherence domain, that the data is available. In some systems, this is an explicit bus transaction that will be treated specially by the bus bridges (e.g., that may not return a response until all write buffers for the unit are flushed). For buses that delay the write-response until write bus transactions have been adequately completed, a separate barrier transaction is not needed since the effect of a barrier can be achieved by waiting for all outstanding write-responses. *Synonym:* write barrier. (C/MM) 1212.1-1993

barrier wiring techniques (coupling in control systems) Those wiring techniques which obstruct electric or magnetic fields, excluding or partially excluding the fields from a given circuit. Barrier techniques are often effective against electromagnetic radiation also. In general, these techniques change the coupling coefficients between wires connected to a noise source and the signal circuit. *Example*: placement of signal lines within steel conduit to isolate them from an existing magnetic field. *See also:* suppressive wiring techniques; compensatory wiring techniques. (IA/ICTL) 518-1982r

barring hole (rotating machinery) A hole in the rotor to permit insertion of a pry bar for the purpose of turning the rotor slowly or through a limited angle. *See also:* rotor. (PE) [9]

bar, rotor *See:* rotor bar.

bar-type current transformer One that has a fixed and straight single primary winding turn passing through the magnetic circuit. The primary winding and secondary winding(s) are insulated from each other and from the core(s) and are assembled as an integral structure. (PE/TR) C57.13-1993, [57]

base (1) (number system) An integer whose successive powers are multiplied by coefficients in a positional notation system. *See also:* radix; positional notation. (C) 162-1963w

(2) (rotating machinery) A structure, normally mounted on the foundation, that supports a machine or a set of machines. In single-phase machines rated up through several horsepower, the base is normally a part of the machine and supports it through a resilient or rigid mounting to the end shields. (PE) [9]

(3) (electron tube or valve) The part attached to the envelope, carrying the pins or contacts used to connect the electrodes to the external circuit and that plugs into the holder. *See also:* electron tube. (ED) [45], [84]

(4) (electroplating) (basis or base metals) The object upon which the metal is electroplated. *See also:* electroplating. (PE/EEC) [119]

(5) (transistor) A region that lies between an emitter and a collector of a transistor and into which minority carriers are injected. *See also:* transistor. (ED/IA) 216-1960w, [12]

(6) (high-voltage fuse) The supporting member to which the insulator unit or units are attached. (SWG/PE) C37.40-1993, C37.100-1992

(7) (pulse terminology) The two portions of a pulse waveform which represents the first nominal state from which a pulse departs and to which it ultimately returns. (IM/WM&A) 194-1977w

base active power (synchronous generators and motors) The total (generator) output or (motor) input power at base voltage and base current with a power factor of unity.

base address (1) (computers) An address used as a reference point to which a relative address is added to determine the address of the storage location to be accessed. *See also:* indexed address; relative address; self-relative address. (C) 610.12-1990, 610.10-1994w

(2) A given address from which an absolute address is derived by combination with a relative address. *Synonyms:* reference address; presumptive address; constant address. (C) [20], 610.10-1994w, [85]

base address register A register used in an operand field of a processor instruction with a specified offset, the sum of which points to a data value within a data structure to be used by the instruction. *See also:* base register. (C) 610.10-1994w

base ambient temperature (power distribution, underground cables) (cable or duct) The no-load temperature in a group with no load on any cable or duct in the group. (PE) [4]

base apparent power (1) (ac rotating machinery) (basic per-unit quantities for ac rotating machines) A reference value expressing an electrical power rating of the machine. *Notes:* 1. Base apparent power may be either input or output power, and the numerical value may be either real power—watts (W)—or total apparent electrical power—voltamperes (VA)—depending upon machine type. Base apparent power is usually expressed in voltamperes, but any consistent set of units may be used. For synchronous generators, induction generators, and synchronous motors, base apparent power is the total apparent electrical at rated voltage and rated current. In induction motors (preferred method), base apparent power is numerically equal to the rated power output. For induction motors (alternate method), base apparent power is the total apparent electrical power at rated voltage and rated current. 2. When the alternate method is used it should be identified as "input voltampere based." (EM/PE) 86-1987w

(2) (synchronous generators and motors) The total rated apparent power at rated voltage and rated current. *Note:* Base apparent power is usually expressed in volt-amperes, but any consistent set of units may be used. 86-1961

base assertion An assertion that is required to be tested for required features and for implemented conditional feaures. (C/PA) 1326.2-1993w, 1328-1993w, 13210-1994, 2003.1-1992, 1328.2-1993w

baseband (carrier or subcarrier wire or radio transmission system) The band of frequencies occupied by the signal before it modulates the carrier (or subcarrier) frequency to form the transmitted line or radio signal. *Note:* The signal in the baseband is usually distinguished from the line or radio signal by ranging over distinctly lower frequencies, which at the lower end relatively approach or may include direct current (zero frequency). In the case of a facsimile signal before modulation on a subcarrier, the baseband includes direct current. *See also:* facsimile transmission. (BT/COM/PE/AV) [34], 168-1956w, 599-1985w

baseband coaxial system (1) A baseband system employing coaxial cables as a data transmission medium. At any point on the medium only one information signal at a time can be present without disruption. *Contrast:* baseband twisted-pair system. (C) 610.7-1995

(2) A system whereby information is directly encoded and impressed upon the transmission medium. At any point on the medium only one information signal at a time can be present without disruption. (C/LM) 802.3-1998

baseband-multiplexed (data transmission) The frequency band occupied by the aggregate of the transmitted signals applied to the facility interconnecting the multiplexing and line equipment. The multiplex baseband is also defined as the frequency band occupied by the aggregate of the received signals obtained from the facility interconnecting the line and the multiplex equipment. (PE) 599-1985w

baseband response function *See:* transfer function.

baseband signaling The transmission of a signal at its original frequency, that is, not changed by modulation. *Note:* It can be an analog or a digital signal. *Contrast:* broadband signaling. (C) 610.7-1995

baseband system A system used for networking in which information is encoded, modulated, and impressed directly on the transmission medium. *Note:* Generally used for limited distance. *Contrast:* broadband system. *See also:* baseband twisted-pair system; baseband coaxial system. (C) 610.7-1995

baseband twisted-pair system A baseband system employing twisted-pair wiring cables as the transmission medium. *Contrast:* baseband coaxial system. (C) 610.7-1995

Base Client Port An instance of a subclass of `IEEE1451_BaseClientPort`. (IM/ST) 1451.1-1999

base complement *See:* radix complement.

base current (ac rotating machinery) (basic per-unit quantities for ac rotating machines) The value of phase current corresponding to the value of base apparent power, base voltage, and the number of phases. *Note:* Base current is usually expressed in amperes, but any consistent set of units may be used. Base current equals the base apparent power divided by the product of base voltage and the number of phases. (EM/PE) 86-1987w

base electrode (transistor) An ohmic or majority-carrier contact to the base region. (IA) [12]

base font The font that is used by a printer or other peripheral device when no font is specified. *Synonym:* default font. (C) 610.10-1994w

base group address The group address (GP) value that is used for geographical addressing on a segment. Normally the lowest GP assigned to the segment. (NID) 960-1993

base impedance (ac rotating machinery) (basic per-unit quantities for ac rotating machines) The value of impedance corresponding to the value of the base voltage divided by the value of the base current. *Note:* Base impedance is usually expressed in ohms (Ω), but any consistent set of units may be used. (EM/PE) 86-1987w

basic insulation Insulation applied to live parts to provide basic protection against electric shock. (EMB/MIB) 1073.4.1-2000

base light (illuminating engineering) A uniform, diffuse illumination approaching a shadowless condition, which is sufficient for a television picture of technical acceptability, and which may be supplemented by other lighting. (EEC/IE) [126]

baseline (1) (germanium gamma-ray detectors) (x-ray energy spectrometers) (charged-particle detectors) (at pulse peak) The instantaneous value that the voltage would have had at the time of the pulse peak in the absence of that pulse. (NPS/NID) 759-1984r

(2) (navigation) The line joining the two points between which electrical phase or time is compared in determining navigation coordinates. For two ground stations, this is normally the great circle joining the two stations, and, in the case of a rotation collector system, it is the line joining the two sides of the collector. (AES/GCS) 172-1983w

(3) (pulse techniques) That amplitude level from which the pulse waveform appears to originate. (IM/HFIM) [40]

(4) (A) (software) A specification or product that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development, and that can be changed only through formal change control procedures. **(B) (software)** A document or a set of such documents formally designated and fixed at a specific time during the life cycle of a configuration item. *Note:* Baselines, plus approved changes from those baselines, constitute the current configuration identification. *See also:* product baseline; functional baseline; developmental configuration; allocated baseline. **(C) (software)** Any agreement or result designated and fixed at a given time, from which changes require justification and approval. (C) 610.12-1990

(5) (charged-particle detectors) The average of the levels from which a pulse departs and to which it returns in the absence of a following overlapping pulse. (NPS) 300-1988r, 325-1996

(6) (radiation instrumentation) The part of the pulse-height distribution lying underneath a peak, including contributions associated with the source, detector, and measuring conditions that affect the spectral shape. (NI) N42.14-1991

(7) The agreed specification, or software item, which has been uniquely identified and becomes the focus for further development, and which can only be altered under strict control procedures. (C/SE) 1298-1992w

(8) A work product that has been formally reviewed and accepted by the involved parties. A baseline should be changed only through formal configuration management procedures. Some baselines may be project deliverables while others provide the basis for further work. (C/SE) 1058-1998

(9) A specification or system that has been formally reviewed and agreed upon, that thereafter serves as the basis for further development and can be changed only through formal change control procedures. (C/SE) 1233-1998

baseline clipper-intensifier (spectrum analyzer) A means of changing the relative brightness between the signal and baseline portion of the display. (IM) 748-1979w

baseline data (1) (electric pipe heating systems) Information retained for the purpose of evaluation against repeated information in order to establish trends in parameters. (PE/EDPG) 622-1979s

(2) (nuclear power generating station) Reference data that may be used to show acceptable functioning of the equipment during qualification testing. (PE/NP) 649-1980s

(3) Initial data needed to show acceptable functioning of the equipment during qualification testing. (SWG/PE) C37.100-1992

baseline delay (navigation aid terms) The time interval needed for a signal from a loran master station to travel to the slave station. (AES/GCS) 172-1983w

baseline management In configuration management, the application of technical and administrative direction to designate the documents and changes to those documents that formally identify and establish baselines at specific times during the life cycle of a configuration item. (C) 610.12-1990

baseline offset (pulse techniques) The algebraic difference between the amplitude of the baseline and the amplitude reference level. *See also:* pulse. (IM/HFIM) [40]

baseline overshoot *See:* pulse distortion.

baseline restoration (x-ray energy spectrometers) Appropriate linear or nonlinear technique(s), or their combination, used to accelerate the return of a voltage to its baseline. (NPS/NID) 759-1984r

baseline restorer A circuit that rapidly restores the baseline following an amplifier's output pulse (or train of pulses) to the level that existed before the pulse. (NPS) 325-1996

Base Link Code Word The first 16-bit message exchanged during IEEE 802.3 Auto-Negotiation. (C/LM) 802.3-1998

base load (power operations) (electric power utilization) The minimum load over a given period of time. *See also:* generating station. (PE/PSE) 858-1987s, 346-1973w

base load control (electric generating unit or station) For an electric generating unit or station, a mode of operation in which the unit or station generation is held constant. (PE/PSE) 94-1991w

base magnitude (pulse terminology) The magnitude of the base as obtained by a specified procedure or algorithm. (IM/WM&A) 194-1977w

basement The rock region underlying the overburden largely comprising aged rock types, often crystalline and of low conductivity. (COM) 365-1974w

base-minus-one complement *See:* diminished-radix complement.

base-minus-ones complement A number representation that can be derived from another by subtracting each digit from one less than the base. Nines complements and ones complements are base-minus-ones complements. (C) 162-1963w

base-mounted electric hoist A hoist similar to an overhead electric hoist except that it has a base or feet and may be mounted overhead, on a vertical plane, or in any position for which it is designed. *See also:* hoist. (EEC/PE) [119]

basename The final, or only, filename in a pathname. (C/PA) 9945-2-1993

base notation *See:* radix notation.

base number *See:* radix.

Base Page *See:* Base Link Code Word.

base page address (microprocessor assembly language) An address of reduced size which references a pre-specified portion of memory (which might be an on-board RAM). (C/MM) 695-1985s

base point *See:* radix point.

Base Port An instance of a subclass of `IEEE1451_BasePort`. (IM/ST) 1451.1-1999

Base Publisher Port An instance of a subclass of `IEEE1451_BasePublisherPort`. (IM/ST) 1451.1-1999

base rate (1) (telephone switching systems) A fixed amount charged each month for any one of the classes-of-service that is provided to a customer. (COM) 312-1977w

(2) The lowest data rate used by the Serial Bus in a particular cable environment. In multiple speed environments, all nodes have to be able to receive and transmit at the base rate. The base rate for the cable environment is 98.304 MHz × 100 ppm. (C/MM) 1394-1995

(3) The lowest data rate used by Serial Bus in a backplane or cable environment. In multiple speed environments, all nodes are able to receive and transmit at the base rate. The base rate for the cable environment is 98.304 MHz ± 100 ppm. (C/MM) 1394a-2000

base-rate area (telephone switching systems) The territory in which the tariff applies. (COM) 312-1977w

base region (transistor) The interelectrode region of a transistor into which minority carriers are injected. *See also:* transistor. (EEC/PE) [119]

base register *See:* base address register.

base relation A relation that is not derivable from other base relations in a given data-base. *Contrast:* derived relation. (C) 610.5-1990w

base repetition rate *See:* basic repetition frequency.

base resistivity The electrical resistivity of the material composing the base of a semiconductor device. (AES/SS) 307-1969w

base speed (1) (ac rotating machinery) (basic per-unit quantities for ac rotating machines) The rated synchronous speed. *Note:* Synchronous speed equals 120 times the value of line frequency, divided by the number of poles. Base speed is usually expressed in revolutions per minute (r/min), but any consistent set of units may be used. (EM/PE) 86-1987w

(2) The lowest speed obtained at rated load and rated voltage at the specified temperature rise. (IA/MT) 45-1998

base standard (1) An approved international standard, technical report, ITU-T Recommendation, or national standard. (C/PA) 14252-1996

(2) The standard for which a test method specification is written and/or a test method implementation is developed. (C/PA) 2003-1997

base station (mobile communication) A land station in the land-mobile service carrying on a radio communication service with mobile and fixed radio stations. *See also:* mobile communication system. (VT) [37]

base torque (ac rotating machinery) (basic per-unit quantities for ac rotating machines) The value of torque corresponding to the value of base apparent power and base synchronous speed. The value of base torque in pound-force feet (lbf · ft) is 7.043 times the value of the base apparent power—in voltamperes (VA), divided by the value of base speed in revolutions per minute (r/min). The value of base torque in newton meters per radian (N · m/rad) is 9.549 times the value of the base apparent power (in voltamperes), divided by the value of the base speed in revolutions per minute. *Note:* Base torque has conventionally been expressed in pound-force feet or in newton meters (N · m). To avoid confusion with the unit of energy, which is also the newton meter, the designation newton meter per radian is recommended. (EM/PE) 86-1987w

Base Transducer Block An instance of a subclass of the class `IEEE1451_BaseTransducerBlock`. (IM/ST) 1451.1-1999

base value (rotating machinery) A normal or nominal or reference value in terms of which a quantity is expressed in per unit or percent. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

base voltage (ac rotating machinery) (basic per-unit quantities for ac rotating ma-chines) The rated phase voltage. *Note:* The value of the base voltage is the value of the rated line voltage for a delta-connected machine, and is the value of the rated line voltage divided by $\sqrt{3}$ for a wye-connected machine. Base voltage is usually expressed in volts (V), but any consistent set of units may be used. (EM/PE) 86-1987w

BASIC *See:* Beginner's All-purpose Symbolic Instruction Code.

basic access method (BAM) An access method in which each input or output statement invokes a corresponding machine operation. For example, when reading a file with 10 records, exactly 10 READ operations will be invoked. *Contrast:* direct access method. *See also:* basic partitioned access method; basic sequential access method; basic indexed sequential access method; basic direct access method. (C) 610.5-1990w

basic alternating voltage (power rectifier) The sustained sinusoidal voltage that must be impressed on the terminal of the alternating-current winding of the rectifier transformer, when set on the rated voltage tap, to give rated output voltage at rated load with no phase control. *See also:* rectification. (EEC/PE) [119]

basic control element (thyristor) The basic thyristor or thyristor/diode circuit configuration, or both, employed as the principal means of power control. (IA/IPC) 428-1981w

basic current range (watthour meter) The current range of a multirange standard watthour meter designated by the manufacturer for the adjustment of the meter (normally the five-ampere range). (ELM) C12.1-1982s

BASIC definitions (real-time BASIC for CAMAC) The syntax definitions make use of a metalanguage that is the usual extension to BNF notation. The meta-language contains symbols such as { or ::= or] or < which do not occur in BASIC. In addition, the meta-language contains words in angle brackets; for example, <numeric-expression>, where the meta-language symbols < and > indicate that the word between (in this case numeric-expression) is in the meta-language, not in BASIC. The symbols of the meta-language are listed below, together with their meanings. Any other symbols not enclosed by angle brackets stand for themselves and are part of BASIC.

::=	means is defined by. It separates the left part from the right part of a definition
<	opens a character string that constitutes a meta-language symbol
>	terminates a character string that constitutes a meta-language symbol
/	separates alternatives in the right part of a definition

[	opens an option—that is, the syntactic units enclosed by square brackets are optionally present
]	terminates an option
{	opens a group of elements that are to be considered a single syntactic unit for the purposes of the definition
}	terminates a group of elements to be considered as a single syntactic unit
. . .	means that the preceding syntactic unit may be repeated zero or more times
.is.	used in place of ::= in the formal semantic definition of a terminal symbol

Notes: 1. Concatenation takes precedence over alternation; for example: F<integer>/<null> is equivalent to {F<integer>}/<null>. 2. The statement number is omitted in the formal definitions. It is mandatory for statements that form part of a program, but it may be omitted to indicate immediate mode execution of single statements in the usual way. 3. Tabulation, blanks, and new lines are used in the syntax definitions to make them easier to read, but they have no other significance. A program must follow the rules for the implementation concerning blanks. (NPS) 726-1982r

basic device *See:* common device.

basic direct access method (BDAM) A variation on the basic access method that allows direct access to the data. (C) 610.5-1990w

basic element (measurement system) A measurement component or group of components that performs one necessary and distinct function in a sequence of measurement operations. *Note:* Basic elements are single-purpose units and provide the smallest steps into which the measurement sequence can be classified conveniently. Typical examples of basic elements are: a permanent magnet, a control spring, a coil, and a pointer and scale. *See also:* measurement system. (EEC/PE) [119]

basic encoding rules A specific set of rules used to encode ASN.1 values as strings of octets. (C/PA) 1327.2-1993w, 1326.2-1993w, 1224.2-1993w, 1328.2-1993w

basic frequency Of an oscillatory quantity having sinusoidal components with different frequencies, the frequency of the component considered to be the most important. *Note:* In a driven system, the basic frequency would, in general, be the driving frequency, and in a periodic oscillatory system, it would be the fundamental frequency. (SP) [32]

basic functions (controller) The functions of those of its elements that govern the application of electric power to the connected apparatus. *See also:* electric controller. (IA/ICTL/IAC) [60]

basic impulse insulation level (BIL, bil) (1) (electric power) Reference levels expressed in impulse crest voltage with a standard wave not longer than 1.5×40 μs wave. *See also:* insulation. (SWG/SPD/PE) 28-1974, 32-1972r, [8], [98], [99], [100]

(2) (surge arresters) (rated impulse withstand voltage) A reference impulse insulation strength expressed in terms of the crest value of withstand voltage of a standard full impulse voltage wave. (SWG/PE/SPD/T&D/SWG-OLD) C37.40-1993, C62.11-1993s, C62.1-1981s, C37.100-1992, 1410-1997

(3) (outdoor apparatus bushings) A reference insulation level expressed as the impulse crest voltage of the 1.2×50 microsecond wave which the bushing will withstand when tested in accordance with specified conditions. (PE/TR) 21-1976

(4) (power cable systems) Impulse voltage that electrical equipment is required to withstand without failure or disruptive discharge when tested under specified conditions of temperature and humidity. Basic impulse levels (BILs) are designated in terms of the crest voltage of a $1.2 \cdot 50$ μs full-wave impulse voltage test. (PE/IC) 400-1991

basic indexed sequential access method (BISAM) A variation on the basic access method that allows indexed sequential access to the data. (C) 610.5-1990w

Basic Interoperability Data Model (BIDM) Defines the minimal set of information that reuse libraries should be able to exchange about assets in order to interoperate. (C/SE) 1420.1-1995

Basic Language for Implementation of System Software A programming language designed for writing systems software such as compilers and operating systems. (C) 610.13-1993w

basic lightning impulse insulation level (BIL) (1) (power and distribution transformers) A specific insulation level expressed in kilovolts of the crest value of a standard lightning impulse. (PE/TR) C57.13-1993, C57.12.80-1978r

(2) The electrical strength of insulation expressed in terms of the crest value of a standard lightning impulse under standard atmospheric conditions. BIL may be expressed as either statistical or conventional. (PE/C) 1313.1-1996

(3) (A) The electrical strength of insulation expressed in terms of the crest value of a standard lightning impulse under standard atmospheric conditions. BIL may be expressed as either statistical or conventional. **(B)** A specific insulation level expressed as the crest value of a standard lightning impulse.

— **BIL (conventional):** Applicable specifically to non-self-restoring insulations. The crest value of a standard lightning impulse for which the insulation does not exhibit disruptive discharge when subjected to a specific number of applications of this impulse under specified conditions.

— **BIL (statistical)**: Applicable specifically to self-restoring insulations. The crest value of a standard lightning impulse for which the insulation exhibits a 90% probability of withstand (or a 10% probability of failure) under specified conditions.

(SPD/PE) C62.11-1999

basic metallic rectifier One in which each rectifying element consists of a single metallic rectifying cell. *See also:* rectification. (EEC/PE) [119]

basic numbering plan USA (telephony) The plan whereby every telephone station is identified for nationwide dialing by a code for routing and a number of digits. (COM) [48]

basic operating unit (A) A single vehicle designed for independent operation. **(B)** A permanent or semipermanent combination, designed for independent operation, consisting of two or more vehicles of one or more types. (VT/RT) 1477-1998, 1473-1999, 1475-1999, 1474.1-1999

basic part (electric and electronics parts and equipment) One piece, or two or more pieces joined together, which are not normally subject to disassembly without destruction of designed use. 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. Typical examples: electron tube, resistor, relay, power transformer, microelectronic device. (GSD) 200-1975w

basic partitioned access method (BPAM) A variation on the basic access method that allows partitioned access to the data. (C) 610.5-1990w

basic planned derating (electric generating unit reliability, availability, and productivity) The planned derating that is originally scheduled and of predetermined duration. *See also:* planned derating. (PE/PSE) 762-1987w

basic planned outage (electric generating unit reliability, availability, and productivity) The planned outage state that is originally scheduled and of a predetermined duration. (PE/PSE) 762-1987w

basic reference designation (electric and electronics parts and equipment) The simplest form of a reference designation, consisting only of a class letter portion and a number (namely, without mention of the item within which the reference-designated item is located). The reference designation for a unit consists of only a number. (GSD) 200-1975w

basic reference standards (metering) Those standards with which the values of the electrical units are maintained in the laboratory, and which serve as the starting point of the chain of sequential measurements carried out in the laboratory. (ELM) C12.1-1982s

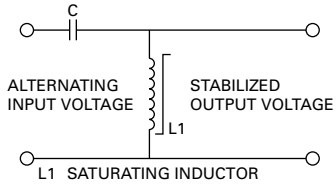
basic regular expression (BRE) A pattern (sequence of characters or symbols) constructed according to the rules defined in POSIX.2. (C/PA) 9945-2-1993

basic repetition frequency (navigation) (loran) The lowest pulse repetition frequency of each of the several sets of closely spaced repetition frequencies employed. (AES/GCS) 172-1983w

basic repetition rate *See:* basic repetition frequency.

basic sequential access method (BSAM) A variation of the basic access method that allows sequential access to the data. *See also:* indexed sequential access method; virtual sequential access method. (C) 610.5-1990w

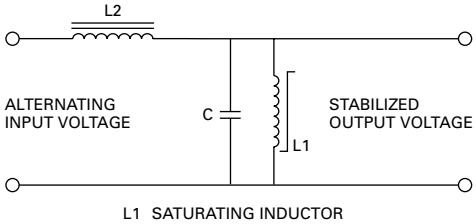
basic series ferroresonant voltage regulator This regulator consists of a series connection of a saturating inductor and a capacitor connected across the source. The load is inductively or conductively coupled to the saturating inductor. See the figure below. *Note:* Applications of this circuit are limited by the requisite large ratio of reactive to real powers.



Basic series ferroresonant voltage regulator

Basic series ferroresonant voltage regulator (PEL) 449-1998

basic series parallel ferroresonant voltage regulator This regulator consists of an essentially linear inductor connected in series with a parallel combination of a nonlinear inductor and a capacitor. This combination is connected across the source as shown in the figure below. Load voltage is derived by inductive or conductive coupling to the nonlinear inductor.



Basic series parallel ferroresonant voltage regulator

Basic series parallel ferroresonant voltage regulator (PEL) 449-1998

basic service area (BSA) The conceptual area within which members of a basic service set (BSS) may communicate. (C/LM) 8802-11-1999

basic service set (BSS) A set of stations controlled by a single coordination function. (C/LM) 8802-11-1999

basic service set basic rate set The set of data transfer rates that all the stations in a BSS will be capable of using to receive frames from the wireless medium (WM). The BSS basic rate set data rates are preset for all stations in the BSS. (C/LM) 8802-11-1999

basic status The capability of an LLC to send or receive a PDU containing an information field. (C/LM/CC) 8802-2-1998

basic switching impulse insulation level (BSL) (1) (power and distribution transformers) A specific insulation level expressed in kilovolts of the crest value of a standard switching impulse. (PE/TR) C57.12.80-1978r

(2) The electrical strength of insulation expressed in terms of the crest value of a standard switching impulse. BSL may be expressed as either statistical or conventional. (PE/C) 1313.1-1996

(3) (A) The electrical strength of insulation expressed in terms of the crest value of a standard switching impulse. BSL may be expressed as either statistical or conventional. **(B)** A specific insulation level expressed as the crest value of a standard switching impulse.

— **BSL (conventional)**: Applicable specifically to non-self-restoring insulations. The crest value of a standard switching impulse for which the insulation does not exhibit disruptive discharge when subjected to a specific number of impulses under specified conditions.

— **BSL (statistical)**: Applicable specifically to self-restoring insulations. The crest value of a standard switching impulse for which the insulation exhibits a 90% probability of withstand (or a 10% probability of failure) under specified conditions.

(SPD/PE) C62.11-1999

basic voltage range (watthour meter) The voltage range of a multirange standard watthour meter designated by the manufacturer for the adjustment of the meter (normally the 120-volt range). (ELM) C12.1-1982s

basket *See:* bucket; woven wire grip.

bass boost An adjustment of the amplitude-frequency response of a system or transducer to accentuate the lower audio frequencies. (EEC/PE) [119]

batch Pertaining to a system or mode of operation in which inputs are collected and processed all at one time, rather than being processed as they arrive, and a job, once started, proceeds to completion without additional input or user interaction. *Contrast:* real time; interactive; conversational. (C) 610.12-1990

batch administrator A person who is authorized to use all restricted batch services. (C/PA) 1003.2d-1994

batch client A computational entity that utilizes batch services by making requests of batch servers. Batch clients often provide the means by which users access batch services, although a batch server may act as a batch client by virtue of making requests of another batch server. *Synonym:* client. (C/PA) 1003.2d-1994

Batcher's parallel sort (data management) A merge sort in which corresponding items in two ordered subsets are simultaneously compared and, if necessary, exchanged; the resulting subsets are divided in half and interleaved with one another, and these steps are repeated until the merge is complete. *Note:* This algorithm is particularly appropriate for parallel processing. *Synonyms:* odd-even sort; merge exchange sort. *See also:* bitonic sort. (C) 610.5-1990w

batch job A set of computational tasks for a computing system. Batch jobs are managed by batch servers. Once created, a batch job may be executing or pending execution. A batch job that is executing has an associated session leader (a process) that initiates and monitors the computational tasks of the job. *Synonym:* job. (C/PA) 1003.2d-1994

batch job attribute A named data type whose value affects the processing of a batch job. The values of the attributes of a batch job affect the processing of that job by the batch server that manages the job. The attributes defined for a batch job are called the batch job attributes. (C/PA) 1003.2d-1994

batch operator A person who is authorized to use some, but not all, restricted batch services. *Synonym:* operator. (C/PA) 1003.2d-1994

batch node A host containing part or all of a batch system. A *batch node* is a host meeting at least one of the following conditions:

— Is capable of executing a batch client
— Contains a routing queue
— Contains an execution queue

Synonym: node. (C/PA) 1003.2d-1994

batch queue A manageable object that represents a set of batch jobs and is managed by a single batch server. *Note:* Each batch job managed by a batch server is a member of a single batch queue managed by that server. Such a set of batch jobs is called a queue largely for historical reasons. Jobs are selected from the queue for execution based on attributes such as priority, resource requirements, and hold conditions. *Synonym:* queue. (C/PA) 1003.2d-1994

batch queue attribute A named data type whose value affects the processing of all jobs that are members of the queue. A batch queue has attributes that affect the processing of jobs that are members of the queue. The attributes defined for a batch queue are called the batch queue attributes. (PA/C) 1003.2d-1994

batch server A computational entity that provides batch services. *Synonym:* server. (C/PA) 1003.2d-1994

batch service Computational and organizational services performed by a batch system on behalf of batch jobs. Batch services are of two types: *requested* and *deferred*. (C/PA) 1003.2d-1994

batch server name A string that identifies a specific server in a network. A string of characters in the portable character set used to specify a particular server in a network. (C/PA) 1003.2d-1994

batch system A collection of one or more batch servers. *Synonym:* system. (C/PA) 1003.2d-1994

batch user A person who is authorized to make use of batch services. (C/PA) 1003.2d-1994

bathtub curve (software) A graph of the number of failures in a system or component as a function of time. The name is derived from the usual shape of the graph: a period of decreasing failures (the early-failure period), followed by a relatively steady period (the constant-failure period), followed by a period of increasing failures (the wearout-failure period). (C) 610.12-1990

bath voltage The total voltage between the anode and cathode of an electrolytic cell during electrolysis. It is equal to the sum of

a) equilibrium reaction potential,
b) IR drop,
c) anode polarization, and
d) cathode polarization.

See also: tank voltage; electrolytic cell. (EEC/PE) [119]

bathythermograph (navigation aid terms) A recording thermometer for determining the temperature of the sea at various depths. (AES/GCS) 172-1983w

battery (primary or secondary) Two or more cells electrically connected for producing electric energy. [Common usage permits this designation to be applied also to a single cell used independently. In this document, IEEE Std 100, unless otherwise specified, the term "battery" will be used in this dual sense.] (IA/PE/EEC/PSE) 446-1995, [119]

battery-and-ground pulsing (telephone switching systems) Dial pulsing using battery-and-ground signaling. (COM) 312-1977w

battery-and-ground signaling (telephone switching systems) A method of loop signaling, used to increase the range, in which battery and ground at both ends of the loop are poled oppositely. (COM) 312-1977w

battery cabinet A structure used to support and enclose a group of cells. (SB) 1188-1996

battery carry-over (magnetic tape pulse recorders for electricity meters) A device that maintains actual time of the interval recording from a standby power source for a specified period when the principal power source is inoperative. (ELM) C12.14-1982r

battery charger As defined in IEEE Std 602-1996, static equipment that is capable of restoring and maintaining the charge in a storage battery. (IA/PSE) 602-1996

battery chute A small cylindrical receptacle for housing track batteries and so set in the ground that the batteries will be below the frost line. (EEC/PE) [119]

battery-current regulation (generator) That type of automatic regulation in which the generator regulator controls only the current used for battery charging purposes. *See also:* axle-generator system. (EEC/PE) [119]

battery duty cycle The loads a battery is expected to supply for specified time periods. (SCC29) 485-1997

battery, electric *See:* electric battery.

battery eliminator A device that provides direct-current energy from an alternating-current source in place of a battery. *See also:* battery. (PE) 599-1985w

battery feed (telephone loop performance) The direct current (dc) supply and coupling circuit powering the loop. (COM/TA) 820-1984r

battery, power station *See:* power station battery.

battery rack (A) (lead storage batteries) A structure used to support a group of cells. **(B) (lead storage batteries) (nuclear power generating station)** A rigid structure used to accommodate a group of cells. (PE/IA/SB/EDPG/PSE) 450-1987, 446-1995, 1188-1996

battery voltage Voltage that is provided within specified limits by the low voltage power supply (or, in its absence, the control voltage on-board battery). (VT) 1475-1999

baud (1) (supervisory control, data acquisition, and automatic control) The signaling speed, that is, keying rate of the modem. The signaling speed in baud is equal to the reciprocal of the shortest element duration in seconds to be transmitted. The terms *bit rate* and *baud* are not synonymous and shall not be interchanged in usage. Preferred usage is bit rate, with baud used only when the details of a communication modem or channel are specified. (PE/SUB/SWG-OLD) C37.100-1992, C37.1-1994

(2) (general) A unit of signalling speed equal to the number of discrete conditions or signal events per second. For example, one baud equals one half dot cycle per second in Morse code, one bit per second in a train of binary signals, and one 3-bit value per second in a train of signals each of which can assume one of 8 different states. *See also:* telegraphy. (C) [85]

(3) (telegraphy) The unit of telegraph signaling speed, derived from the duration of the shortest signaling pulse. A telegraphic speed of one baud is one pulse per second. *Note:* The term "unit pulse" is often used for the same meaning as "baud." A related term, "dot cycle," refers to an ON-OFF or MARK-SPACE cycle in which both mark and space intervals have the same length as the unit pulse. (AP/ANT) 145-1983s

(4) (data transmission) A unit of signaling speed equal to the number of discrete conditions or signal events per second, or the reciprocal of the time of the shortest signal element in a character.local area networks. (LM/PE/C) 599-1985w, 8802-12-1998

(5) A unit of signaling speed, expressed as the number of times per second the signal can change the electrical state of the transmission line or other medium. *Note:* Depending on the encoding strategies, a signal event may represent a single bit, more, or less, than one bit. *Contrast:* bits per second; bit rate. (C/Std100/LM/EMB/MIB) 610.7-1995, 610.10-1994w, 802.3-1998, 1073.3.2-2000

Baudot code A code for the transmission of data in which five data bits represent one character. (C) 610.7-1995

baud rate (1) The rate of signal transitions per unit time, usually expressed in baud. *Note:* Often confused with bit rate. *Contrast:* bit rate; bits per second. *See also:* data signaling rate. (C) 610.7-1995, 610.10-1994w

(2) For a given encoding scheme and data rate, the maximum number of signal transitions transmitted on a serial interface in a 1 s period. (EMB/MIB) 1073.4.1-2000

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

bay *See:* patch bay; electronic analog computer.

Bayliss distribution (A) Circular. A continuous distribution over a circular planar aperture that yields a difference pattern with a sidelobe structure similar to that of a sum pattern produced by a Taylor circular distribution. **(B)** Linear. A continuous distribution of a line source that yields a difference pattern with a side-lobe structure similar to that of a sum pattern produced by a Taylor linear distribution. (AP/ANT) 145-1993

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

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

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

B-box *See:* index register.

BCC *See:* bedside communications controller; block check character.

BCD *See:* binary coded decimal; borderline between comfort and discomfort.

BCD real data *See:* binary coded decimal real data.

B channel A channel that provides 64 kbit/s, full-duplex, isochronous access. B channels support all ISDN bearer services. The information on a B channel may be nonswitched or either circuit or packet switched depending on user request and network capabilities. (C/LM/COM) 802.9a-1995w, 8802-9-1996

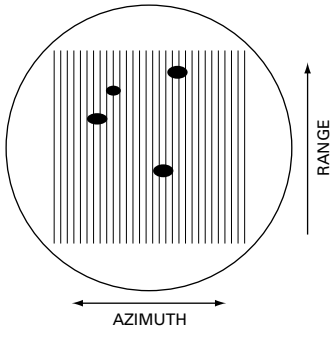
BCNF *See:* Boyce/Codd Normal form.

***b* contact** A contact that is closed when the main device is in the standard reference position and that is open when the device is in the opposite position. *Notes:* 1. *b* contact has general application. However, this meaning for back 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 *b*. *See also:* standard reference position. (SWG/PE) C37.100-1992

BCPL *See:* Bootstrap Combined Programming Language.

BDAM *See:* basic direct access method.

B-display A rectangular display in which each target appears as an intensity-modulated blip, with azimuth indicated by the horizontal coordinate and range by the vertical coordinate.



B-display

(AES) 686-1997

BDP *See:* business data processing.

beacon (1) (A) (navigation aid terms) A fixed aid to navigation. *See also:* racon; fan-marker beacon; marker beacon; z-marker beacon; lighted beacon; radio beacon; identification beacon; landing beacon; radar beacon; homing beacon. **(B) (navigation aid terms)** An unlighted aid to navigation. *See also:* marker beacon; radio beacon; fan-marker beacon; homing beacon; radar beacon; lighted beacon; landing beacon; identification beacon; z-marker beacon; racon. **(C) (navigation aid terms)** Anything serving as a signal or conspicuous indication, either for guidance or warning. *See also:* radio beacon; lighted beacon; landing beacon; identification beacon; z-marker beacon; marker beacon; racon; fan-marker beacon; radar beacon; homing beacon. **(D) (navigation aid terms)** In radar, a transponder used for replying to interrogations from a radar. *See also:* radar beacon; homing beacon; fan-marker beacon; radio beacon; z-marker beacon; landing beacon; lighted beacon; identification beacon; marker beacon; racon. (AES/GCS) 172-1983 **(2)** A roadside system at which dedicated short-range communications (DSRC) can be accomplished. A beacon typically consists of a reader and an antenna. (SCC32) 1455-1999 **(3)** *See also:* radar beacon. (AES) 686-1997

beacon equation An equation that gives the maximum detection range of a transponder or secondary radar as a function of system parameters for a given set of conditions. It is the one-way counterpart of the two-way radar equation. (AES) 686-1997

beaconing A ring state that occurs when a station on the ring has detected a ring failure. The frame transmitted by the station to alert the other stations on the ring of the failure is called a beacon frame. (C/LM) 8802-5-1998

beacon receiver A radio receiver for converting waves, emanating from a radio beacon, into perceptible signals. *See also:* radio beacon; radio receiver. (EEC/PE) [119]

beacon reconfigure A beacon (Type 1) used in the reconfiguration protocols. (LM/C) 802.5c-1991r

beacon service table (BST) A data structure created and transmitted by a beacon. It contains data such as the application identifier (AID) relevant for initiating communication with an onboard equipment (OBE) transponder. The reception of the BST by an OBE transponder results in a vehicle service table (VST) being sent back to the beacon. (SCC32) 1455-1999

beam (1) (laser maser) A collection of rays that may be parallel, divergent, or convergent. (LEO) 586-1980w **(2)** (of an antenna) The major lobe of the radiation pattern of an antenna. (AP/ANT) 145-1993

beam alignment (camera tubes) An adjustment of the electron beam, performed on tubes employing low-velocity scanning, to cause the beam to be perpendicular to the target at the target surface. (ED) 161-1971w

beam angle *See:* scan angle.

beam axis (1) (of a pencil-beam antenna) The direction, within the major lobe of a pencil-beam antenna, for which the radiation intensity is a maximum. (AP/ANT) 145-1993 **(2) (illuminating engineering)** (of a projector) A line midway between two lines that intersect the candlepower distribution curve at points equal to a stated percent of its maximum (usually 50%). (EEC/IE) [126]

beam bending (camera tubes) Deflection of the scanning beam by the electrostatic field of the charges stored on the target. (ED) 161-1971w

beam compressors Structures on the surface of a substrate that increase the power density in a surface acoustic wave device by decreasing its lateral extent, such as the following: **horn:** A tapered structure of reduced velocity to produce gradual reduction of transverse width of beam; **multistrip beam compressor:** A multistrip coupler with spacing of the strips chosen so that one track (path) is appreciably wider than the other; **lenses:** Regions of decreased phase velocity so shaped as to produce focusing of an incident surface acoustic wave beam. (UFFC) 1037-1992w

beam coverage solid angle (of an antenna over a specified surface) The solid angle, measured in steradians, subtended at the antenna by the footprint of the antenna beam on a speci-

fied surface. *Contrast:* beam solid angle. *See also:* footprint. (AP/ANT) 145-1993

beam current (1) (storage tubes) The current emerging from the final aperture of the electron gun. *See also:* storage tube. (ED) 158-1962w

(2) (computer graphics) The flow of electrons from an electron gun onto the phosphor-coated screen of a cathode ray tube. (C) 610.6-1991w

beam-deflection tube An electron-beam tube in which current to an output electrode is controlled by the transverse movement of an electron beam. (ED) 161-1971w

beam diameter (1) (fiber optics) The distance between two diametrically opposed points at which the irradiance is a specified fraction of the beam's peak irradiance; most commonly applied to beams that are circular or nearly circular in cross section. *Synonym:* beamwidth. *See also:* beam divergence. (Std100) 812-1984w

(2) (laser maser) The distance between diametrically opposed points in that cross section of a beam where the power per unit area is 1/*e* times that of the peak power per unit area. (LEO) 586-1980w

beam divergence (laser maser) The full angle of the beam spread between diametrically opposed 1/*e* irradiance points; usually measured in mrad (one mrad $\simeq \Delta$ 3.4 minutes of arc). (LEO) 586-1980w

(2) (A) (fiber optics) For beams that are circular or nearly circular in cross section, the angle subtended by the far-field beam diameter. *See also:* collimation; far-field region; beam diameter. **(B) (fiber optics)** For beams that are not circular or nearly circular in cross section, the far-field angle subtended by two diametrically opposed points in a plane perpendicular to the optical axis, at which points the irradiance is a specified fraction of the beam's peak irradiance. Generally, only the maximum and minimum divergences (corresponding to the major and minor diameters of the far-field irradiance) need be specified. *See also:* beam diameter; far-field region; collimation. (Std100) 812-1984

beam error (navigation aids) (navigational systems using directionally propagated signals) The lateral or angular distance between the mean direction of the actual course and the desired course direction. (AES/GCS) 172-1983w

beam expander (laser maser) A combination of optical elements that will increase the diameter of a laser beam. (LEO) 586-1980w

beam finder (oscilloscopes) A provision for locating the spot when it is not visible. (IM) 311-1970w

beamguide (laser maser) A set of beam-forming elements spaced in such a way as to conduct a well-defined beam of radiation. Analogs are waveguides and fiber optic filaments. (LEO) 586-1980w

beam-indexing color tube A color-picture tube in which a signal, generated by an electron beam after deflection, is fed back to a control device or element in such a way as to provide an image in color. (ED) 161-1971w

beam landing error (camera tubes) A signal non-uniformity resulting from beam electrons arriving at the target with a spatially varying component of velocity parallel to the target. *See also:* camera tube. (ED) [45]

beam locator *See:* beam finder.

beam modulation, percentage (image orthicons) One hundred times the ratio of the signal output current for highlight illumination on the tube to the dark current. (ED) 161-1971w

beam noise (navigation aids) (navigational systems using directionally propagated signals) Extraneous disturbances tending to interfere with ideal system performance. *Note:* Beam noise is the aggregate effect of bends, scalloping, roughness, etc. (AES/GCS) 172-1983w

beam parametric amplifier A parametric amplifier that uses a modulated electron beam to provide a variable reactance. *See also:* parametric device. (ED) [46]

beam pattern *See:* directional response pattern.

beam pointing (communication satellite) The ability to orient the beam of a high gain antenna into a specific direction in a coordinate system. (COM) [19]

beam position *See:* current position.

beam power tube An electron-beam tube in which use is made of directed electron beams to contribute substantially to its power-handling capability, and in which the control grid and the screen grid are essentially aligned. (ED) 161-1971w

beam resonator (laser maser) A resonator that serves to confine a beam of radiation to a given region of space without continuous guidance along the beam. (LEO) 586-1980w

beam rider guidance That form of missile guidance wherein a missile, through a self-contained mechanism, automatically guides itself along a beam. *See also:* guided missile. (EEC/PE) [119]

beamshape loss A loss factor included in the radar equation to account for the use of the peak antenna gain in the radar equation instead of the effective gain that results when the received train of pulses is modulated by the two-way pattern of a scanning antenna. *Synonym:* antenna-pattern loss. (AES) 686-1997

beam shaping (communication satellite) Controlling the shape of an antenna beam, by design of the surfaces of the antenna or by controlling the phasing of the signals radiated from the antenna. (COM) [25]

beam solid angle The solid angle through which all the radiated power would stream if the power per unit solid angle were constant throughout this solid angle and at the maximum value of the radiation intensity. (AP/ANT) 145-1993

beamsplitter (fiber optics) A device for dividing an optical beam into two or more separate beams; often a partially reflecting mirror. (Std100) 812-1984w

beam splitter (laser maser) An optical device which uses controlled reflection to produce two beams from a single incident beam. (LEO) 586-1980w

beam spot size *See:* spot size.

beam spread (1) (illuminating engineering) (in any plane) The angle between the two directions in the plane in which the intensity is equal to a stated percentage of the maximum beam intensity. The percentage typically is 10% for floodlights and 50% for photographic lights. (EEC/IE) [126]

(2) (light-emitting diodes) (source of light, θ *y*, where *y* is the stated percent.) See definition (1) above. (ED) [127]

beam steering (1) Changing the direction of the major lobe of a radiation pattern. *See also:* radiation. (AP/ANT) [35], 145-1993

(2) Surface acoustic wave propagation phenomena in anisotropic materials described by a nonzero angle of power flow. (UFFC) 1037-1992w

beam waveguide A quasioptical structure consisting of a sequence of lenses or mirrors used to guide an electromagnetic wave. (MTT) 146-1980w

beamwidth *See:* beam diameter; half-power beamwidth.

bearer channel protocol intervention level The highest protocol level at which a private switching network (PSN) provides protocol termination on a given bearer channel. (LM/C/COM) 8802-9-1996

bearer service A telecommunication service that provides the capability for the transmission of signals between user-network interfaces. (C/LM/COM) 802.9a-1995w, 8802-9-1996

bearing (A) (navigation aid terms) The horizontal direction of one terrestrial point from another, expressed as the angle in the horizontal plane between a reference line and the horizontal projection of the line joining two points. **(B) (navigation aid terms)** Azimuth. A bearing is often designated as true, magnetic, compass, grid, or relative, and is dependent upon the reference direction. (AES/GCS) 172-1983

(2) (A) (rotating machinery) A stationary member or assembly of stationary members in which a shaft is supported and may rotate. **(B) (rotating machinery)** In a ball or roller

bearing, a combination (frequently preassembled) of stationary and rotating members containing a peripheral assembly of balls or rollers, in which a shaft is supported and may rotate. (PE) [9]

bearing accuracy, instrumental (A) (direction finding systems) The difference between the indicated and the apparent bearings in a measurement of the same signal source. *See also:* navigation. **(B) (direction finding systems)** As a statement of overall system performance, a difference between indicated and correct bearings whose probability of being exceeded in any measurement made on the system is less than some stated value. *See also:* navigation. (AES) [42]

bearing bracket (rotating machinery) A bracket which supports a bearing, but including no part thereof. A bearing bracket is not specifically constructed to provide protection for the windings or rotating parts. (PE) [9]

bearing cap (rotating machinery) (or bearing bracket cap) A cover for the bearing enclosure of a bearing bracket type machine or the removable upper half of the enclosure for a bearing. *See also:* bearing. (PE) [9]

bearing cartridge (rotating machinery) A complete enclosure for a ball or roller bearing, separate from the bearing bracket or end shield. *See also:* bearing. (PE) [9]

bearing clearance (A) (rotating machinery) The difference between the bearing inner diameter and the journal diameter. *See also:* bearing. **(B) (rotating machinery)** The total distance for axial movement permitted by a double-acting thrust bearing. *See also:* bearing. (PE) [9]

bearing distance heading indicator (navigation aid terms) A display device which presents continuous references as to course and distance to destination. (AES/GCS) 172-1983w

bearing dust-cap (rotating machinery) A removable cover to prevent the entry of foreign material into the bearing. *See also:* bearing. (PE) [9]

bearing error curve (A) (navigation aid terms) [DF (direction finder) equipment]. A plot of the instrumental bearing errors versus either indicated or correct bearing. **(B) (navigation aid terms)** (in DF installations) A plot of the combined instrumental bearing error (of the equipment) and site error versus indicated bearings. (AES/GCS) 172-1983

bearing housing (rotating machinery) A structure supporting the actual bearing liner or ball or roller bearing in a bearing assembly. *See also:* bearing. (PE) [9]

bearing insulation (rotating machinery) Insulation that prevents the circulation of stray currents by electrically insulating the bearing from its support. *See also:* bearing. (PE) [9]

bearing liner (rotating machinery) The assembly of a bearing shell together with its lining. *See also:* bearing. (PE) [9]

bearing lining (rotating machinery) The element of the journal bearing assembly in which the journal rotates. *See also:* bearing. (PE) [9]

bearing locknut (rotating machinery) A nut that holds a ball or roller bearing in place on the shaft. *See also:* bearing. (PE) [9]

bearing lock washer (rotating machinery) A washer between the bearing locknut and the bearing that prevents the locknut from turning. *See also:* bearing. (PE) [9]

bearing offset, indicated (electronic navigation) (direction finding systems) The mean difference between the indicated and apparent bearings of a number of signal sources, the sources being substantially uniformly distributed in azimuth. *See also:* navigation. (AES/GCS) 173-1959w, [42]

bearing oil seal *See:* oil seal.

bearing oil system (rotating machinery) (oil-circulating system) All parts that are provided for the flow, treatment, and storage of the bearing oil. *See also:* oil cup. (PE) [9]

bearing pedestal (rotating machinery) A structure mounted from the bedplate or foundation of the machine to support a bearing, but not including the bearing. *See also:* bearing. (PE) [9]

bearing-pedestal cap (rotating machinery) The top part of a bearing pedestal. *See also:* bearing. (PE) [9]

bearing plates Plates of large surface area attached to the structure below ground surface to prevent uplift or to increase the bearing capability in unstable soils. (T&D/PE) 751-1990

bearing protective device (power system device function numbers) A device that functions on excessive bearing temperature, or on other abnormal mechanical conditions associated with the bearing, such as undue wear, which may eventually result in excessive bearing temperature or failure. (SUB/PE) C37.2-1979s

bearing reciprocal *See:* reciprocal bearing.

bearing reservoir (rotating machinery) (oil tank) (oil well) A container for the oil supply for the bearing. It may be a sump within the bearing housing. *See also:* oil cup. (PE) [9]

bearing seal *See:* oil seal.

bearing seat (rotating machinery) The surface of the supporting structure for the bearing shell. *See also:* bearing. (PE) [9]

bearing sensitivity (electronic navigation) The minimum field strength input to a direction-finder system to obtain repeatable bearings within the bearing accuracy of the system. *See also:* navigation. (AES) 270-1966w, [42]

bearing shell (rotating machinery) The element of the journal bearing assembly that supports the bearing lining. *See also:* bearing. (PE) [9]

bearing shoe *See:* segment shoe.

bearing-temperature detector (rotating machinery) A temperature detector whose sensing element is mounted at or near the bearing surface. *See also:* bearing. (PE) [9]

bearing-temperature relay (rotating machinery) A relay whose temperature sensing element is mounted at or near the bearing surface. *Synonym:* bearing thermostat. *See also:* bearing. (PE) [9]

bearing thermometer (rotating machinery) A thermometer whose temperature sensing element is mounted at or near the bearing surface. *See also:* bearing. (PE) [9]

bearing thermostat *See:* bearing-temperature relay.

beat An event that begins with the transition on a synchronization line by the master, followed by the release of an acknowledge line by one or more slaves. Command and data information may be transferred from the master to one or more slaves in the first half of the beat. During the second half of the beat the slaves may transfer capability, status, and data information back to the master. (C/BA) 10857-1994, 896.4-1993w, 896.3-1993w

beating (data transmission) A phenomenon in which two or more periodic quantities of different frequencies produce a resultant having pulsations of amplitude. (PE) 599-1985w

beat note The wave of difference frequency created when two sinusoidal waves of different frequencies are supplied to a nonlinear device. *See also:* radio receiver. 188-1952w

beat reception *See:* heterodyne reception.

beats (1) (general) Periodic variations that result from the superposition of waves having different frequencies. *Note:* The term is applied both to the linear addition of two waves, resulting in a periodic variation of amplitude, and to the nonlinear addition of two waves, resulting in new frequencies, of which the most important usually are the sum and difference of the original frequencies. *See also:* signal wave. (COM) 312-1977w

(2) (data transmission) Periodic variations that result from the superposition of waves having difference frequencies. *Note:* The term is applied both to the linear addition of two waves, resulting in a periodic variation of amplitude, and to the nonlinear addition of two waves, resulting in new frequencies, of which the most important usually are the sum and difference of the original frequencies. (PE/EDPG) 599-1985w, [3]

becquerel (metric practice) The activity of a radionuclide decaying at the rate of one spontaneous nuclear transition per second. (QUL) 268-1982s

bedside Those medical devices that directly interact with, monitor, provide treatment to, or are in some way associated with a single patient. (EMB/MIB) 1073.4.1-1994s, 1073-1996, 1073.3.1-1994

bedside communications controller (BCC) A communications controller, typically located at a patient bedside, that serves to interface between one or more medical devices. The BCC may be embedded into local display, monitoring, or control equipment. Alternatively, it may be part of a communications router to a remote hospital host computer system. (EMB/MIB) 1073.4.1-2000, 1073.3.2-2000

bedside environment Encompassing a particular patient, bed or treatment area which is specific to one patient, and usually including those systems and personnel which are involved in the acute monitoring and treatment of the patient. (EMB/MIB) 1073-1996

bedside medical device A medical device that directly interacts with, monitors, provides treatment to, or is in some way associated with a single patient. (EMB/MIB) 1073.4.1-2000

beep A brief audible warning emitted by the terminal. (C) 1295-1993w

Beer-Lambert Law Also called Beer's Law or Bouger's Law, this law, valid for discrete random media, relates the intensity of an electromagnetic wave at one point to the intensity at another point in the direction of propagation. The intensity decreases exponentially with distance and the attenuation coefficient is equal to the product of the concentration of particles and the extinction cross-section per particle. Consequently, the application of Beer's Law is restricted to weakly scattering media. (AP/PROP) 211-1997

begin-end block (software) A sequence of design or programming statements bracketed by "begin" and "end" delimiters and characterized by a single entrance and a single exit. *See also:* design. (C/SE) 729-1983s

Beginner's All-purpose Symbolic Instruction Code (BASIC) A general-purpose programming language designed for writing programs in scientific and business applications. *Notes:* 1. Originally developed on a mainframe computer in 1964 at Dartmouth College, BASIC was later implemented as the first high-order language available for a microcomputer. 2. Numerous implementations of BASIC have been developed for various computers. Examples include ABASIC, MBASIC, S-BASIC, and ZBASIC. *See also:* common language. (C) 610.13-1993w

beginning-of-file label (BOF) An internally-recorded label that identifies a file, marks its location, and contains information for use in file control. *Synonym:* header label. *Contrast:* end-of-file label. (C) 610.10-1994w

beginning of frame (BOF) An octet specified by infrared link access protocol (IrLAP). (EMB/MIB) 1073.3.2-2000

beginning-of-tape marker (BOT) A marker on a magnetic tape used to indicate the beginning of the permissible recording area. *Note:* It might be a photo reflective strip, a unique data pattern, or a transparent section of tape *Contrast:* end-of-tape marker. *See also:* load point. (C) 610.10-1994w

beginning-of-volume label (BOV) An internally-recorded label that identifies a volume and which indicates the beginning of the recording area on that volume. *Synonyms:* volume header; volume label. *Contrast:* end-of-volume label. (C) 610.10-1994w

behavior (1) A formal representation of the characteristics that describe the operation, function, relationships, control, or static properties of a test entity. (SCC20) 1226-1998
(2) The aspect of an instance's specification that is determined by the state-changing operations it can perform. (C/SE) 1320.2-1998
(3) A statement of the externally visible response and internal change of state of an object to invoked operations or internal events, given its current internal state. (IM/ST) 1451.1-1999

behavioral analysis The analysis of the logical (stimulus/response) and design (resource consumption, event timing, throughput, etc.) execution of a system to assess the functional and design architectures. (C/SE) 1220-1998

behavioral design The design of how an overall system or software item will behave, from a user's point of view, in meeting its requirements, ignoring the internal implementation of the system or software item. This design contrasts with architectural design, which identifies the internal components of the system or software item, and with the detailed design of those components. (C/SE) J-STD-016-1995

behavioral model *See:* black box model.

BEL *See:* bell character.

bel (1) The fundamental division of a logarithmic scale for expressing the ratio of two amounts of power, the number of bels denoting such a ratio being the logarithm to the base 10 of this ratio. *Note:* With P_1 and P_2 designating two amounts of power and N the number of bels denoting their ratio, $N = \log10(P_1/P_2)$ bels. (AP/ANT) 145-1983s
(2) The fundamental unit in a logarithmic scale for expressing the ratio of two amounts of power. *Notes:* 1. The number of bels is equal to the $\log_{10}(P_1/P_2)$, where P_1 is the power level being considered and P_2 is an arbitrary reference level. 2. The decibel, a more commonly used unit, is equal to 0.1 bel. (C) 610.10-1994w

bell box (ringer box) An assemblage of apparatus, associated with a desk stand or hand telephone set, comprising a housing (usually arranged for wall mounting) within which are those components of the telephone set not contained in the desk stand or hand telephone set. These components are usually one or more of the following: induction coil, capacitor assembly, signaling equipment, and necessary terminal blocks. In a magneto set a magneto and local battery may also be included. *See also:* telephone station. (EEC/PE) [119]

bell character (BEL) A control character that is used when there is a need to call for human attention and that may activate an alarm or other attention devices. (C) 610.5-1990w

bell crank A lever with two arms placed at an angle diverging from a given point, thus changing the direction of motion of a mechanism. (SWG/PE) C37.100-1992

bell crank hanger A support for a bell crank. (SWG/PE) C37.100-1992

Bell Laboratories' Low-level Linked List Language (L) A list processing language that allows programmers to specify list sizes and types. (C) 610.13-1993w

belt (rotating machinery) A continuous flexible band of material used to transmit power between pulleys by motion. (PE) [9]

belt, aerial *See:* aerial belt.

belt, bucket *See:* aerial belt.

belt-drive machine (elevators) An indirect-drive machine having a single belt or multiple belts as the connecting means. *See also:* driving machine. (PE/EEC) [119]

belted-type cable A multiple-conductor cable having a layer of insulation over the assembled insulated conductors. (PE/T&D) [10]

belt insulation (rotating machinery) A form of overhang packing inserted circumferentially between adjacent layers in the winding overhang. *See also:* stator; rotor. (PE) [9]

belt leakage flux (rotating machinery) The low-order harmonic airgap flux attributable to the phase belts of a winding. The magnitude of this leakage flux varies with winding pitch. *See also:* rotor; stator. (PE) [9]

belt printer An element printer in which the type slugs are carried on a flexible belt. (C) 610.10-1994w

belt-type conveyor A conveyor consisting of an endless belt used to transport material from one place to another. *See also:* conveyor. (EEC/PE) [119]

benchboard A combination of a control desk and a vertical switchboard in a common assembly.
(SWG/PE) C37.100-1992, C37.21-1985r

benchmark (A) A standard against which measurements or comparisons can be made. *See also:* benchmark program; benchmark problem. **(B)** A procedure, problem, or test that can be used to compare systems or components to each other or to a standard as in definition (A). **(C)** A recovery file.
(C) 610.12-1990, 610.10-1994

benchmark problem (computers) A problem used to evaluate the performance of computers relative to each other.
(C) [85]

(2) (A) A problem used to evaluate the performance of hardware, software, or both. **(B)** A problem used to evaluate the performance of several computer systems relative to one another, or relative to system specification. (C) 610.10-1994

benchmark program A standard program that can be used to evaluate the performance of a computer system. *See also:* synthetic benchmark program; kernel benchmark program; local benchmark program. (C) 610.10-1994w

bend (navigation) A departure of the course line from the desired direction at such a rate that it can be followed by the vehicle. (AES/GCS) 172-1983w

bend amplitude (navigation) The measured maximum amount of course deviation due to bend; measurement is made from the nominal or bend-free position of the course.
(AES/GCS) 172-1983w

bend frequency (navigation) The frequency at which the course indicator oscillates when the vehicle track is straight and the course contains bends; bend frequency is a function of the vehicle velocity. (AES/GCS) 172-1983w

bend radius The radial distance of any arc formed by a bent cable, measured to the geometric center of the cable. *See also:* minimum bend radius. (C) 610.7-1995

bend ratio (cable plowing) The radius of a bend (segment of a circle) divided by the outside diameter of a cable, pipe, etc.
(T&D/PE) 590-1977w

bend-reduction factor (navigation) The ratio of bend amplitude existing before the introduction of bend-reducing features to that existing afterward. (AES/GCS) 172-1983w

bend, waveguide *See:* waveguide bend.

benign failure Failure whose penalties are of the same order of magnitude as the benefit provided by correct service delivery.
(C/BA) 896.9-1994w

BER *See:* bit error rate; bit error ratio.

BERT *See:* bit error rate testing.

best effort service A communication service in which transmitted data is not acknowledged. Such data typically arrives in order, complete and without errors. However, if an error occurs, or a packet is not delivered, nothing is done to correct it (e.g., there is no retransmission).
(DIS/C) 1278.1-1995, 1278.2-1995

beta The ratio of the collector current to the base current of a bipolar transistor, commonly referred to as either the common-emitter current gain or the current amplification factor.
(CAS) [13]

beta circuit (feedback amplifier) That circuit that transmits a portion of the amplifier output back to the input. *See also:* feedback. (EEC/PE) [119]

beta end (1) The end of the module farthest from the lowest-numbered connector contact. (C/BA) 1101.3-1993
(2) The end of the module nearest the highest-numbered contact. (C/BA) 1101.4-1993, 1101.7-1995

beta figure of merit (β) (nonlinear, active, and nonreciprocal waveguide components) A figure of merit for parametric amplifier varactors that relates to capacitive nonlinearity. Historically, for silicon varactors,

$$\beta = \frac{C_J(+1\mu A)}{C_{J-3}} = \frac{C_{JV_S}}{C_{J-3}}$$

and for GaAs varactors,

$$\beta = \frac{C_{J+0.5}}{C_{J-3}}$$

where
C_{JV} = junction capacitance at voltage V
V_s = voltage at which the forward current is 1μV
(MTT) 457-1982w

beta key The connector keying pin located at the beta end of the module connector. (BA/C) 1101.3-1993

betatron An electric device in which electrons revolve in a vacuum enclosure in a circular or a spiral orbit normal to a magnetic field and have their energies continuously increased by the electric force resulting from the variation with time of the magnetic flux enclosed by their orbits. (ED) [45]

bevatron A synchrotron designed to produce ions of a billion (10^9) electron-volts energy or more. (ED) [45]

beveled brush corners Where material has been removed from a corner, leaving a triangular surface. *See also:* brush.
(EEC/EM/LB) [101]

beveled brush edges The removal of an edge to provide a slanting surface from which a shunt connection can be made or for clearance of pressure fingers or for any other purpose. *See also:* brush. (EEC/EM/LB) [101]

beveled brush ends and toes The angle included between the beveled surface and a plane at right angles to the length. The toe is the uncut or flat portion on the beveled end. When a brush has one or both ends beveled, the front of the brush is the short side of the side exposing the face level. *See also:* brush. (EEC/EM/LB) [101]

Beverage antenna A directional antenna composed of a system of parallel horizontal conductors from one-half to several wavelengths long, terminated to ground at the far end in its characteristic impedance. *Synonym:* wave antenna.
(AP/ANT) 145-1993

bezel (cathode-ray oscilloscopes) The flange or cover used for holding an external graticule or cathode-ray tube cover in front of the cathode-ray tube. It may also be used for mounting a trace recording camera or other accessory item.
(IM) 311-1970w

BF *See:* ballistic focusing.

BI *See:* buffered interconnect.

bias (1) (germanium gamma-ray detectors) The voltage applied to a detector to produce the electric field to sweep out the signal charge. (NPS/NID) 325-1986s, 759-1984r
(2) (telegraph transmission) A uniform displacement of like signal transitions resulting in a uniform lengthening or shortening of all marking signal intervals. *See also:* telegraphy.
(COM) [49]

(3) (A) (of a semiconductor radiation detector) (in a biased amplifier). The applied threshold voltage (or current) below which the gain is zero. **(B)** (in a detector) The polarizing electric field that causes charge to be collected.
(NPS) 300-1988

(4) (A) (computers) A systematic deviation of a value from a reference value. *Synonym:* bias error. **(B) (computers)** The amount by which the average of a set of values departs from a reference value. *Synonym:* bias error.
(C) 610.10-1994, 1084-1986

(5) (A) (accelerometer) The average component of accelerometer output, which has no correlation with input acceleration. Bias is typically expressed in units of gravity. **(B) (gyros)** The average component of gyro output, which has no correlation with input rotation or acceleration. Bias is typically expressed in degrees per hour (°/h).
(AES/GYAC) 528-1994

(6) (A) The deviation of the expected value of a random variable from a corresponding stated (correct or known) value. **(B)** A fixed deviation from the true value that remains constant over replicated measurements within the statistical precision of the measurement. *Synonyms:* fixed error; systematic error; deterministic error. (NI) N42.23-1995

(7) The time difference between the data arrival time and a specified signal edge (e.g., of a clock). Also the BIAS clause used in a CHECK statement. (C/DA) 1481-1999

bias current or power The direct and/or alternating current or power required to operate a bolometer at a specified resistance under specified ambient conditions. (IM) 470-1972w

bias, detector *See:* detector bias.

bias distortion (data transmission) A measure of the difference in the pulse width of the positive and negative pulses of a dotting signal. Usually expressed in percent of a full signal. (PE) 599-1985w

biased amplifier (1) (charged-particle detectors) (semiconductor radiation detectors) An amplifier giving essentially zero output for all inputs below a threshold and having constant incremental gain for all inputs above the threshold up to a specified maximum amplitude. (NPS/NID) 325-1986s, 301-1976s, 759-1984r

(2) (semiconductor charged-particle detectors) An amplifier giving zero output for input signals below an adjustable threshold and having a constant incremental gain above that threshold up to a specified maximum output. (NPS) 300-1988r

biased exponent (1) (binary floating-point arithmetic) The sum of the exponent and a constant (bias) chosen to make the biased exponent's range nonnegative. (C/MM) 754-1985r

(2) (mathematics of computing) In floating-point arithmetic, the sum of the exponent and a constant (bias) chosen to make the biased exponent's range nonnegative. (C) 1084-1986w

biased scheduled net interchange The scheduled net interchange power plus the algebraic sum of frequency bias, time-error bias, and other control-area biases. (PE/PSE) 94-1991w

bias error (1) A systematic error, whether due to equipment or propagation conditions. A nonzero mean component of a random error. (AES) 686-1997

(2) (mathematics of computing) *See also:* bias. (C) 1084-1986w

bias, grid, direct *See:* direct grid bias.

biasing (1) (laser gyro) The action of intentionally imposing a real or artificial rate into a laser gyro to avoid the region in which lock-in occurs. (AES/GYAC) 528-1994

(2) A technique used in memory mapping whereby the translation from a logical address to a physical address is performed by simply adding a bias to the logical address to determine the physical address. *Synonym:* relocation. *See also:* segmenting. (C) 610.10-1994w

bias instability (gyros) The random variation in bias as computed over specified finite sample time and averaging time intervals. This non-stationary (evolutionary) process is characterized by a 1/f power spectral density. It is typically expressed in degrees per hour (°/h). (AES/GYAC) 528-1994

bias magnet (magnetic tape pulse recorders for electricity meters) A device that provides a magnetic field used to orient the direction of magnetization on the magnetic tape to a predetermined polarity. (ELM) C12.14-1982r

bias resistor (1) (charged-particle detectors) (germanium gamma-ray detectors) (x-ray energy spectrometers) (of a semiconductor radiation detector) The resistor through which bias voltage is applied to a detector. (NPS/NID) 759-1984r, 301-1976s

(2) (semiconductor charged-particle detectors) The resistor through which the polarizing voltage is applied to a detector. (NPS) 300-1988r

(3) The resistor through which the bias voltage is applied to a detector. (NPS) 325-1996

bias spectrum At reference ambient, a specification of the fractions of total bias power in the dc and ac components and the frequency of the ac component. *Note:* The polarity of the dc component should also be given. (IM) 470-1972w

bias statistic An estimation of bias calculated from a finite sample of data using a specified formula. (NI) N42.23-1995

bias telegraph distortion (1) Distortion in which all mark pulses are lengthened (positive bias) or shortened (negative bias). It may be measured with a steady stream of unbiased reversals, square waves having equal-length mark and space pulses. The average lengthening or shortening gives true bias distortion only if other types of distortion are negligible. *See also:* modulation. (AP/ANT) 145-1983s

(2) (relay) *See also:* relay bias winding.

biaxial test (1) (seismic testing of relays) The relay under test is subjected to acceleration in one principal horizontal axis and the vertical axis simultaneously. (PE/PSR) C37.98-1977s

(2) The specimen under test is subject to acceleration in one principal horizontal axis and the vertical axis simultaneously. (SWG/PE) C37.100-1992, C37.81-1989r

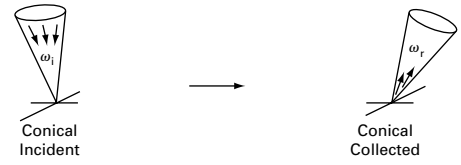
(3) Simultaneously testing in one horizontal and the vertical direction. (PE/SUB) 693-1997

BIB *See:* Bridge Interconnect Bus.

biconical antenna (1) (overhead power lines) An antenna consisting of two conical conductors that have a common axis and vertex and are excited or connected to the receiver at the vertex. When the vertex angle of one of the cones is 180°, the antenna is called a discone. (T&D/PE) 539-1990

(2) An antenna consisting of two conical conductors having a common axis and vertex. (AP/ANT) 145-1993

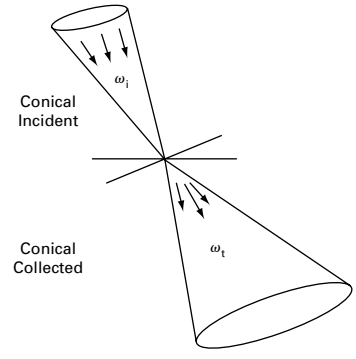
biconical reflectance (illuminating engineering) Ratio of reflected flux collected through a conical solid angle to the incident flux limited to a conical solid angle. *Note:* The directions and extent of each cone must be specified.



biconical reflectance

(EEC/IE) [126]

biconical transmittance (illuminating engineering) Ratio of transmitted flux, collected over an element of solid angle surrounding the direction, to the incident flux limited to a conical solid angle. *Note:* The directions and extent of each cone must be specified.



biconical transmittance

(EEC/IE) [126]

BICS *See:* bus implementation conformance statement.

BICS pro forma *See:* bus implementation conformance statement pro forma.

bicycle *See:* cable car.

BIDI *See:* bidirectional bus.

bidirectional (1) Providing for information transfer in both directions between master and remote terminals (of a communication channel). (SUB/PE) 999-1992w

(2) A pin or port that can place logic signals onto an interconnect and receive logic signals from it (i.e., act both as a driver and a receiver). (C/DA) 1481-1999

bidirectional antenna An antenna having two directions of maximum response. *See also:* antenna. (AP/ANT) [35]

bidirectional bar code symbol A bar code symbol format that permits decoding of the contents whether scanned in one direction or the reverse direction. (PE/TR) C57.12.35-1996

bidirectional bus (BIDI) (1) A bus which provides a communication path in either direction between two or more devices; for example, between a central processor and peripheral devices. (C) 610.10-1994w

(2) (programmable instrumentation) A bus used by any individual device for two-way transmission of messages; that is, both input and output. (IM/C/MM/AIN) 488.1-1987r, 696-1983w

bidirectional diode-thyristor (thyristor ac power controllers) A two-terminal thyristor having substantially the same switching behavior in the first and third quadrants of the principal voltage-current characteristic. (IA/IPC) 428-1981w

bidirectional operation When the peripheral and host communicate using both forward and reverse data channels. As defined in this standard, Nibble and Byte Modes provide reverse channel communication and are used in conjunction with Compatibility Mode to provide bidirectional operation. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) Modes support bidirectional communication. (C/MM) 1284-1994

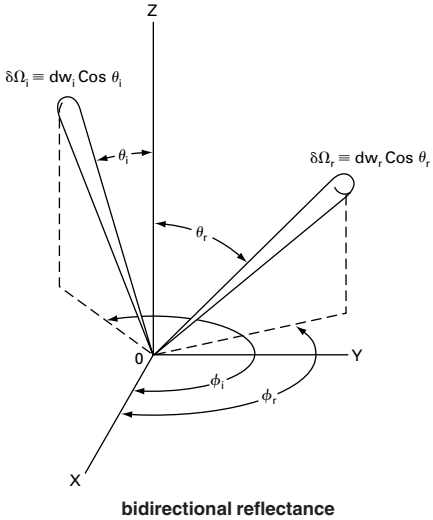
bidirectional pin A component pin that can either drive or receive signals from external connections. (TT/C) 1149.1-1990

bidirectional printer A printer that can print in two directions, that is, left-to-right and right-to-left. *Synonym:* reverse printer. (C) 610.10-1994w

bidirectional pulse *See also:* bidirectional pulses.

bidirectional pulses Pulses, some of which rise in one direction and the remainder in the other direction. *See also:* pulse. (AP/ANT) 145-1983s

bidirectional reflectance (illuminating engineering) Ratio of reflected flux collected over an element of solid angle surrounding the given direction to essentially collimated incident flux. *Note:* (1) The directions of incidence and collections and the size of the solid angle "element" of collection must be specified. (2) In each case of conical incidence or collection, the solid angle is not restricted to a right circular cone, but may be of any cross section, including rectangular, a ring, or a combination of two or more solid angles.



bidirectional reflectance

(EEC/IE) [126]

bidirectional reflectance–distribution function (f_r) The ratio of the differential luminance of a ray $dL_r(\theta_r,\phi_r)$ reflected in a given direction (θ_r,ϕ_r) to the differential luminous flux density $dE_i(\theta_i,\phi_i)$ incident from a given direction of incidence (θ_r,ϕ_r) that produces it.

$$f_r(\theta_i,\phi_i;\theta_r,\phi_r) \equiv dL_r(\theta_r,\phi_r)/dE_i(\theta_i,\phi_i)(\mathrm{sr})^{-1}$$
$$= dL_r(\theta_r,\phi_r)/L_i(\theta_i,\phi_i)d\Omega_i$$

where
$d\Omega \equiv d\omega \cdot \cos\theta$.

Notes: 1. This distribution function is the basic parameter for describing (geometrically) the reflecting properties of an opaque surface element (negligible internal scattering). 2. It may have any positive value and will approach infinity in the particular direction for ideally specular reflectors. 3. The spectral and polarization aspects must be defined for complete specification, since the BRDF as given above only defines the geometric aspects.

bidirectional reflectance—distribution function

(EEC/IE) [126]

bidirectional relay A stepping relay in which the rotating wiper contacts may move in either direction. *Synonym:* add-and-subtract relay. (IM) [120]

bidirectional signal line A signal line that may be defined in either direction across an interface. The direction is determined by control signals for each operation. (C/MM) 959-1988r

bidirectional transducer (bilateral transducer) A transducer that is not a unidirectional transducer. *See also:* transducer. (Std100) 270-1966w

bidirectional transmission (fiber optics) Signal transmission in both directions along an optical waveguide or other component. (Std100) 812-1984w

bidirectional transmittance (illuminating engineering) Ratio of incident flux collected over an element of solid angle surrounding the given direction to essentially collimated incident flux. *Note:* The directions of incidence and collection, and the size of the solid angle "elements" must be specified. (EEC/IE) [126]

bidirectional triode-thyristor A three-terminal thyristor having substantially the same switching behavior in the first and third quadrants of the principal voltage-current characteristic. (IA/IPC) 428-1981w

BIDM *See:* Basic Interoperability Data Model.

bifilar suspension A suspension employing two parallel ligaments, usually of conducting material, at each end of the moving element. (EEC/AII) [102]

bifunctional machine A computer that can perform either the host computer or backend computer functions. (C) 610.10-1994w

bifurcated feeder A stub feeder that connects two loads in parallel to their only power source. (SWG/PE) C37.100-1992

bigAdd A bus transaction that adds an integer *addend* argument to a specified data address and returns the previous data value from that address. All values in this transaction are assumed to be big-endian integers. In the CSR Architecture this is called a fetch_add transaction. (C/MM) 1596.5-1993

big addressan Bus that multiplexes the most significant byte of the address with the data byte that has the lowest address. (C/BA) 896.3-1993w

big addressian A term used to describe the physical location of data-byte addresses on a multiplexed address/data bus. On a big-addressian bus, the data byte with the largest address is multiplexed (in time or space) with the least-significant byte of the address. (C/MM) 1212-1991s

big-bang testing A type of integration testing in which software elements, hardware elements, or both are combined all at once into an overall system, rather than in stages. (C) 610.12-1990

big endian (1) The most significant byte of a data item, it has the lowest relative memory address. Correspondingly, less significant bytes have higher relative memory addresses. (C/BA) 896.3-1993w

(2) A representation of multibyte numerical values in which bytes with greater numerical significance appear at lower memory addresses. (C/BA) 1275-1994

(3) A term used to describe the arithmetic significance of data-byte addresses within a multibyte register. Within a big endian register or register set, the data byte with the largest address is the least significant. (MM/C) 1212-1991s

(4) A multibyte data value that is stored in memory with the most significant data byte through least significant data byte in the lowest through highest memory addresses, respectively. (C/MM) 1212.1-1993

(5) A specified ordering of bytes within a data structure where the low-order byte (byte 0) is placed in the most significant byte lane of that data structure. (C/BA) 1014.1-1994w

(6) A term used to imply that bytes in a word and words in a double word are transmitted most significant byte or word first in a serial stream of bytes. (C/MM) 1284.1-1997

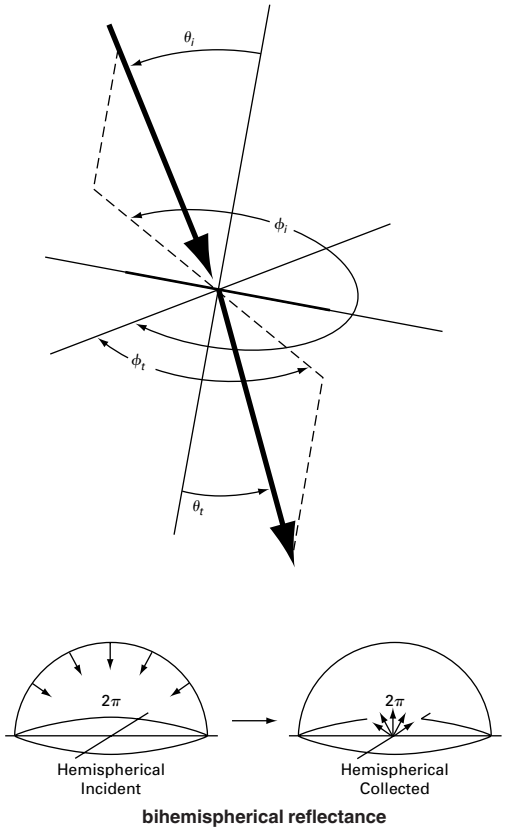
(7) A method of storing multibyte data in a byte-addressable memory such that the most significant byte of the data is stored at the lowest address. (C/BA) 896.10-1997

(8) A data format where the most significant byte of a multibyte object is at the lowest address and the least-significant byte is at the highest address. (C/MM) 1284.4-2000

big endian processor A processor architecture that is optimized for the processing of big endian data values, as opposed to little endian data values. (C/MM) 1212.1-1993

bignum A multiple-precision computer representation for very large integers. *See also:* fixnum. (C/MM) 1178-1990r

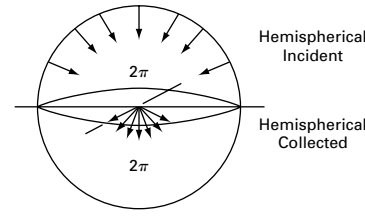
bihemispherical reflectance (illuminating engineering) Ratio of reflected flux collected over the entire hemisphere to the flux incident from the entire hemisphere. *See also:* hemispherical reflectance.



bihemispherical reflectance

(EEC/IE) [126]

bihemispherical transmittance (illuminating engineering) Ratio of transmitted flux collected over the entire hemisphere to the incident flux from the entire hemisphere.



bihemispherical transmittance

(EEC/IE) [126]

bil *See:* basic impulse insulation level.

BIL *See:* preferred basic impulse insulation level; basic impulse insulation level.

bilateral-area track (electroacoustics) A photographic sound track having the two edges of the central area modulated according to the signal. *See also:* phonograph pickup. (SP) [32]

bilateral network (network analyzers) Network capable of transmission in both directions, not necessarily equal or symmetrical. (IM/HFIM) 378-1986w

bilateral transducer A transducer capable of transmission simultaneously in both directions between at least two terminations. 196-1952w

BILBO *See:* built-in logic block observer.

bilevel operation Operation of a storage tube in such a way that the output is restricted to one or the other of two permissible levels. *See also:* storage tube. (ED) 158-1962w

billing demand (power operations) The demand that is used to determine the demand charges in accordance with the provisions of a rate schedule or contract. (PE/PSE) 858-1987s, 346-1973w

billing error (switching systems in telecommunications environments) Occurs when a call is billed incorrectly. Billing errors may be measured as the number of incorrectly billed calls per 10 000 billable calls. Billing errors are the aggregate of the following specific billing errors. The billing accuracy definitions for automatic message accounting (AMA) data collection apply from the point at which information is submitted to the sensor up to the point at which the information is sent on to the revenue accounting office. Passage of answer supervision and number identification information outside of the AMA data collection system is considered separately. The AMA data collection system should be designed such that a single equipment failure does not cause an unrecoverable loss of more than a given number of call records. (COM/TA) 973-1990w

bill of materials A report showing the material costs of a single unit of product; listing of all unit components with part numbers, quantities, and supplier prices. (SCC22) 1346-1998

bill to wrong party (switching systems in telecommunications environments) Occurs when a call is charged to the wrong customer. (COM/TA) 973-1990w

bimetallic element An actuating element consisting of two strips of metal with different coefficients of thermal expansion bound together in such a way that the internal strains caused by temperature changes bend the compound strip. *See also:* relay. (EEC/REE) [87]

bimetallic thermometer A temperature-measuring instrument comprising an indicating pointer and appropriate scale in a protective case and a bulb having a temperature-sensitive bimetallic element. The bimetallic element is composed of two or more metals mechanically associated in such a way that relative expansion of the metals due to temperature change produces motion. (PE/PSIM) 119-1974w

bin *See:* pocket.

binary (A) (data transmission) Pertaining to a characteristic or property, involving a selection, choice or condition in which there are two possibilities. **(B) (data transmission)** Pertaining to the numeration system with a radix of two. (PE) 599-1985

(2) (A) (data management) (mathematics of computing) Pertaining to a selection in which there are two possible outcomes. *Synonyms:* straight binary; pure binary; natural binary; ordinary binary; normal binary; regular binary; standard binary. **(B) (mathematics of computing) (data management)** Pertaining to the numeration system with a radix of two. *Synonyms:* standard binary; regular binary; normal binary; straight binary; natural binary; ordinary binary; pure binary. (C) 610.5-1990, 1084-1986

binary arithmetic operation (mathematics of computing) An arithmetic operation in which the operands and the results are represented in the binary numeration system. (C) 1084-1986w

binary Boolean operation* *See:* dyadic Boolean operation.
* Deprecated.

binary card A punch card that is to contain information in column binary or row binary form. (C) 610.10-1994w

binary cell (1) An elementary unit of storage that can be placed in either of two stable states. *Note:* It is therefore a storage cell of one binary digit capacity, for example, a single-bit register. (C) [20], [85]

(2) A storage cell that can hold one binary digit. For example, a single-bit register. (C) 610.10-1994w

binary chop* *See:* binary search.
* Deprecated.

binary code (1) A code in which each code element may be either of two distinct kinds or values, for example, the presence or absence of a pulse. (PE) 599-1985w

(2) A code that makes use of members of an alphabet containing exactly two characters, usually 0 and 1. The binary number system is one of many binary codes. *See also:* reflected binary code; pulse; information theory. (C/IA) [20], [61]

(3) (mathematics of computing) A code that uses exactly two distinct characters, usually 0 and 1, to represent data or instructions. (C) 610.5-1990w, 1084-1986w

binary coded decimal (BCD) (mathematics of computing) Pertaining to a number representation system in which each decimal digit is represented by a unique arrangement of binary digits (usually four); for example, the number 23 is represented as 0010 0011, whereas in binary notation, 23 is represented as 10111. *Synonym:* coded decimal. (C) 1084-1986w

binary coded decimal character set A character set containing all 64 characters that can be represented as permutations of six bits. (C) 610.5-1990w

binary-coded-decimal number (or BCD number). The representation of the cardinal numbers 0 through 9 by 10 binary codes of any length. Note that the minimum length is four and that there are over 29×10^9 possible four-bit binary-coded-decimal codes. *Note:* An example of 8-4-2-1 binary-coded decimal code follows for number 1 through 9.

Number	*r*4	*r*3	*r*2	*r*1
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

Where *r*1 is termed the **least significant binary digit (bit).** *See also:* digital. (PE) 599-1985w

binary coded decimal real data A technique for assigning numeric characters such that each decimal digit is represented by a unique arrangement of binary digits with an implied radix point at a specified position.

decimal	163.3_{10}
BCD real	$10001\ 0110\ 0011\ .\ 0011_2$

(C) 610.5-1990w

binary-coded digit A digit of any number representation system that is represented as a fixed number of binary digits. For example, the decimal digit 9 is represented as 1001. (C) 1084-1986w

binary-coded octal Pertaining to a three-bit binary code in which the octal digits 0−7 are represented by the binary numerals 000−111. (C) 1084-1986w

binary data Numeric data used to represent binary digits. *See also:* packed binary data; binary picture data; fixed-point binary data. (C) 610.5-1990w

binary digit (1) (A) (computers) A unit of information that can be represented by either a zero or a one. *See also:* word; byte; binary element. **(B) (computers)** An element of computer storage that can hold a unit of information as in definition (A). *See also:* binary element; byte; word. **(C) (computers)** A numeral used to represent one of the two digits in the binary numeration system; zero (0) or one (1) *See also:* byte; word; binary element.
(C) 610.5-1990, 610.12-1990, 1084-1986, 610.6-1991

(2) (data transmission) A character used to represent one of the two digits in the numeration system with a radix of two. Abbreviated "bit." (PE) 599-1985w

(3) A character used to represent one of the two digits in the binary number system and the basic unit of information in a two-state device. The two states of a binary digit are usually represented by "0" and "1". *Synonym:* bit. (SUB/PE) 999-1992w

(4) (A) A unit of information that can be represented by either a zero or a one. *See also:* word; clocking bit; start bit; block; byte; synchronization bit; stop bit. **(B)** The fundamental unit of digital communication; information is transmitted over networks as streams of units as in definition (A). (C) 610.7-1995, 610.10-1994

binary digit character A character within a picture specification that represents a binary digit. (C) 610.5-1990w

binary element A data element that can assume either of two possible values or states. *See also:* binary digit; binary variable. (C) 610.5-1990w, 1084-1986w

binary element string A string consisting solely of binary elements. (C) 1084-1986w

binary encoding An encoding scheme for serial communications in which the symbol for a logic "0" or "l" assumes a specified voltage level for the full duration of a signalling bit period. (EMB/MIB) 1073.4.1-2000

binary floating point number (or binary floating-point arithmetic) A bit-string characterized by three components: a sign, a signed exponent, and a significand. Its numerical value, if any, is the signed product of its significand and two raised to the power of its exponent. (C/MM) 754-1985r

binary image A digital image in which each pixel is assigned a value of either zero or one. (C) 610.4-1990w

binary incremental representation An incremental representation system in which the value of an increment is plus one or minus one. *Synonym:* incremental binary representation. (C) 1084-1986w

binary information (microprocessor object modules) Bit patterns to be loaded into memory. (C/MM) 695-1985s

binary insertion sort An insertion sort in which each item in the set to be sorted is inserted into its proper position in the sorted set using a binary search algorithm. *Contrast:* two-way insertion sort. (C) 610.5-1990w

binary notation Any notation that uses the binary digits and the radix 2. *Synonyms:* binary scale; two-scale. (C) 1084-1986w

binary number (A) A quantity that is expressed by using the binary numeration system. **(B)** Loosely, a binary numeral. (C) 1084-1986, [20], [85]

binary number system *See:* positional notation; binary numeration system.

binary numeral (1) The binary representation of a number; for example, 101 is the binary numeral and V is the Roman numeral of the number of fingers on one hand. (C) [20], [85]
(2) (mathematics of computing) A numeral in the binary numeration system. For example, the binary numeral 101 is equivalent to the decimal numeral 5. (C) 1084-1986w

binary numeration system The numeration system that uses the binary digits and the radix 2. *Note:* The use of "binary number system" as a synonym for this term is deprecated. *Synonyms:* pure binary numeration system; binary system. *See also:* positional notation. (C) 1084-1986w

binary one The "true" binary state, usually represented as 1 or T. *Contrast:* binary zero. (C) 1084-1986w

binary operation* *See:* dyadic operation; Boolean operation.
* Deprecated.

binary operator *See:* dyadic operator.

binary phase shift keying (Binary PSK, BPSK) (1) A specific form of PSK that defines two states of carrier phase that are digitally encoded in a binary data stream. The states have a change in phase of 180° that corresponds to the 0 or 1 binary state. (LM/C) 802.7-1989r
(2) A form of modulation in which binary data are transmitted by changing the carrier phase by 180°. *See also:* frequency shift keying; amplitude shift keying. (LM/C) 610.7-1995, 802.3-1998

binary picture data Arithmetic data that is associated with a picture specification that allows binary digit characters, a radix point, exponent characters, and sign characters. *Synonym:* numeric bit data. *Contrast:* decimal picture data. (C) 610.5-1990w

binary point (1) (mathematics of computing) The radix point in the binary numeration system. *See also:* radix point; point. 10.1-1990
(2) *See also:* point.

Binary PSK *See:* binary phase shift keying.

binary pulse width modulation torquing (digital accelerometer) A torquing technique in which the time between (positive, negative) torquing transitions is constant. (AES/GYAC) 530-1978r

binary radix trie search A radix trie search using a binary trie in which only one bit is considered on each branch. *See also:* multiway radix trie search. (C) 610.5-1990w

binary relation A relation with two attributes. (C) 610.5-1990w

binary scale *See:* binary notation.

binary search (1) A dichotomizing search in which, at each step of the search, the remaining set of items is partitioned into two equal parts. *Synonyms:* logarithmic search; binary chop; bisection. *Contrast:* Fibonacci search; interpolation search. *See also:* binary search tree; binary tree search. (C) 610.5-1990w
(2) A search in which a set of items is divided into two parts, one part is rejected, and the process is repeated on the accepted part until those items with the desired property are found. *See also:* dichotomizing search. (C) [20], [85]

binary search tree A search tree of order 2. (C) 610.5-1990w

binary signaling A means of communicating between devices that uses two-state signals. Where multiple binary data bits are to be transferred, either multiple signaling paths ("parallel binary") or a time series of individual data bits ("serial binary") transmission methods are to be used. (SUB/PE) 999-1992w

binary-state variable *See:* binary variable.

binary symmetric channel A channel designed to convey messages consisting of binary characters and which has the property that the conditional probabilities of changing any one character to the other character are equal. (C) 610.10-1994w

binary system *See:* binary numeration system.

binary-to-decimal conversion The process of converting a binary numeral to an equivalent decimal numeral. For example, binary 10001011.01 is converted to decimal 139.25. (C) 1084-1986w

binary-to-hexadecimal conversion The process of converting a binary numeral to an equivalent hexadecimal numeral. For example, binary 10001011.01 is converted to hexadecimal 8B.4. (C) 1084-1986w

binary-to-octal conversion The process of converting a binary numeral to an equivalent octal numeral. For example, binary 10001011.01 is converted to octal 213.2. (C) 1084-1986w

binary torquing (1) (digital accelerometer) System with two stable torquing states (for example, positive and negative). (AES/GYAC) 530-1978r
(2) (accelerometer) (gyros) A torquing mechanization that uses only two torquer current levels, usually positive and negative of the same magnitude; no sustained zero current or off condition exists. The positive and negative current periods can be either discrete pulses or duration-modulated pulses. In the case of zero input (acceleration or angular rate), a discrete pulse system will produce an equal number of positive and negative pulses. A pulse-duration-modulated system will produce positive and negative current periods of equal duration for zero input. Binary torquing delivers constant power to a sensor torquer (as compared to variable power ternary torquing) and results in stable thermal gradients for all inputs. (AES/GYAC) 528-1994

binary tree A tree in which each nonterminal node has at most two subtrees. *Note:* B tree is sometimes used incorrectly in reference to a binary tree. This usage is considered deprecated. *See also:* complete binary tree; weight-balanced tree; n-ary tree; binary search tree; full binary tree. (C) 610.5-1990w

binary tree search A search in which the items in the set to be searched are placed in a binary tree, and the tree is traversed making key comparisons until the argument is found, or the end of the tree is encountered. *See also:* digital tree search; binary search. (C) 610.5-1990w

binary variable A variable that can assume either of two values or logic states: binary zero (false) or binary one (true). *Synonyms:* two-valued variable; two-state variable; Boolean variable; binary-state variable. (C) 1084-1986w

binary zero The "false" binary state, usually represented as 0 or F. *Contrast:* binary one. (C) 1084-1986w

bind (1) To assign a value to an identifier. For example, to assign a value to a parameter or to assign an absolute address to a symbolic address in a computer program. *See also:* static binding; dynamic binding. (C) 610.12-1990
(2) To assign a network address to an endpoint. (C) 1003.5-1999

binder *See:* binder load.

binder (bond) (1) (rotating machinery) A solid, liquid, or semiliquid composition that exhibits marked ability to act as an adhesive, and that, when applied to wires, insulation components, or other parts, will solidify, hold them in position, and strengthen the structure. (PE) [9]
(2) (electroacoustics) A resinous material that causes the various materials of a record compound to adhere to one another. *See also:* phonograph pickup. (SP) [32]

binder-hole card A punch card that contains one or more holes used to bind the cards together. (C) 610.10-1994w

binder load A toggle device designed to secure loads in a desired position. It is normally used to secure loads on mobile equipment. *Synonyms:* chain binder; binder. (T&D/PE) 524-1992r

binding (1) (software) The assigning of a value or referent to an identifier; for example, the assigning of a value to a parameter, the assigning of an absolute address, virtual address,

or device identifier to a symbolic address or label in a computer program. *See also:* label; dynamic binding; identifier; computer program; parameter; static binding. (C/SE) 729-1983s

(2) A defined mapping from the syntax and semantics of a software specification language into the syntax and semantics of a general purpose programming language. The purpose of such mapping to allow either a human or a machine to translate a program specified in the former language into a compilable and executable program in the latter. (SCC20) 1226-1998

binding band (rotating machinery) A band of material, encircling stator or rotor windings to restrain them against radial movement. *See also:* rotor. (PE) [9]

binding post *See:* binding screw.

binding screw A screw for holding a conductor to the terminal of a device or equipment. *Synonyms:* clamping screw; binding post; terminal screw. (EEC/PE) [119]

binnacle (navigation aids) (marine navigation) The stand in which a compass is mounted. (AES/GCS) 172-1983w

binocular (navigation aids) An optical instrument for use with both eyes simultaneously. (AES/GCS) 172-1983w

binocular portion of the visual field (illuminating engineering) That portion of space where the fields of the two eyes overlap. (EEC/IE) [126]

binomial array A linear array in which the currents in successive elements are made proportional to the binomial coefficients of $(x+y)^{n-1}$ for the purpose of reducing minor lobes. *See also:* antenna. (AP/ANT) [35]

bioelectric null (zero lead) (medical electronics) A region of tissue or other area in the system, which has such electric symmetry that its potential referred to infinity does not significantly change. *Note:* This may or may not be ground potential. (EMB) [47]

biological electrode impedance The ratio between two vectors, the numerator being the vector that represents the potential difference between the electrode and biological material, and the denominator being the vector that represents the current between the electrode and the biological material. *See also:* polarization reactance; loss angle; polarization capacitance; polarization resistance. (EMB) [47]

biological electrode potential The potential between an electrode and biological material. (EMB) [47]

biological variability A range in the degree of response to internal and external stimuli that organisms normally exhibit because of genetic makeup and environmental conditioning. This biological or normal variability must be considered when determining the effect of any one specific factor; e.g., an electric field. (T&D/PE) 539-1990

Biomedical Statistics Package A computer language used widely in biomedical statistical applications. (C) 610.13-1993w

bionics A branch of technology relating the functions, characteristics, and phenomena of living systems to the development of mechanical systems. (C) 610.2-1987

biophysical study One approach used to assess the potential for biological effects of artificial electric or magnetic fields. The magnitude of induced body currents and fields is compared with levels known to cause biological effects by certain physical mechanisms; e.g., heating of tissues. (T&D/PE) 539-1990

Biot-Savart law *See:* magnetic field strength produced by an electric current.

biparting door (elevators) A vertically sliding or a horizontally-sliding door, consisting of two or more sections so arranged that the sections or groups of sections open away from each other and so interconnected that all sections operate simultaneously. *See also:* hoistway. (PE/EEC) [119]

bipolar (power supplies) Having two poles, polarities, or directions. *Note:* Applied to amplifiers or power supplies, it means that the output may vary in either polarity from zero; as a symmetrical program it need not contain a direct-current component. *See also:* unipolar. (PE) [78]

(2) (A) Having two opposite states, such as positive and negative; For example, in computer logic, a value of true is represented by an electrical voltage polarity opposite to that representing a value of false. *Contrast:* unipolar. **(B)** Pertaining to a semiconductor technology in which transistors are built from alternating layers of positively and negatively doped semiconductor material. *See also:* diode-transistor logic; transistor-transistor logic; emitter-coupled logic. (C) 610.10-1994

bipolar code violation A violation that occurs whenever two consecutive nonzero elements of the same polarity occur in an AMI signal. A bipolar violation is a code violation if (A) it occurs in an AMI signal, or (B) it occurs in a B*n*ZS signal separate from a zero substitution code. Such a code violation indicates an error in transmission. (COM/TA) 1007-1991r

bipolar device An electronic device whose operation depends on the transport of both holes and electrons. (CAS) [13]

bipolar electrode An electrode, without metallic connection with the current supply, one face of which acts as an anode surface and the opposite face as a cathode surface when an electric current is passed through the cell. *See also:* electrolytic cell. (EEC/PE) [119]

bipolar electrode system (electrobiology) Either a pickup or stimulating system consisting of two electrodes whose relation to the tissue currents is roughly symmetrical. *See also:* electrobiology. (EMB) [47]

bipolar pulse (1) (pulse terminology) Two pulse waveforms of opposite polarity that are adjacent in time and that are considered or treated as a single feature. (IM/WM&A) 194-1977w

(2) A signal pulse having two lobes, one above and the other below the baseline. When produced by a linear filter network, the two lobes have the same area but not necessarily the same peak amplitude. (NPS) 325-1996

bipolar signal A line code that employs a ternary signal to convey binary digits in which successive binary ones are represented by signal elements that are normally of alternating positive and negative polarity but equal in amplitude, and in which binary zeros are represented by signal elements that have zero amplitude. (COM/TA) 1007-1991r

bipolar video A radar video signal whose amplitude can have both positive and negative values; derived from a synchronous phase detection process. *Note:* Coherent detection produces one type of bipolar video. *See also:* coherent signal processing. (AES) 686-1997

bipolar violation A nonzero signal element in an alternate mark inversion signal that has the same polarity as the previous nonzero element. (COM/TA) 1007-1991r

biquinary (1) (mathematics of computing) Pertaining to a two-part representation of decimal digits consisting of a binary portion with values 0 or 5, and a quinary portion with values 0 through 4. For example, the decimal digit 7 is coded as 12, which implies 5 + 2. (C) 1084-1986w

(2) (information processing) Pertaining to the number representation system in which each decimal digit N is represented by the digit pair AB, where $N = 5A + B$, and where $A =$ 0 or 1 and $B = 0, 1, 2, 3,$ or 4; for example, decimal 7 is represented by biquinary 12. This system is sometimes called a mixed-radix system having the radices 2 and 5. (C) [85]

biquinary code A two-part representation of decimal digits consisting of a binary portion with values 0 or 5 and a quinary portion with values 0 through 4. For example, decimal digit 7 is coded as 12. (C) 1084-1986w

biquinary coded decimal Pertaining to a number representation system in which each decimal digit is represented by a biquinary code. (C) 1084-1986w

biquinary notation Any notation that uses the biquinary code to represent numbers. (C) 1084-1986w

biquinary numeration system A numeration system that alternately uses 2 and 5 as bases. *Note:* The abacus uses a biquinary system. (C) 1084-1986w

bird *See:* running board.

birdie *See:* running board.

birefringence *See:* birefringent medium.

birefringent medium (fiber optics) A material that exhibits different indices of refraction for orthogonal linear polarizations of the light. The phase velocity of a wave in a birefringent medium thus depends on the polarization of the wave. Fibers may exhibit birefringence. *See also:* refractive index. (Std100) 812-1984w

BISAM *See:* basic indexed sequential access method.

bisection *See:* binary search.

BIST Built-in self-test. (C/BA) 896.2-1991w

bistable (1) (general) The ability of a device to assume either of two stable states. (IA/IAC) [60]

(2) Pertaining to a device capable of assuming either one or two stable states. *See also:* feedback control system. (C/ICTL) [85]

(3) Pertaining to a circuit or device that is capable of assuming one of two stable states. *See also:* monostable. (C) 610.10-1994w

bistable amplifier An amplifier with an output that can exist in either of two stable states without a sustained input signal and can be switched abruptly from one state to the other by specified inputs. *See also:* feedback control system. (IA/ICTL/IAC) [60]

bistable logic function A sequential logic function that has two and only two internal output states. *Synonym:* flip-flop. (GSD) 91-1984r

bistable operation Operation of a charge-storage tube in such a way that each storage element is inherently held at either of two discrete equilibrium potentials. *Note:* Ordinarily this is accomplished by electron bombardment. *See also:* charge-storage tube. (ED) 158-1962w

bistatic cross section The scattering cross section in any specified direction other than back toward the source. *See also:* monostatic cross section; radar cross section. (AP/ANT) 145-1993

bistatic radar A radar using antennas for transmission and reception at sufficiently different locations that the angles or ranges from those locations to the target are significantly different. (AES) 686-1997

bistatic reflectivity The reflectivity when the reflected wave is in any specified direction other than back toward the transmit antenna. The transmit and receive antennas are at different locations. (EMC) 1128-1998

bistatic-scatter cross section *See:* radar cross section.

bistatic scattering coefficient The scattering coefficient when the transmitter and receiver are not collocated. *See also:* scattering coefficient. (AP/PROP) 211-1997

BIT *See:* built-in test.

bit (b) (1) (microprocessor operating systems) A contraction of the term "binary digit;" a unit of information represented by either a zero or a one. (C/MM) 855-1990

(2) A single binary integer. A set bit represents to a binary "1." A cleared bit represents a binary "0." (C/MM) 1284.1-1997

(3) (A) An abbreviation of binary digit. **(B)** A single occurrence of a character in a language employing exactly two distinct kinds of characters. **(C)** A unit of storage capacity. The capacity, in bits, of a storage device is the logarithm to the base two of the number of possible states of the device. *See also:* storage capacity.

(4) A unit of information content equal to the information content of a message the *a priori* probability of which is one-half. *Note:* If, in the definition of information content, the logarithm is taken to the base two, the result will be expressed in bits. One bit equals $\log_{10} 2$ hartley. *See also:* information theory; parity bit; check bit. (IT) [7]

(5) A binary digit. (C/MM) 1296-1987s

(6) A unit of information in the binary numeration system. Also a unit of storage capacity of a memory. (ED) 641-1987w

(7) The smallest unit of information in the binary system of notation. (DIS/C) 1278.1-1995

(8) *See also:* least significant bit; most significant bit. (SWG/SUB/PE) C37.1-1987s, C37.100-1992

(9) *See also:* binary digit. (C) 610.5-1990w, 610.12-1990, 1084-1986w, 610.6-1991w

(10) *See also:* binary digit; block; byte; clocking bit; start bit; stop bit. (C) 610.7-1995

(11) (A) An abbreviation of binary digit. **(B)** A single occurrence of a character in a language that employs exactly two distinct kinds of characters. **(C)** A unit of storage capacity. The capacity, in bits, of a storage device is the logarithm to the base two of the number of possible states of the device. (ED) 1005-1998

bit blitter circuit A circuit that performs bit block transfer operations. *Synonym:* blitter. *See also:* blt chip. (C) 610.10-1994w

bit block transfer (A) To move information, optionally with a masking step, from one storage location to another. *Note:* Used extensively in bit mapped displays. Often abbreviated as bit blt, bitblt, or just blt (pronounced "blit"). *See also:* bit blitter circuit. **(B)** The transfer or combination of the pixel values in rectangular regions of bit maps. (C) 610.10-1994

bitblt *See:* bit block transfer.

bit blt (bitblt) *See:* bit block transfer.

bit cell The time interval used for the transmission of a single data (CD0 or CD1) or control (CVH or CVL) symbol. (C/LM) 802.3-1998

bit clock A clock recovered from the input Rx Serial Symbol stream which is bit synchronous with less than 5 degrees of single-sided phase noise. (C/BA) 1393-1999

bit density *See:* recording density.

BITE *See:* built-in test equipment.

bit error A bit is said to be in error when it is transferred from the source to the destination within the assigned timeslot, but the delivered bit is of a different value than that sent from the source. *See also:* error rate. (COM/TA) 1007-1991r

bit-encoded byte A byte with a definition for each bit. (C/MM) 1284.1-1997

bit-encoded word A word with a definition for each bit. (C/MM) 1284.1-1997

bit error rate (BER) (1) The ratio of errors to the total number of bits being sent in a data transmission from one location to another. (LM/C/BA) 802.7-1989r, 1355-1995

(2) A measurement of error rate stated as a ratio of the number of bits with an error to the total number of bits passing a given point on the ring. A BER of 10^{-6} indicates that an average of one bit per million bits is in error. (C/LM) 8802-5-1998

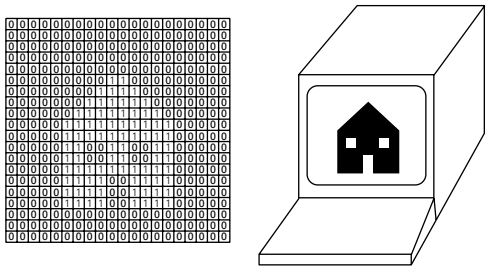
bit error rate testing The process of testing a data transmission channel using some predictable bit pattern so that the bits can be compared before and after the transmission to detect errors. *See also:* block error rate testing. (C) 610.7-1995

bit error ratio (BER) (1) The ratio of the number of bits received in error to the total number of bits received. (C/LM) 802.3-1998

(2) The ratio of the number of bit errors to the total number of bits transmitted in a given time interval. BER may be measured directly by detecting errors in a known signal, or approximated from code violations or framing bit errors. Numerical values of error ratio should be expressed in the form $n \cdot 10^{-p}$, where p is an integer greater than zero. When n is omitted, the implied value is 1. (COM/TA) 1007-1991r

bit-line The line that connects the memory cell drain to the sense amplifier during the read cycle and to a data line or latch during a write cycle. (ED) 1005-1998

bit map In computer graphics, a block of memory that stores a raster image of pixels in a device-specific format, in which the characteristics of each pixel are determined by a set of bits. *Synonyms:* refresh buffer; frame buffer.



bit map

(C) 610.6-1991w

(2) A data structure that stores information about entities in the form of a series of one-bit entries, each of which describes the state of the corresponding entity; for example, in graphics, a block of memory that stores a raster image in a device-specific format in which the characteristics of each pixel are determined by a set of bits. *See also:* bit plane; bit-mapped. (C) 610.10-1994w

bit map font A font defined in the form of a bit map that specifies the bit pattern which makes up each character. *Synonym:* intrinsic font. *Contrast:* derived font; vector font; outline font. (C) 610.10-1994w

bit-mapped Pertaining to a display screen on which a character or image is generated from a bit map in memory. (C) 610.10-1994w

bitonic merge *See:* bitonic sort.

bitonic sort A variation on Batcher's parallel sort in which one of the two ordered subsets begins in reverse order and the items to be compared and exchanged are selected from the same subset. *Synonym:* bitonic merge. (C) 610.5-1990w

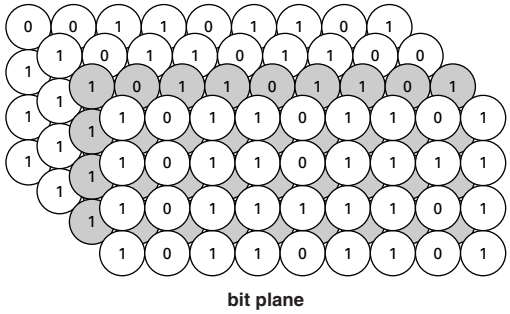
bit pad *See:* data tablet.

bit parallel Pertaining to a method for simultaneously processing all bits as a contiguous set of bits over separate wires, one wire for each bit. (C) 610.10-1994w

bit-parallel (programmable instrumentation) (696 interface devices) (signals and paths) A set of concurrent data bits present on a like number of signal lines used to carry information. Bit-parallel data bits may be acted upon concurrently as a group or independently as individual data bits. (IM/MM/C/AIN) 488.1-1987r, 696-1983w

bit pattern The image created on the screen of a display device by the mapping of the bit map onto the screen. (C) 610.10-1994w

bit plane A portion of a bit map that stores one bit of every pixel of a raster image. *Note:* Several bit planes are combined to make the full image.



bit plane

(C) 610.10-1994w

bit rate (BR) (1) (station control and data acquisition) (supervisory control) (data acquisition and automatic control) The number of bits transferred in a given time interval. Bits per second is a measure of the rate at which bits are transmitted. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) (data transmission) The speed at which bits are transmitted; usually expressed in bits per second. (PE) 599-1985w

(3) The number of bits transmitted per unit of time, usually expressed in bits per second (bps). (COM/TA) 1007-1991r

(4) The rate of data throughput on the medium in bits per second or hertz, whichever is more appropriate to the context. *Synonym:* bit transfer rate. *Contrast:* baud rate. (C) 610.7-1995

(5) The rate at which data are transmitted, expressed in bits per unit time. *Synonym:* bit transfer rate. *See also:* baud rate. (C) 610.10-1994w

(6) The total number of bits per second transferred to or from the Media Access Control (MAC). For example, 100BASE-T has a bit rate of one hundred million bits per second (10^8 b/s). (C/LM) 802.3-1998

bit rate/2 One-half of the BR in hertz. (C/LM) 802.3-1998

bit-retention The time interval from the writing of either state into a specified memory location to the earliest appearance of an incorrect state from such memory location, as measured on the specified output terminal(s). (ED) 1005-1998

bit-retention time The retention time for one address location. (ED) 641-1987w

bit serial Pertaining to a method of sequentially processing a contiguous set of bits one at a time over a single wire, according to a fixed sequence. (C) 610.10-1994w

bit slice Pertaining to a device consisting of an n-bit functional component, such as an arithmetic and logic unit (ALU), or a sequencer, which may be cascaded with one or more identical devices to expand the width of its function by multiples of n. *See also:* bit slice device; bit slice processor. (C) 610.10-1994w

bit slice architecture An architecture in which a section of the register and the arithmetic and logic unit in a computer is placed into one package. *See also:* bit slice processor. (C) 610.10-1994w

bit slice device A device that uses bit slice technology. (C) 610.10-1994w

bit slice microprocessor *See:* bit slice device; bit slice processor.

bit slice processor A processor that is built from multiple bit slices to any given word-size. (C) 610.10-1994w

bits per second (bps) A unit of data transmission speed, expressed as the number of bits transmitted per second. *Note:* IEEE Std 260.1-1993 specifies b/s as the SI unit symbol for bits per second. *Contrast:* baud rate. (C) 610.7-1995

bits per unit time (test, measurement, and diagnostic equipment) Operating number of bits, handled by a device in a given unit of time, under specified conditions. (MIL) [2]

bit steering A microprogramming technique in which the meaning of a field in a microinstruction is dependent on the value of another field in the microinstruction. *Synonym:* immediate control. *Contrast:* residual control. *See also:* two-level encoding. (C) 610.12-1990

bit stream A continuous stream of bits transmitted over a channel with no separators between the character groups. (C) 610.7-1995, 610.10-1994w

bit string (1) A sequence of binary digits; for example, the bit string 0101001. *See also:* character string. (C) 610.5-1990w

(2) An ordered sequence of zero or more bits. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

bit stuffing A method to insert extra bits in a bit stream to achieve transparency throughout the bit stream. (C) 610.7-1995

bit time (BT) The duration of one bit as transferred to and from the MAC. The bit time is the reciprocal of the bit rate. For example, for 100BASE-T the bit rate is 10^{-8} s or 10 ns. (LM/C) 8802-3-1993s, 802.3-1998

bit transfer rate *See:* bit rate.

BIU *See:* bus interface unit.

bivariant function generator A function generator having two input variables. *See also:* electronic analog computer. (C) 165-1977w

BIXIT *See:* bus implementation extra information for testing.

BIXIT pro forma *See:* bus implementation extra information for testing pro forma.

black Pertains to the parts of a computer or communications system in which data being transmitted or manipulated is encrypted. *Contrast:* red. (C) 610.7-1995

black and white *See:* monochrome.

blackbody (1) (A) (fiber optics) A totally absorbing body (which reflects no radiation). *Note:* In thermal equilibrium, a blackbody absorbs and radiates at the same rate; the radiation will just equal absorption when thermal equilibrium is maintained. *See also:* emissivity. **(B) ([planckian] locus [illuminating engineering])** The locus of points on a chromaticity diagram representing the chromaticities of blackbodies having various (color) temperatures. **(C) (illuminating engineering)** A temperature radiator of uniform temperature whose radiant exitance in all parts of the spectrum is the maximum obtainable from any temperature radiator at the same temperature. Such a radiator is called a blackbody because it will absorb all the radiant energy that falls upon it. All other temperature radiators may be classed as nonblackbodies. They radiate less in some or all wavelength intervals than a blackbody of the same size and the same temperature. *Note:* The blackbody is practically realized over limited solid angles in the form of a cavity with opaque walls at a uniform temperature and with a small opening for observation purposes. (Std100/EEC/IE) 812-1984, [126]

(2) An ideal material that absorbs all incident radiation. *Note:* Under thermal equilibrium, a blackbody is a perfect emitter with its emissivity and absorptivity equal to unity. The radiation spectrum of a blackbody is given by Planck's radiation law. (AP/PROP) 211-1997

black box (A) A system or component whose inputs, outputs, and general function are known but whose contents or implementation are unknown or irrelevant. *See also:* encapsulation. **(B)** Pertaining to an approach that treats a system or component as in definition (A). *Contrast:* glass box. *See also:* encapsulation. (C) 610.12-1990

black box model A model whose inputs, outputs, and functional performance are known, but whose internal implementation is unknown or irrelevant; for example, a model of a computerized change-return mechanism in a vending machine, in the form of a table that indicates the amount of change to be returned for each amount deposited. *Synonyms:* input/output model; behavioral model. *Contrast:* glass box model. (C) 610.3-1989w

black-box testing *See:* functional testing.

black compression (television) The reduction in gain applied to a picture signal at those levels corresponding to dark areas in a picture with respect to the gain at that level corresponding to the mid-range light value in the picture. *Note:* (1) The gain referred to in the definition is for a signal amplitude small in comparison with the total peak-to-peak picture signal involved. A quantitative evaluation of this effect can be obtained by a measurement of differential gain. (2) The overall effect of black compression is to reduce contrast in the low lights of the picture as seen on a monitor. *Synonym:* black saturation. *See also:* television. (BT/AV) [34]

black level (television) The level of the picture signal corresponding to the maximum limit of black peaks. *See also:* television. (BT/AV) [34]

black light (illuminating engineering) The popular term for ultraviolet energy near the visible spectrum. *Note:* For engineering purposes the wavelength range 320–400 nm (nanometers) has been found useful for rating lamps and their effectiveness upon fluorescent materials (excluding phosphors used in fluorescent lamps). By confining "black light" applications to this region, germicidal, and erythemal effects are, for practical purposes, eliminated. (EEC/IE) [126]

black light flux (illuminating engineering) Radiant flux within the wavelength range 320−400 nm (nanometers). It is usually measured in milliwatts. *Note:* The fluoren is used as a unit of "black light" flux and is equal to one milliwatt of radiant flux in the wavelength range 320−400 nm. Because of the variability of the spectral sensitivity of materials irradiated by "black light" in practice, no attempt is made to evaluate "black light" flux according to its capacity to produce effects. (EEC/IE) [126]

black light flux density (illuminating engineering) "Black light" flux per unit area of the surface being irradiated. It is equal to the incident "black light" flux divided by the area of the surface when the flux is uniformly distributed. It usually is measured in milliwatts per unit area of "black light" flux. (EEC/IE) [126]

black peak (television) A peak excursion of the picture signal in the black direction. (BT/AV) [34]

black recording (A) (amplitude-modulation facsimile system) The form of recording in which the maximum received power corresponds to the maximum density of the record medium. **(B) (frequency-shift facsimile system)** The form of recording in which the lowest received frequency corresponds to the maximum density of the record medium. *See also:* recording. (COM) 168-1956

black saturation *See:* black compression.

black signal (at any point in a facsimile system) The signal produced by the scanning of a maximum-density area of the subject copy. *See also:* facsimile signal. (COM) 168-1956w

black transmission (A) (amplitude-modulation facsimile system) The form of transmission in which the maximum transmitted power corresponds to the maximum density of the subject copy. **(B) (frequency-modulation facsimile system)** The form of transmission in which the lowest transmitted frequency corresponds to the maximum density of the subject copy. *See also:* facsimile transmission. (COM) 168-1956

blade (1) (of a switching device) The moving contact member that enters or embraces the contact clips. *Notes:* 1. In cutouts the blade may be a fuse carrier or fuseholder on which a nonfusible member has been mounted in place of a fuse link. When so used the nonfusible member alone is also called a blade in fuse parlance. 2. In distribution cutouts the blade may be a nonfusible member for mounting on a fuse carrier in place of a fuse link, or in a fuse support, in place of a fuse holder. *Synonym:* disconnecting blade. (SWG/PE) C37.30-1971s

(2) (disconnecting blade of a switch or disconnecting cutout) The moving contact member that enters or embraces the contact clips. *Note:* In distribution cutouts, the blade may be a non-fusible member for mounting on a fuse carrier in place of a fuse link, or in a fuse support, in place of a fuseholder. (SWG/PE) C37.40-1993

(3) (of a switching device) The moving contact member that enters or embraces the contact clips. *Note:* In cutouts, the blade may be a fuse carrier or fuseholder on which a nonfusible member has been mounted in place of a fuse link. When so used, the nonfusible member alone is also called a blade in fuse parlance. *Synonym:* disconnecting blade. (SWG/PE) C37.100-1992

blade antenna A form of monopole antenna that is blade-shaped for strength and low aerodynamic drag. (AP/ANT) 145-1993

blade control deadband (hydraulic turbines) The magnitude of the change in the blade control cam follower position required to reverse the travel of the blade control servomotor. The deadband is expressed in percent of the change in cam follower position required to move the blades from extreme "flat" to extreme "steep." (PE/EDPG) 125-1977s

blade guide An attachment to ensure proper alignment of the blade and contact clip when closing the switch. (SWG/PE) C37.100-1992

blade latch A latch used on a stick operated switch to hold the switch blade in the closed position. (SWG/PE) C37.100-1992, C37.40-1981s

⟨blank⟩ One of the characters that belong to the blank character class as defined via the LC_CTYPE category in the current locale. In the POSIX Locale, a ⟨blank⟩ is either a ⟨tab⟩ or a ⟨space⟩. (PA/C) 9945-2-1993

blank (A) (test, measurement, and diagnostic equipment) A place of storage where data may be stored. *Synonym:* space. **(B) (test, measurement, and diagnostic equipment)** A character, used to indicate an output space on a printer in which nothing is printed. **(C) (test, measurement, and diagnostic equipment)** A condition of no information at all in a given column of a punched card or in a given location on perforated tape. (MIL) [2]

blank character (1) A character used to produce a character space on an output medium. (C) [20], [85]
(2) (computer graphics) A graphic representation of the space character. (C) 610.5-1990w

blanked picture signal (television) The signal resulting from blanking a picture signal. *Note:* (1) Adding synchronizing signal to the blanked picture signal forms the composite picture signal. (2) This signal may or may not contain setup. A blanked picture signal with setup is commonly called a non-composite signal. *See also:* television. (BT/AV) [34], [27]

blanket *See:* conductor cover.

blanketing The action of a powerful radio signal or interference in rendering a receiving set unable to receive desired signals. *See also:* radiation. (EEC/PE) [119]

blank groove *See:* unmodulated groove.

blanking (1) (general) The process of making a channel or device noneffective for a desired interval.
(2) (television) The substitution for the picture signal, during prescribed intervals, of a signal whose instantaneous amplitude is such as to make the return trace invisible. *See also:* television. (EEC/PE) [119]
(3) (oscilloscopes) Extinguishing of the spot. Retrace blanking is the extinction of the spot during the retrace portion of the sweep waveform. The term does not necessarily imply blanking during the holdoff interval or while waiting for a trigger in a triggered sweep system. (IM/HFIM) [40]

blanking, chopped *See:* chopping transient blanking.

blanking, chopping transient *See:* chopping transient blanking.

blanking, deflection *See:* deflection blanking.

blanking level (television) That level of a composite picture signal which separates the range containing picture information from the range containing synchronizing information. *Note:* This term should be used for controls performing this function. (BT) [27]

blanking signal (television) A wave constituted of recurrent pulses, related in time to the scanning process, used to effect blanking. *Note:* In television, this signal is composed of pulses at line and field frequencies, which usually originate in a central synchronizing generator and are combined with the picture signal at the pickup equipment in order to form the blanked picture signal. The addition of synchronizing signal completes the composite picture signal. The blanking portion of the composite picture signal is intended primarily to make the return trace on a picture tube invisible. The same blanking pulses or others of somewhat shorter duration are usually used to blank the pickup device also. *See also:* television. 337

blanking, transient *See:* chopping transient blanking.

blank line A line consisting solely of zero or more ⟨blank⟩s terminated by a ⟨newline⟩. *See also:* empty line. (C/PA) 9945-2-1993

blank medium A data medium on which neither marks of reference, nor user data are recorded; For example, an unformatted floppy disk. *See also:* empty medium; virgin medium. (C) 610.10-1994w

blaster *See:* blasting unit.

blasting circuit A shot-firing cord together with connecting wires and electric blasting caps used in preparation for the firing of a blast in mines, quarries, and tunnels. *See also:* blasting unit. (EEC/PE) [119]

blasting switch A switch used to connect a power source to a blasting circuit. *Note:* A blasting switch is sometimes used to short-circuit the leading wires as a safeguard against premature blasts. *See also:* blasting unit. (EEC/PE) [119]

blasting unit A portable device including a battery or a hand-operated generator designed to supply electric energy for firing explosive charges in mines, quarries, and tunnels. *Synonyms:* exploder; blaster. (EEC/PE) [119]

bleaching (laser maser) The decrease of optical absorption produced in a medium by radiation or by external forces. (LEO) 586-1980w

bleeder A resistor connected across a power source to improve voltage regulation, to drain off the charge remaining in capacitors when the power is turned off, or to protect equipment from excessive voltages if the load is removed or substantially reduced. (EEC/PE) [119]

blemish (television) A small area brightness gradient in the reproduced picture, not present in the original scene. (BT) [27]

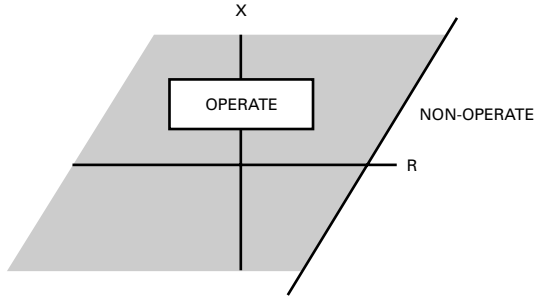
blemish charge (storage tubes) A localized imperfection of the storage assembly that produces a spurious output. *See also:* storage tube. (ED) 158-1962w, [45], 161-1971w

blending The combination of two or more modes of braking (e.g., rheostatic electric brake, regenerative electric brake, and friction brake) to produce the desired total retarding effort. (VT) 1475-1999

BLERT *See:* block error rate testing.

blinder A relay having a characteristic on an *R-X* diagram of one or more essentially straight lines, usually positioned at 75° to 90° from the *R*-axis and displaced from the origin. (SWG/PE) C37.100-1992

blinder characteristic A nondirectional distance relay characteristic in which the threshold of operation substantially plots as a straight line on an *R-X* diagram with the reach essentially resistive and largely independent of the reactance value. Generally this threshold of operation is positioned at an angle of 75° to 90° from the *R* axis. See figure below.



blinder characteristic
(SWG/PE) C37.100-1992

blinding glare (illuminating engineering) Glare that is so intense that for an appreciable length of time after it has been removed, no object can be seen. (EEC/IE) [126]

blind interrogation Access to a facility (e.g., the device identification register) without prior knowledge of the test logic operation of the specific component being accessed. (TT/C) 1149.1-1990

blind matrix spike A matrix spike sample sent through normal processing wherein the processor knows that the sample is of QA origin but does not know the nuclide or nuclide concen-

tration. The terminology "Single Blind Matrix Spike" is also commonly used. (NI) N42.23-1995

blind phase In moving-target indication (MTI) radars, when the echo of interest is in quadrature to the reference signal. It occurs in systems that detect only the in-phase signal component. *See also:* moving-target indication. (AES) 686-1997

blind quality control sample Also referred to as a single blind quality control sample. Similar to a spike sample except that a blind sample is presented to the laboratory or analyst by whom the sample may be recognized as a quality control sample but the quantity and identity of the analytes are unknown. (NI) N42.23-1995

blind range A range corresponding to the time delay of an integral multiple of the interpulse period plus a time less than or equal to the transmitted pulse length. *Note:* A radar usually cannot detect targets at a blind range because of interference by a subsequent transmitted pulse. *See also:* eclipsing. (AES) 686-1997

blind replicate A replicate sample unknown to the analyst. (NI) N42.23-1995

blind replicate reference standard A sample of known concentration prepared from a purchased standard reference material and submitted as a blind sample into the laboratory. (NI) N42.23-1995

blind speed [radar using moving-target indication (MTI)] Radial velocity of a target with respect to the radar for which the MTI response is approximately zero. *Note:* In a coherent MTI system using a uniform repetition rate, a blind speed is a radial velocity at which the target changes its distance by one-half wavelength, or a multiple thereof, during each pulse-repetition interval. (AES) 686-1997

blind spot A limited range within the total domain of application of a device, generally at values inferior to the maximum rating. Operation of the equipment or of the protective device might fail in that limited range despite the device's demonstration of satisfactory performance at maximum ratings. (SPD/PE) C62.45-1992r

blind study *See:* single-blind study; double-blind study.

B-line *See:* index register.

blink A technique in which a display element is alternately blanked and displayed. *See also:* highlight. (C) 610.6-1991w

blinking (pulse systems) (navigation aids) A method of providing information by modifying the signal at its source so that the signal presentation on the display at the receiver alternately appears and disappears, for example, in loran, blinking is used to indicate that the signals of a pair of stations are out of synchronization. (AES/GCS) 172-1983w

blip (1) (navigation aids) (radar) A deflection or a spot of contrasting luminescence on a radar display caused by the presence of a target. (AES/GCS) 172-1983w, 686-1997
(2) *See also:* document mark. (C) 610.2-1987

blip-scan ratio The fraction of scans for which a blip is observed at a given range. *Synonym:* single-scan probability of detection. (AES) 686-1997

BLISS *See:* Basic Language for Implementation of System Software.

blitter *See:* bit blitter circuit; bit block transfer.

Block An instance of a subclass of `IEEE1451_Block`. (IM/ST) 1451.1-1999

block (1) (A) (data transmission) A set of things, such as words, characters, or digits handled as a unit. **(B) (data transmission)** A collection of contiguous records recorded as a unit. **(C) (data transmission)** In data communications, a group of contiguous characters formed for transmission purposes. **(D)** A circuit assemblage that functions as a unit. For example, a logic block within a sequential circuit. (PE/C) 599-1985, 610.7-1995, 610.10-1994
(2) (railway practice) A length of track of defined limits on which the movement of trains is governed by block signals, cab signals, or both. *See also:* absolute block. (EEC/PE) [119]
(3) (A) (software) A group of contiguous storage locations, computer program statements, records, words, characters, or bits that are treated as a unit. **(B) (software)** To form a group as in definition (A). *Contrast:* deblock. (C) 610.7-1995, 610.5-1990, 610.10-1994, 610.12-1990
(4) In text editing and text formatting, one or more contiguous characters or lines of text. (C) 610.2-1987
(5) (city, town, or village) A square or portion of a city, town, or village enclosed by streets and including the alleys so enclosed but not any street. (NESC/NEC) [86]
(6) A device designed with one or more single sheaves, a wood or metal shell, and an attachment hook or shackle. When rope is reeved through two of these devices, the assembly is commonly referred to as A *block and tackle*. A *set of fours* refers to a block and tackle arrangement utilizing two 4 in double sheave blocks to obtain four load-bearing lines. Similarly, a *set of fives* or a *set of sixes* refers to the same number of load-bearing lines obtained using two 5 in or two 6 in double sheave blocks, respectively. (PE/T&D) 524-1992r
(7) (as applied to static relay design) An output signal of constant amplitude and specified polarity derived from an alternating input and with the duration controlled by the polarity of the input quantity. (SWG/PE) C37.100-1992
(8) A group of data that is contiguous in nature. *Synonym:* sector. (C/MM/ED) 855-1990, 1005-1998

block allocation *See:* paging.

Block and List Manipulator A programming language, based on LISP, but containing an ALGOL-like syntax, data types such as vectors and strings, and the ability to write macro-instructions. (C) 610.13-1993w

block and tackle *See:* rope block.

block average demand An average value occurring over a demand period specified by the end device (e.g., watthours/hours). The value may be saved by the end device for maximum or minimum registration. (AMR/SCC31) 1377-1997

block–block element A signal element in which two blocks are compared as to coincidence or sequence. (SWG/PE) C37.100-1992

block cable (communication practice) A distribution cable installed on poles or outside building walls, in the interior of a block, including cable run within buildings from the point of entrance to a cross-connecting box, terminal frame, or point of connection to house cable. *See also:* cable. (EEC/PE) [119]

block character *See:* end of transmission block character.

block check character In longitudinal redundancy checking and cyclic redundancy checking, a character that is transmitted by the sender after each message block and is compared with a character computed by the receiver to determine if the transmission was successful. (C) 610.7-1995

block clear Operation that sets a block of data within a memory to a common "1" state without affecting any other memory block. *Note:* In the field of nonvolatile memories, clear conventionally means "set to a '1' state." (ED) 1005-1998

Block Cookie The value of the cookie of a specific Block. (IM/ST) 1451.1-1999

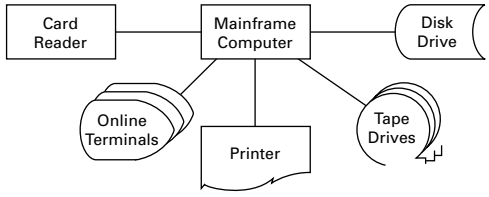
block copy (1) In text editing, an operation that copies a block of text from one point to another within a file or between files, leaving the original block of text intact. (C) 610.2-1987
(2) A series of read or write transactions to sequential memory locations. (C/BA) 896.3-1993w
(3) A block copy operation is characterized by a long series of read or write transactions to sequential memory locations. (C/BA) 10857-1994
(4) This operation is characterized by a long series of read or write transactions to sequential memory locations. (C/BA) 896.4-1993w

block count readout Display of the number of blocks that have been read from the tape derived by counting each block as it is read. *See also:* sequence-number readout. (IA) [61]

block delete In text editing, an operation that removes a block of text from a file. (C) 610.2-1987

block_descriptor A cell in a block_vector containing a pointer to the first byte of a contiguous storage block, the size of the block, and a flag. The flag indicates whether the storage block contains data or an extension to the block_vector. (C/MM) 1212.1-1993

block diagram (software) A diagram of a system, computer, or device in which the principal parts are represented by suitably annotated geometrical figures to show both the functions of the parts and their functional relationships. *Synonym:* configuration diagram; system resources chart. *See also:* structure chart; input-process-output chart; box diagram; graph; bubble chart.



block diagram

(C) 610.12-1990

blocked channel A channel with at least one blocked endpoint. (C/MM) 1284.4-2000

blocked conductor A stranded conductor whose interstices are filled with a compound that prevents the migration of moisture along the interstices. (PE/IC) 1142-1995

blocked dial tone Occurs when the customer line cannot access any digit receiver because of overload, particularly in the front-end concentrator. In some systems, overload is the major reason for extremely long dial-tone delays. (COM/TA) 973-1990w

blocked endpoint An endpoint that is unable to send data on a connection due to lack of credit. A blocked endpoint becomes unblocked when it is granted credit to send data on that connection. (C/MM) 1284.4-2000

blocked impedance (transducer) The input impedance of the transducer when its output is connected to a load of infinite impedance. *Note:* For example, in the case of an electromechanical transducer, the blocked electric impedance is the impedance measured at the electric terminals when the mechanical system is blocked or clamped: the blocked mechanical impedance is measured at the mechanical side when the electric circuit is open-circuited. *See also:* self-impedance. (SP) [32]

blocked process A process that is waiting for some condition (other than the availability of a processor) to be satisfied before it can continue execution. (C/PA) 1003.1b-1993s

blocked record A record that is contained in a block that contains at least one other record. *See also:* unblocked record; spanned record. (C) 610.5-1990w

blocked task An Ada task that is not running or ready to run. A task is either blocked or ready to run. While ready, a task competes for the available execution resources that it requires to run. An operation that causes a task to become blocked is said to *block* the task, and an operation that causes a task to no longer be blocked is said to *unblock* the task. (C) 1003.5-1999

blocked thread A thread that is waiting for some condition (other than the availability of a processor) to be satisfied before it can continue execution. (C/PA) 9945-1-1996

block erase (A) Signal (command) that causes the erasing of a block of data within a memory without affecting any other memory block. **(B)** The operation of erasing a block of data. (ED) 1005-1998

block error (data transmission) A discrepancy of information in a block as detected by a checking code or technique. (PE) 599-1985w

block error rate testing The process of testing a data transmission channel using groups of information arranged into transmission blocks in a given message for error checking. *See also:* bit error rate testing. (C) 610.7-1995

block-error ratio The ratio of the blocks in error received in a specified period to the total number of blocks received in the same period. (COM/TA) 1007-1991r

block errors A block is said to be in error when one or more bit errors occur in that block when it is transferred from the source to the destination within the timeslot assigned. (COM/TA) 1007-1991r

block gap* *See:* interblock gap.
* Deprecated.

block ground *See:* traveler ground.

block, hold-down *See:* hold-down block.

block indicator A device used to indicate the presence of a train in a block. (EEC/PE) [119]

blocking (1) (tube rectifier) The prevention of conduction by means of grid or ignitor action, or both, when forward voltage is applied across a tube. (IA/CEM) [58]
(2) (semiconductor rectifiers) The action of a semiconductor rectifier cell that essentially prevents the flow of current. *See also:* rectification. (IA) 59-1962w, [12]
(3) (rotating machinery) A structure or combination of parts, usually of insulating material, formed by hold coils in relative position for mechanical support. *Note:* Usually inserted in the end turns to resist forces during running and abnormal conditions. *See also:* stator. (PE) [9]
(4) (telephone switching systems) The inability of a telecommunication system to establish a connection due to the unavailability of paths. (COM) 312-1977w
(5) (computers) The process of creating a block from one or more records. (C) 610.5-1990w, 610.12-1990
(6) A relay function that prevents action that would otherwise be initiated by the relay system. (SWG/PE) C37.100-1992
(7) Executing with `POSIX_IO.Non_Blocking` not set. *See also:* nonblocking. (C) 1003.5-1999

blocking behavior The effect on other tasks in the same partition when a task is blocked by a POSIX operation. Certain POSIX operations are required to block the calling task under defined conditions. For implementation-defined reasons a blocked task may prevent other tasks from executing. (C) 1003.5-1999

blocking capacitor (1) A capacitor that introduces a comparatively high series impedance for limiting the current flow of low-frequency alternating current or direct current without materially affecting the flow of high-frequency alternating current. *Synonym:* blocking condenser. (IM) [120]
(2) (check valve) An asymmetrical cell used to prevent flow of current in a specified direction. (PE/EEC) [119]

blocking condenser *See:* blocking capacitor.

blocking contact (of a semiconductor radiation detector) That contact from which depletion proceeds into the semiconductor material under conditions of reverse bias. (NPS) 300-1988r

blocking factor The number of records, words, characters, or bits in a block. (C) 610.12-1990, 610.5-1990w

blocking interval (circuit properties) (self-commutated converters) An interval during which voltage is impressed across a switching element in its off-state. (IA/SPC) 936-1987w

blocking oscillator (1) A relaxation oscillator consisting of an amplifier (usually single-stage) with its output coupled back to its input by means that include capacitance, resistance, and mutual inductance. *See also:* oscillatory circuit. (EEC/PE) [119]
(2) (squegging oscillator) An electron-tube oscillator operating intermittently with grid bias increasing during oscillation to a point where oscillations stop, then decreasing until

oscillation is resumed. *Note:* Squegge rhymes with wedge. *See also:* oscillatory circuit. (AP/ANT) 145-1983s

blocking period (1) (rectifier circuit element) The part of an alternating-voltage cycle during which reverse voltage appears across the rectifier-circuit element. *Note:* The blocking period is not necessarily the same as the reverse period because of the effect of circuit parameters and semiconductor rectifier cell characteristics. *See also:* rectifier circuit element. (IA) 59-1962w

(2) (gas tube) The part of the idle period corresponding to the commutation delay due to the action of the control grid. (ED) [45], [84]

blocking relay (1) (power system device function numbers) A relay that initiates a pilot signal for blocking of tripping on external faults in a transmission line or in other apparatus under predetermined conditions, or cooperates with other devices to block tripping or to block reclosing on an out-of-step condition or on power swings. (SUB/PE) C37.2-1979s

(2) A relay whose function is to render another relay or device ineffective under specified conditions. (SWG/PE) C37.100-1992

blocking signal A logic signal that is transmitted in a pilot scheme to prevent tripping. (PE/PSR) C37.113-1999

blocking switching network (telephone switching systems) A switching network in which a given outlet cannot be reached from any given inlet under certain traffic conditions. (COM) 312-1977w

blocking voltage The maximum voltage that can be applied to current-limiting pairs of terminals of a surge protector containing one or more current-protective devices without degradation of the surge protector. (SPD/PE) C62.36-1994

block, input *See:* input block.

block-interval demand meter *See:* integrated-demand meter; demand meter.

block-interval demand register (mechanical demand registers). A demand register that indicates or registers the maximum demand obtained by arithmetically averaging the meter registration over a regularly repeated time interval. (ELM) C12.4-1984

block length The number of units in a block. *Synonym:* block size. (C) 610.5-1990w

block-mode terminal A terminal device operating in a mode incapable of the character-at-a-time input and output operations described by some of the standard utilities. (C/PA) 9945-2-1993

block move In text editing, an operation that moves a block of text from one point to another within a file or between files, deleting the block of text from its original location. *Synonym:* block movement. (C) 610.2-1987

block movement *See:* block move.

block operation In text editing, an operation that affects a block of text. For example, block copy, block delete, block move. (C) 610.2-1987

block-organized random-access memory (BORAM) A memory arrangement that permits random access to blocks of memory cells that are read using serial transmission methods. *Note:* A block is a singly addressed large number of memory cells (greater than needed for a single computer word operation). (ED) 641-1987w

block overhead Any information, besides the actual data, that is stored with a block; for example, the size and location of the records within the block is considered overhead. *See also:* loading factor. (C) 610.5-1990w

block parity A parity check system capable of detecting and correcting a single error in a binary message. *See also:* parity check. (C) 1084-1986w

block read cycle A data transfer bus (DTB) cycle that is used to transfer a block of bytes ranging in number from 1 to 256 bytes from a to a master. This transfer is executed by using a string of l-, 2-, or 4-byte data transfers. Once the block transfer is initiated, the master does not release the DTB until all of the bytes have been transferred. This operation differs from a string of read cycles insofar as the master broadcasts only one address and one address modifier (at the beginning of the cycle). The slave then increments this address on each transfer so that the data for the next transfer is retrieved from the next higher location. (C/BA) 1014-1987

block read transaction An address beat followed by a block of one or more data read transfers from a set of contiguous addresses beginning with the address in the address beat. This is terminated by the appropriate style of end beat. (MM/C) 896.1-1987s

block select An input terminal to which a signal must be applied in order to permit the device to read or write a block of data. (ED) 1005-1998

block signal A fixed signal installed at the entrance of a block to govern trains entering and using that block. (EEC/PE) [119]

block-signal system A method of governing the movement of trains into or within one or more blocks by block signals or cab signals. (EEC/PE) [119]

block size *See:* block length.

block special file A file that refers to a device. A block special file is normally distinguished from a character special file by providing access to the device in a manner such that the hardware characteristics of the device are not visible. (C/PA) 9945-1-1996, 9945-2-1993, 1003.5-1999

block-spike element A signal element in which a block and a spike are compared as to coincidence. (SWG/PE) C37.100-1992

block, splice release *See:* hold-down block.

Block State Machine The state machine specified for the referenced Block. (IM/ST) 1451.1-1999

block station A place at which manual block signals are displayed. (EEC/PE) [119]

block-structured language A design language or programming language in which sequences of statements, called blocks, are defined, usually with begin and end delimiters, and variables or labels defined in one block are not recognized outside that block. Examples include Ada, ALGOL, C, PL/1, Pascal, MENTOR, and Modula II. *See also:* structured programming language. (C) 610.13-1993w, 610.12-1990

block transfer (1) (FASTBUS acquisition and control) The portion of a FASTBUS operation in which a master either sends data to or receives data from an attached slave on every transition of data sync. The slave acknowledges receipt of or sends data with every transition of data acknowledge. (NID) 960-1993

(2) (STEbus) A sequence of data transfers, in the same direction, that occur during a single bus transaction. (MM/C) 1000-1987r

(3) (NuBus) A transaction in which a single address is conveyed by the master and multiple data items from sequential addresses are then communicated between the master and the slave. (C/MM) 1196-1987w

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block-transfer read cycle A DTB cycle that is used to transfer a block of bytes from the responding slave to the active master, and possibly to participating slaves. This transfer is done using a number of 1, 2, or 4-byte data transfers. It differs from a series of single-transfer read cycles in that the master broadcasts the address only once, at the beginning of the cycle. It is the responsibility of the selected slaves to control the address for each subsequent data transfer. (C/MM) 1096-1988w

block-transfer write cycle A DTB cycle that is used to transfer a block of bytes from the active master to the selected slaves. This transfer is done using a series of 1, 2, or 4-byte data transfers. It differs from a series of single-transfer write cycles in that the master broadcasts the address only once, at the beginning of the cycle. It is the responsibility of the selected slaves to control the address for each subsequent data transfer. (C/MM) 1096-1988w

block_vector An effective_length parameter and an array of block_descriptors referencing storage locations for application data or unit-dependent information. The referenced blocks are physically segmented but logically contiguous. The descriptor array may also be segmented and one flagged descriptor per array segment may be used to point to an extension of the vector. The effective_length parameter limits the transfer of data bytes. (C/MM) 1212.1-1993

block write cycle A data transfer bus (DTB) cycle used to transfer a block of bytes ranging in number from 1 to 256 bytes from a master to a slave. It uses a string of l-, 2-, or 4-byte data transfers. Once the block transfer is initiated, the master does not release the DTB until all of the bytes have been transferred. It differs from a string of write cycles insofar as the master broadcasts only one address and one address modifier (at the beginning of the cycle). The slave then increments this address on each transfer so that the data from the next transfer is stored in the next higher location. (C/BA) 1014-1987

block write transaction An address beat followed by a block of one or more data write transfers to a set of contiguous addresses beginning with the address in the address beat. This is terminated by the appropriate style of end beat. (C/MM) 896.1-1987s

Blondel diagram (rotating machinery) A phasor diagram intended to illustrate the currents and flux linkages of the primary and secondary windings of a transformer, and the components of flux due to primary and secondary winding currents acting alone. *Note:* This diagram is also useful as an aid in visualizing the fluxes in an induction motor. *See also:* asynchronous machine. (PE) [9]

blooming (1) (A) (diode-type camera tube) The increase in the size of the displayed image of a bright source when its irradiance is sufficient to cause overload of the mosaic target. It is measured in the display of the video output as the ratio of the enlarged spot size to the dimension of the active raster diagonal. **(B) (diode-type camera tube)** The ratio of the image device generated spot size at overload to the size of the active raster diagonal. The actual spot size imaged upon the device photosensitive surface is chosen as one percent of the active raster diagonal. (ED) 503-1978

(2) An increase in the blip size on the display as a result of an increase in signal intensity or duration. (AES) 686-1997

blowback In micrographics, an enlargement. (C) 610.2-1987

blower blade (rotating machinery) An active element of a fan or blower. *See also:* fan. (PE) [9]

blower housing *See:* fan housing.

blowoff valve (gas turbines) A device by means of which a part of the air flow bypasses the turbine(s) and/or the regenerator to reduce the rate of energy input to the turbine(s). *Note:* It may be used in the speed governing system to control the speed of the turbine(s) at rated speed when fuel flow permitted by the minimum fuel limiter would otherwise cause the turbine to operate at a higher speed. *See also:* asynchronous machine. (PE/EDPG) 282-1968w, [5]

blowout coil An electromagnetic device that establishes a magnetic field in the space where an electric circuit is broken and helps to extinguish the arc by displacing it, for example, into an arc chute. (IA/EEC/IAC/REE) [60], [84], [87]

blowout magnet A permanent-magnet device that establishes a magnetic field in the space where an electric circuit is broken and helps to extinguish the arc by displacing it. *See also:* relay. (EEC/REE) [87]

blt *See:* bit block transfer.

blt chip An integrated circuit whose purpose is to perform bit block transfer operations. (C) 610.10-1994w

blue alarm *See:* alarm indication signal.

blue dip (electroplating) A solution containing a mercury compound, and used to deposit mercury upon an immersed metal, usually prior to silver plating. *See also:* electroplating. (EEC/PE) [119]

blur (navigation aid terms) [null type direction finder (DF) systems] The output (including noise) at the bearing of minimum response expressed as a percentage of the output at the bearing of maximum response. (AES/GCS/RS) 173-1959w, 172-1983w, 686-1982s

blurred Pertaining to elements in an image that are indistinct or not readily discernable. *Contrast:* sharp. (C) 610.4-1990w

BMDP *See:* Biomedical Statistics Package.

B-message (analog voice frequency circuits) A frequency-weighting characteristic, used for measurement of noise in voice-frequency communications circuits and designed to weight noise frequencies in proportion to their perceived annoyance effect in telephone service. (COM/TA) 743-1984s

BNF *See:* Backus-Naur form.

BNR *See:* beacon reconfigure.

B*n*ZS code A bipolar line code with *n*-zero substitution. (COM/TA) 1007-1991r

board (1) (STEbus). A printed circuit board (pcb) that complies with IEEE Std 1000-1987. *See also:* problem board. (C/MM) 1000-1987r

(2) (VMEbus) A printed-circuit board (pcb), its collection of electronic components, and either one or two 96-pin connectors that can be plugged into backplane connectors. (BA/C) 1014-1987

(3) (VSB) A printed circuit (pc) board, its collection of electronic components, and at least one 96-pin connector. (C/MM) 1096-1988w

(4) (NuBus) A device connected to a bus. Usually constructed from a printed circuit board. Also referred to as a module. (C/MM) 1196-1987w

(5) A physical component that is inserted into one of the backplane slots. Note that a board may contain two nodes. (C/BA) 896.3-1993w

(6) The physical component of an SCI module that is inserted into one of the backplane slots. Note that a board may contain multiple nodes, and that nodes can be implemented without using boards or modules. (C/MM) 1596-1992

(7) A blank PCB. (C/MM) 1155-1992

(8) An electronic circuit assembly that connects to a single slot on the backplane. It is removable from and replaceable to a backplane assembly via connectors. This is standard terminology for VME64, while Futurebus+ uses module synonymously. (C/BA) 1014.1-1994w

(9) The physical component that is inserted into one of the backplane slots. (C/MM) 1212-1991s

(10) A device connected to a bus. Usually constructed from a printed circuit board. Also referred to as a module. (C/BA) 896.9-1994w

(11) A generic term used as an abbreviation for circuit board. (C) 610.10-1994w

(12) The physical component that is inserted into one of the backplane slots. Note that a board may contain multiple nodes. (C/MM) 1596.3-1996

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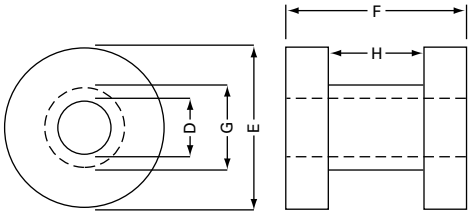
board assembly A board and its associated electrical components and connectors. (C/MM) 1155-1992

boatswain's chair (conductor stringing equipment) A seat designed to be suspended on a line reeved through a block and attached to a pulling device to hoist a workman to an elevated position. *Synonym:* bosun's chair. (T&D/PE) 524-1992r

bobbin (1) (primary cell) A body in a dry cell consisting of a depolarizing mix molded around a central rod of carbon and constituting the positive electrode in the assembled cell. *See also:* electrolytic cell. (EEC/PE) [119]

(2) (rotating machinery) Spool-shaped ground insulation fitting tightly on a pole piece, into which field coil is wound or placed. *See also:* rotor; stator. (PE) [9]

bobbin core A tape-wound core in which ferromagnetic tape has been wrapped on a form or bobbin that supplies mechanical support to the tape. *Note:* The dimensions of a bobbin are illustrated in the accompanying figure. Bobbin I.D. is the center-hole diameter (D) of the bobbin. Bobbin O.D. is the over-all diameter (E) of the bobbin. The bobbin height is the over-all axial dimension (F) of the bobbin. Groove diameter is the diameter (G) of the center portion of the bobbin on which the first tape wrap is placed. The groove width is the axial dimension (H) of the bobin measured inside the groove at the groove diameter.



dimensions of a bobbin

bobbin core

(Std100) 163-1959w

bobbin height *See:* bobbin core; tape-wound core.

bobbin I.D. *See:* bobbin core; tape-wound core.

bobbin O.D. *See:* bobbin core; tape-wound core.

Bode diagram (automatic control) A plot of log-gain and phase-angle values on a log-frequency base, for an element transfer function $G(j\omega)$, a loop transfer function $GH(j\omega)$, or an output transfer function $G(j\omega)/[1 + GH(j\omega)]$. The generalized Bode diagram comprises similar plots of functions of the complex variable $s = \sigma + j\omega$. *Note:* Except for functions containing lightly damped quadratic factors, the gain characteristic may be approximated by asymptotic straight-line segments that terminate at corner frequencies. The ordinate may be expressed as a gain, a log-gain, or in decibels as 20 times log-gain; the abscissa as cycles per unit time, radians per unit time, or as the ratio of frequency to an arbitrary reference frequency. *See also:* feedback control system.

(IM/PE/EDPG) [120], [3]

body *See:* housing.

body capacitance Capacitance introduced into an electric circuit by the proximity of the human body. (EEC/PE) [119]

body-capacitance alarm system A burglar alarm system for detecting the presence of an intruder through his or her body capacitance. *See also:* protective signaling.

(EEC/PE) [119]

body effect (metal-nitride-oxide field-effect transistor) This effect occurs when the potential in the substrate of a (p-channel) insulated-gate field-effect transistor (IGFET) is more positive than the source potential. It can be expressed as an increment that increases the threshold voltage of an IGFET. The effect occurs routinely in integrated circuits.

(ED) 581-1978w

body/finger ESD An electrostatic discharge from an intruding human finger or hand. Also called body/finger discharge.

(SPD/PE) C62.47-1992r

body generator suspension A design of support for an axle generator in which the generator is supported by the vehicle body. *See also:* axle-generator system. (EEC/PE) [119]

body/metal discharge *See:* hand/metal ESD.

body/metal ESD *See:* hand/metal ESD.

body resistance (1) Determined from the ratio of voltage applied to current flowing in a human body, neglecting capacitive and inductive effects. (T&D/PE) 524a-1993r

(2) Determined from the ratio of voltage applied to current flowing in a body, neglecting capacitive and inductive effects. That value impeding the current flow through the common body resulting from contact with an energized line.

(T&D/PE) 1048-1990

BOF *See:* beginning-of-file label.

bog anchor A heavy anchor of large surface area for use in unstable soils. (PE/T&D) 751-1990

bog shoe A piece of material, such as a section of pole or railroad tie, attached horizontally below the ground surface to increase the bearing area in unstable soils. Usually four shoes are installed, one on each side of the pole, at ninety degrees to each other. (T&D/PE) 751-1990

boilerplate text In word processing, standardized previously-stored textual material that may be used to create a new document. *Synonym:* stored paragraph. (C) 610.2-1987

bole The main stem of a tree of substantial diameter. Roughly capable of yielding sawn timber, veneer logs, or poles.

(PE/T&D) 751-1990

bolometer (1) (fiber optics) A device for measuring radiant energy by measuring the changes in resistance of a temperature-sensitive device exposed to radiation. *See also:* radiant energy; radiometry. (Std100) 812-1984w

(2) (waveguide components) A term commonly used to denote the combination of a bolometer element and a bolometer mount; sometimes used imprecisely to refer to a bolometer element. (MTT) 147-1979w

(3) (laser maser) A radiation detector of the thermal type in which absorbed radiation produces a measurable change in the physical property of the sensing element. The change in state is usually that of electrical resistance.

(LEO) 586-1980w

bolometer bridge A bridge circuit with provisions for connecting a bolometer in one arm and for converting bolometer-resistance changes to indications of power. *See also:* bolometric power meter. (IM/HFIM) [40]

bolometer bridge, balanced A bridge in which the bolometer is maintained at a prescribed value of resistance before and after radio-frequency power is applied, or after a change in radio-frequency power, by keeping the bridge in a state of balance. *Note:* The state of balance can be achieved automatically or manually by decreasing the bias power when the radio-frequency power is applied or increased and by increasing the bias power when the radio-frequency power is turned off, or decreased. The change in the bias power is a measure of the applied radio-frequency power. *See also:* bolometric power meter. (IM) 470-1972w

bolometer bridge, unbalanced A bridge in which the resistance of the bolometer changes after the radio-frequency power is applied and unbalances the bridge. The degree of bridge unbalance is a measure of the radio-frequency power dissipated in the bolometer. *See also:* bolometric power meter.

(IM/HFIM) [40]

bolometer-coupler unit A directional coupler with a bolometer unit attached to either the side arm or the main arm, normally used as a feed-through power-measuring system. *Note:* Typically, a bolometer unit is attached to the side arm of the coupler so that the radio-frequency power at the output port can be determined from a measurement of the substitution power in the side arm. This system can be used as a terminating power meter by terminating the output port of the directional coupler. *See also:* bolometric power meter.

(IM) 470-1972w

bolometer element (waveguide components) (bolometric detector) A power-absorbing element that uses the resistance change related to the temperature coefficient of resistivity (either positive or negative) as a means of measuring or detecting the power absorbed by the element.

(MTT) 147-1979w

bolometer mount (1) (general) A waveguide or transmission-line termination that houses a bolometer element(s). *Note:* It normally contains internal matching devices or other reactive elements to obtain specified impedance conditions when a bolometer element is inserted and appropriate bias power is applied. Bolometer mounts may be subdivided into tunable, fixed-tuned, and broad-band untuned types. *See also:* bolometric power meter. (IM) 470-1972w

(2) (waveguide components) A waveguide or transmission line termination that can house a bolometer element. (MTT) 147-1979w

bolometer unit An assembly consisting of a bolometer element or elements and bolometer mount in which they are supported. *See also:* bolometric power meter. (IM) 470-1972w

bolometer unit, dual element An assembly consisting of two bolometer elements and a bolometer mount in which they are supported. *Note:* The bolometer elements are effectively in series to the bias power and in parallel to the radio frequency power. (IM/HFIM) [40]

bolometric detector (bolometers) The primary detector in a bolometric instrument for measuring power or current and consisting of a small resistor, the resistance of which is strongly dependent on its temperature. *Notes:* 1. Two forms of bolometric detector are commonly used for power or current measurement: The barretter that consists of a fine wire or metal film, and the thermistor that consists of a very small bead of semiconducting material having a negative temperature-coefficient of resistance; either is usually mounted in a waveguide or coaxial structure and connected so that its temperature can be adjusted and its resistance measured. 2. Bolometers for measuring radiant energy usually consist of blackened metal-strip temperature-sensitive elements arranged in a bridge circuit including a compensating arm for ambient temperature compensation. *See also:* instrument; bolometric instrument. (IM/HFIM) [40]

bolometric instrument (bolometers) An electrothermic instrument in which the primary detector is a resistor, the resistance of which is temperature sensitive, and that depends for its operation on the temperature difference maintained between the primary detector and its surroundings. Bolometric instruments may be used to measure nonelectrical quantities, such as gas pressure or concentration, as well as current and radiant power. *See also:* instrument. (EEC/PE) [119]

bolometric power meter A device consisting of a bolometer unit and associated bolometer-bridge circuit(s). (IM) 470-1972w

bolometric technique (power measurement) A technique wherein the heating effect of an unknown amount of radio-frequency power is compared with that of a measured amount of direct-current or audio-frequency power dissipated within a temperature sensitive resistance element (bolometer). *Note:* The bolometer is generally incorporated into a bridge network, so that a small change in its resistance can be sensed. This technique is applicable to the measurement of low levels of radio-frequency power, that is, below 100 mW. (IM/HFIM) [40]

bolted fault (1) (generating station grounding) A short circuit or electrical contact between two conductors at different potentials, in which the impedance or resistance between the conductors is essentially zero. (PE/EDPG) 665-1987s
(2) A short-circuit condition that assumes zero impedance exists at the point of the fault. (SWG/PE) C37.100-1992

Boltzmann's constant (fiber optics) The number k that relates the average energy of a molecule to the absolute temperature of the environment. k is approximately 1.38×10^{-23} joules/kelvin. (Std100) 812-1984w

bombardment-induced conductivity (storage tubes) An increase in the number of charge carriers in semiconductors or insulators caused by bombardment with ionizing particles. *See also:* storage tube. (ED) 158-1962w

bomb-control switch A switch that closes an electric circuit, thereby tripping the bomb-release mechanism of an aircraft, usually by means of a solenoid. (EEC/PE) [119]

bond A reliable connection to assure the required electrical conductivity between conductive parts required to be electrically connected. (IA/PC) 463-1993w

bonded (conductor stringing equipment) (power line maintenance, grounding) The mechanical interconnection of conductive parts to maintain a common electrical potential.*Synonym:* connected. *See also:* bonding. (T&D/PE) 524a-1993r, 1048-1990, 516-1995, 524-1992r

bonded motor (rotating machinery) A complete motor in which the stator and end shields are held together by a cement, or by welding or brazing. (PE) [9]

bonded sheath Cable shielding that is bonded to a plastic jacket by means of a plastic coating on the shielding. (PE/IC) 1143-1994r

bonding (1) (generating station grounding) The permanent joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed. (PE/IA/EDPG/PSE) 665-1995, 1100-1999
(2) The electrical interconnecting of conductive parts, designed to maintain a common electrical potential. (IA/PSE) 1100-1999
(3) (electric cables) The electric interconnecting of cable sheaths or armor to sheaths or armor of adjacent conductors. *See also:* continuity cable bond; cross cable bond; cable bond. (T&D/PE) [10]
(4) (data management) A technique used in database design, in which two or more data items are defined and physically stored together; for example, one might bond data items FIRST-NAME and LAST-NAME. (C) 610.5-1990w

bonding jumper A reliable conductor to ensure the required electrical conductivity between metal parts that need to be electrically connected. (PE/EDPG) 665-1995

bone conduction (hearing) The process by which sound is conducted to the inner ear through the cranial bones. (SP) [32]

Bookmaster A text-formatting language developed by IBM; a superset of DCF and GML that allows for elaborate markup of simple text into complex books, with a large degree of output device independence. (C) 610.13-1993w

Boolean (1) (mathematics of computing) Pertaining to the rules of logic formulated by the Irish mathematician George Boole in 1847. (C) 1084-1986w
(2) The language-independent syntax for a datatype with two values, names "TRUE" and "FALSE", and a set of logical operations: NOT, OR, AND, and so on. (C/PA) 1351-1994w
(3) (general) (A) Pertaining to the processes used in the algebra formulated by George Boole. (B) Pertaining to the operations of formal logic. (C) [85]
(4) A datatype with two values, named "TRUE" and "FALSE", and a set of logical operations: NOT, OR, AND, etc. (C/PA) 1224.1-1993w
(5) A variable that can assume only two states, true or false. (SCC20) 771-1998

Boolean add *See:* OR.

Boolean algebra The binary system of algebra formulated by George Boole, dealing with binary variables and employing the basic logical operators AND, OR, NOT, etc. *Synonyms:* Boolean logic; Boolean math. (C) 1084-1986w

Boolean calculus An extension of Boolean algebra that includes time-dependent operators such as BEFORE, DURING, AFTER. (C) 1084-1986w

Boolean complementation *See:* NOT.

Boolean connective *See:* Boolean operator.

Boolean function A switching function in which the number of possible values of the function and each of its independent variables is two. (C) 1084-1986w

Boolean logic *See:* Boolean algebra.

Boolean math *See:* Boolean algebra.

Boolean multiplication *See:* AND.

Boolean operation Any operation in which each of the operands and the result take one of two values. (C) 1084-1986w

Boolean operation table *See:* truth table.

Boolean operator An operator whose operands and results are binary variables. *Synonym:* Boolean connective. (C) 1084-1986w

Boolean value The value of a binary variable; either binary zero or binary one. (C) 1084-1986w

Boolean variable *See:* binary variable.

boolean vector machine A special type of attractor neural network that uses binary values for its connectivity-states matrix. (C) 610.10-1994w

boost (1) The act of increasing the power output capability of an operational amplifier by circuit modification in the output stage. *See also:* electronic analog computer. (C) 165-1977w

(2) In an analog computer, to increase the power output capability of an operational amplifier by circuit modification in the output stage. (C) 610.10-1994w

boost charge (storage battery) A partial charge, usually at a high rate for a short period. *Synonym:* quick charge. *See also:* charge. (EEC/PE) [119]

booster An electric generator inserted in series in a circuit so that it either adds to or subtracts from the voltage furnished by another source. (EEC/PE) [119]

booster coil An induction coil utilizing the aircraft direct-current supply to provide energy to the spark plugs of an aircraft engine during its starting period. (EEC/PE) [119]

booster dynamotor A dynamotor having a generator mounted on the same shaft and connected in series for the purpose of adjusting the output voltage. *See also:* converter. (EEC/PE) [119]

boot (1) To initialize a computer system by clearing memory and reloading the operating system. Derived from **bootstrap.** (C) 610.12-1990

(2) To load and execute a client program. (C/BA) 1275-1994

bootleg (railway techniques) A protection for track wires when the wires leave the conduit or ground near the rail. (EEC/PE) [119]

bootstrap (1) (A) (software) A short computer program that is permanently resident or easily loaded into a computer and whose execution brings a larger program, such as an operating system or its loader, into memory. *Synonym:* initial program load. **(B) (software)** To use a program as in definition (A). *Synonym:* initial program load. (C) 610.12-1990

(2) (metal nitrite oxide semiconductor arrays) A circuit design technique in which a junction point (node) is capacitively driven to a voltage of greater magnitude than that available from the device power supply. (ED) 641-1987w

bootstrap circuit (1) (general) A single-stage electron-tube amplifier circuit in which the output load is connected between cathode and ground or other common return, the signal voltage being applied between the grid and the cathode. *Note:* The name "bootstrap" arises from the fact that a change in grid voltage changes the potential of the input source with respect to ground by an amount equal to the output signal. (BT) 182A-1964w

(2) A circuit in which an increment of the applied input signal is partially fed back across the input impedance resulting in a higher effective input impedance. (CAS) [13]

Bootstrap Combined Programming Language A recursive computer language used primarily for compiler writing and systems programming. *See also:* CINEMA; B. (C) 610.13-1993w

bootstrap loader (software) A short computer program used to load a bootstrap. (C) 610.12-1990

bootstrap SAIDs Four SAID values that are reserved for the purpose of establishing initial communication with key management or system management when an SAID has not already been negotiated. These SAID values have a preestablished security association. (C/LM) 802.10-1998

boot-up The process an NCAP and its operating system perform, usually on application of power, in preparation for executing operations related to the application and application visible components of the system. System level network visible actions may be accomplished as well, for example, the publication of PSK_NCAPBLOCK_ANNOUNCEMENT. (IM/ST) 1451.1-1999

***B* operator** An operator assigned to a *B* switchboard. *See also:* telephone system. (EEC/PE) [119]

BORAM *See:* block-organized random-access memory.

border The set of pixels in a region of a digital image that are adjacent to pixels in the region's complement. *Synonym:* boundary. *Contrast:* interior. *See also:* perimeter; edge. (C) 610.4-1990w

border delineation *See:* border detection.

border detection Any image segmentation technique that identifies borders within a digital image. *Synonym:* border delineation. (C) 610.4-1990w

borderline between comfort and discomfort (BCD) (illuminating engineering) The average luminance of a source in a field of view which produces a sensation between comfort and discomfort. (EEC/IE) [126]

bore (1) (rotating machinery) The surface of a cylindrical hole (for example, stator bore). *See also:* stator. (PE) [9]

(2) The inside diameter of a spool of magnetic tape. (C) 610.10-1994w

borehole cable A cable designed for vertical suspension in a borehole or shaft and used for power circuits in mines. *See also:* mine feeder circuit. (PE/EEC/MIN) [119]

bore-hole lead insulation (rotating machinery) Special insulation surrounding connections that pass through a hollow shaft. *See also:* rotor. (PE) [9]

boresight *See:* electrical boresight; reference boresight.

boresight error The angular deviation of the electrical boresight of an antenna from its reference boresight. *See also:* antenna. (AP/ANT) 149-1979r, 145-1993

boresighting (1) (navigation aids) The process of aligning or determining the angle of the electrical or mechanical axes of a navigation system to a set of vehicle reference axes. Usually accomplished by an optical procedure. (AES/GCS) 172-1983w

(2) The process of aligning the electrical and mechanical axes of a directional antenna system, usually by an optical procedure. (AES) 686-1997

Born approximation A single-scattering approximation in which the exciting field is assumed to be equal to the incident field. (AP/PROP) 211-1997

borrow (general math) In direct subtraction, a carry that arises when the result of the subtraction in a given digit place is less than zero. (C) 162-1963w

(2) (A) (mathematics of computing) A mathematical process used in subtraction, in which, when the difference in a digit place would be arithmetically negative, the subtraction in that digit place is preceded by increasing the digit in the minuend by the value of the radix, and decreasing the digit in the next higher digit place by one. **(B) (mathematics of computing)** The value added to the digit place in definition (A). **(C) (mathematics of computing)** To perform the process defined in definition (A). (C) 1084-1986

Bose-Chaudhuri-Hocquenghem (BCH) Code A class of security code that is relatively simple to implement in hardware and that provides a high degree of immunity to transmission errors for a small reduction in communication efficiency. (SUB/PE) 999-1992w

bosun's chair *See:* boatswain's chair.

BOT *See:* beginning-of-tape marker.

bottom (A) In a queue, the position of the item that has been in the queue for the shortest time. **(B)** In a stack, the position of the item that has been in the stack for the longest time. (C) 610.5-1990

bottom-car clearance (elevators) The clear vertical distance from the pit floor to the lowest structural or mechanical part, equipment, or device installed beneath the car platform, except guide shoes or rollers, safety jaw assemblies, and platform aprons or guards, when the car rests on its fully compressed buffers. *See also:* hoistway. (EEC/PE) [119]

bottom-coil slot (rotating machinery) (radially outer-coil side) The coil side of a stator slot farthest from the bore of the stator or from the slot wedge. *See also:* stator. (PE) [9]

bottom-connected electromechanical watthour meter An electromechanical watthour meter having a bottom-connection terminal assembly. (ELM) C12.10-1987

bottom edge By convention, that edge of the module that is seen counterclockwise from the faceplate when viewing the component side. (C/MM) 1101.2-1992

bottom-half bearing (rotating machinery) The bottom half of a split-sleeve bearing. *See also:* bearing. (PE) [9]

bottom-terminal landing (elevators) The lowest landing served by the elevator that is equipped with a hoistway door and hoistway-door locking device that permits egress from the hoistway side. *See also:* elevator landing. (EEC/PE) [119]

bottom-up (software) Pertaining to an activity that starts with the lowest-level components of a hierarchy and proceeds through progressively higher levels; for example, bottom-up design; bottom-up testing. *Contrast:* top-down. *See also:* critical piece first. (C) 610.12-1990

bottom-up design (software) The design of a system starting with the most basic or primitive components and proceeding to higher level components that use the lower level ones. *See also:* components; top-down design; system; design. (C/SE) 729-1983s

bounce (television) A transient disturbance affecting one or more parameters of the display and having duration much greater than the period of one frame. *Note:* The term is usually applied to changes in vertical position or in brightness. *See also:* television. (BT/AV) [34]

boundary *See:* border.

boundary alignment *See:* alignment.

boundary arrow An arrow with one end (source or use) not connected to any box in a diagram. *Contrast:* internal arrow. (C/SE) 1320.1-1998

boundary condition The values assumed by the variables in a system, model, or simulation when one or more of them is at a limiting value or a value at the edge of the domain of interest. *Contrast:* final condition; initial condition. (C) 610.3-1989w

boundary ICOM code An ICOM code that maps an untunneled boundary arrow in a child diagram to an arrow attached to the parent box that is detailed by that diagram. (C/SE) 1320.1-1998

boundary lights (illuminating engineering) Aeronautical ground lights delimiting the boundary of a land aerodrome without runways. (EEC/IE) [126]

boundary marker (navigation aid terms) [instrument landing system (ILS)] A radio-transmitting station near the approach end of the landing runway that provides a fix on the localizer course. (AES/GCS) 172-1983w

boundary node A node with two or more ports, at least one of which is active and another suspended. (C/MM) 1394a-2000

boundary, *p-n* (semiconductor) A surface in the transition region between *p*-type and *n*-type material at which the donor and acceptor concentrations are equal. *See also:* semiconductor; transistor. (ED) 216-1960w

boundary potential The potential difference, of whatever origin, across any chemical or physical discontinuity or gradient. *See also:* electrobiology. (EMB) [47]

boundary value A data value that corresponds to a minimum or maximum input, internal, or output value specified for a system or component. *See also:* stress testing. (C) 610.12-1990

bounded-input-bounded-output stability (A) Driven stability when the solution of interest is the output solution. *See also:* control system. **(B) (excitation systems)** A system exhibits bounded input-bounded output (BIBO) stability if the output is bounded for every bounded input. *Note:* BIBO stability is also known as stability in the sense of Liapunov and it refers to force systems. In nonlinear systems, a bounded limit cycle appearing in the output signal is an example of BIBO stability. (CS/PE/EDPG) 421A-1978

bounded scheduling A scheduling algorithm used by a simple controller. Rather than specifying the exact time for a slave to return its response, a time window is provided where the time window is longer than the expected request-processing delay. (C/MM) 1596.4-1996

bounding volume The six-sided, rectangular enclosing space whose width, length, and height are aligned with those of the entity. (DIS/C) 1278.1-1995

bound mode (fiber optics) In an optical waveguide, a mode whose field decays monotonically in the transverse direction everywhere external to the core and that does not lose power to radiation. Specifically a mode for which $N(a)k = \beta = n(0)k$ where β is the imaginary part (phase constant) of the axial propagation constant, $n(a)$ is the refractive index at $r = a$, the core radius, $n(0)$ is the refractive index at $r = 0$, k is the free-space wave number, $2\pi/\lambda$, and λ is the wavelength. Bound modes correspond to guided rays in the terminology of geometric optics. *Note:* Except in a monomode fiber, the power in bound modes is predominantly contained in the core of the fiber. *Synonyms:* guided mode; trapped mode. *See also:* unbound mode; cladding mode; leaky mode; mode; guided ray; normalized frequency. (Std100) 812-1984w

bound ray *See:* guided ray.

bounds register A register which holds an address specifying a storage boundary. *Note:* An access outside the boundary results in an error. (C) 610.10-1994w

Bourdon A closed and flattened tube formed in a spiral, helix, or arc, which changes in shape when internal pressure changes are applied. *Note:* Bourdon tube, or simply Bourdon, has at times been used more restrictively to mean only the C-shaped member invented by Bourdon. (PE/PSIM) 119-1974w

BOV *See:* beginning-of-volume label.

bowl (illuminating engineering) An open top diffusing glass or plastic enclosure used to shield a light source from direct view and to redirect or scatter the light. (EEC/IE) [126]

box (1) A mechanical unit which contains links; the links may either remain inside the box, connecting internal devices, or may leave the box in order to connect internal devices to external ones. A box is assumed to be an EMC compliant enclosure and to operate under a single electrical environment. (C/BA) 1355-1995
(2) (electronic) A protective enclosure to house modules, backplane(s), I/O connector assemblies, internal cables, and other electronic, mechanical, and thermal devices. *Synonyms:* box; rack; cabinet. (BA/C) 14536-1995
(3) A rectangle containing a box name, a box number, and possibly a box detail reference and representing a function in a diagram. (C/SE) 1320.1-1998

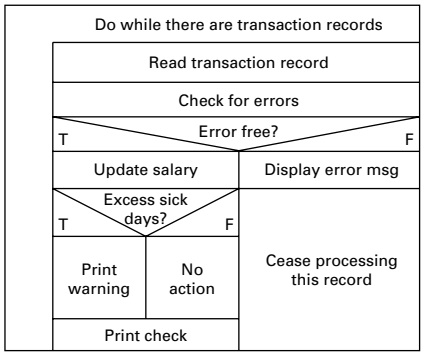
box-car detector† In radar, a detector whose output is held at the amplitude of the last sample until the next sample arrives. *Note:* Functionally the same as a sample and hold. (AES) 686-1997

† Obsolete.

box detail reference A square enclosure encompassing a box number, which indicates that the box is decomposed or detailed by a child diagram. (C/SE) 1320.1-1998

box diagram A control flow diagram consisting of a rectangle that is subdivided to show sequential steps, if-then-else con-

ditions, repetition, and case conditions. *Synonyms:* Chapin chart; Nassi-Shneiderman chart; program structure diagram. *See also:* block diagram; graph; flowchart; program structure diagram; structure chart; bubble chart.



box diagram

(C) 610.12-1990

box frame (rotating machinery) A stator frame in the form of a box with ends and sides and that encloses the stator core. *See also:* rotor. (PE) [9]

box ICOM code An ICOM code that maps a tunneled boundary arrow to an arrow attached to some ancestral box. (C/SE) 1320.1-1998

boxing glove *See:* conductor lifting hook.

box name The verb or verb phrase placed inside a box that names the modeled function. A box takes as its box name the function name of the function represented by the box. *See also:* function name. (C/SE) 1320.1-1998

box number A single digit (***0, 1, 2, . . ., 9***) placed in the lower right corner of a box to uniquely identify that box in a diagram. The only box that may be numbered 0 is the box that represents the **A0** function in **A-0** and **A-1** context diagrams. (C/SE) 1320.1-1998

Boyce/Codd Normal form (BCNF) Developed by R. F. Boyce and E. F. Codd, one of the forms used to characterize relations; a relation is said to be in Boyce/Codd Normal form if every determinant in the relation is or contains a candidate key; that is, no attribute is transitively dependent on any key. *Note*: This is an extension of third normal form. (C) 610.5-1990w

BPAM *See:* basic partitioned access method.

bps *See:* bits per second.

BPSK *See:* binary phase shift keying.

BR *See:* bit rate.

BR/2 *See:* bit rate/2.

braces The characters "{" (*left brace*) and "}" (*right brace*), also known as *curly braces*. When used in the phrase "enclosed in (curly) braces" the symbol "{" shall immediately precede the object to be enclosed, and "}" shall immediately follow it. When describing these characters, the names <left-brace> and <right-brace> are used. (C/PA) 9945-2-1993

bracket (1) (illuminating engineering) An attachment to a lamp post or pole from which a luminaire is suspended. *Synonym:* mast arm. (EEC/IE) [126]

(2) (rotating machinery) A solid or skeletal structure usually consisting of a central hub and a plurality of arms extending (often radially) outward from the hub to a supporting structure. The supporting structure usually is the stator frame when the axis of the shaft is horizontal. When the axis of the shaft is vertical, the stator usually supports the upper bracket and the foundation supports the lower bracket. *See also:* bearing bracket. (PE) [9]

bracket arm (rotating machinery) One of several structural members (beams) extending from the hub portion of a bracket to the supporting structure. The arms may be individual or parallel pairs extending radially or near-radially from the hub. (PE) [9]

brackets The characters "[" (*left bracket*) and "]" (*right bracket*), also known as *square brackets*. When used in the phrase "enclosed in (square) brackets" the symbol "[" shall immediately precede the object to be enclosed, and "]" shall immediately follow it. When describing these characters, the names <left-square-bracket> and <right-square-bracket> are used. (C/PA) 9945-2-1993

bracket-type handset telephone *See:* hang-up hand telephone set.

Bragg angles When an incident plane wave is diffracted by a periodic structure into discrete directions, the angles these directions of travel make with respect to the normal of the mean boundary. (AP/PROP) 211-1997

Bragg region (acousto-optic device) The region that occurs when the length of the acoustic column in the direction of light propagation, L, satisfies the inequality $L > n\,\Lambda^2\,\lambda_0$, with n the index of refraction at wavelength λ_0 and Λ the acoustic wavelength. (UFFC) [23]

Bragg resonant scattering Originally described the scattering in discrete directions by spatially periodic boundaries or constitutive parameter(s), where the scattering directions are determined by the resonance condition in which two source-to-scatter-to-receiver path lengths differ by an integer multiple of 2π radians. This same physical mechanism has been found to apply to some randomly rough planar interfaces and random fluctuations of spatially continuous constitutive parameter(s). In these cases, there is a continuum of scattering angles provided there is either a continuous surface roughness or a continuous constitutive parameter fluctuation spectrum that satisfies the proper Bragg resonance condition. (AP/PROP) 211-1997

braided shield Cable shield that consists of groups of metallic strands, one set woven in a clockwise direction and interwoven with another set in a counter-clockwise direction. Braided shields provide superior structural integrity, while maintaining good flexibility and flex life. (PE/IC) 1143-1994r

brake *See:* bullwheel tensioner.

brake assembly (rotating machinery) All parts that are provided to apply braking to the rotor. *See also:* rotor. (PE) [9]

brake control The provision for controlling the operation of an electrically actuated brake. *Note:* Electrical energizing of the brake may either release or set the brake, depending upon its design. *See also:* electric controller. (IA/ICTL/IAC) [60]

brake drum *See:* brake ring.

brake ring (rotating machinery) A rotating ring mounted on the rotor that provides a bearing surface for the brake shoes. *Synonym:* brake drum. *See also:* rotor. (PE) [9]

brakes applied An indication that all friction brakes are applied to some agreed-upon preset level. (VT) 1475-1999

brake service (maximum) A nonemergency brake application that obtains the (maximum) brake rate that is consistent with the design of the brake system, retrievable under the control of master control. (VT/RT) 1474.1-1999

braking The control function of retardation by dissipating the kinetic energy of the drive motor and the driven machinery. *See also:* electric drive. (IA/ICTL/IAC) [60]

braking effort Longitudinal retarding force generated by the friction brake system or the propulsion system (in electric brake). (VT) 1475-1999

braking magnet *See:* retarding magnet.

braking resistor A resistor commonly used in some types of dynamic braking systems, the prime purpose of which is to convert the electric energy developed during dynamic braking into heat and to dissipate this energy to the atmosphere. *See also:* dynamic braking. (EEC/PE) [119]

braking test (A) (rotating machinery) A test in which the mechanical power output of a machine acting as a motor is determined by the measurement of the shaft torque, by means of a brake, dynamometer, or similar device, together with the rotational speed. *See also:* asynchronous machine; direct-current commutating machine. **(B) (rotating machinery)** A test

performed on a machine acting as a generator, by means of a dynamometer or similar device, to determine the mechanical power input. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

braking torque (synchronous motor) Any torque exerted by the motor in the same direction as the load torque so as to reduce its speed. (PE) [9]

branch (1) (A) (software) A computer program construct in which one of two or more alternative sets of program statements is selected for execution. *See also:* go to; jump; if-then-else; case. **(B) (software)** A point in a computer program at which one of two or more alternative sets of program statements is selected for execution. *Synonym:* branchpoint. **(C) (software)** Any of the alternative sets of program statements in definition (A). **(D) (software)** To perform the selection in definition (A). (C) 610.12-1990

(2) (local area networks) A cable distribution line in a broadband coaxial network that is connected to a trunk line. (LM/C) 802.7-1989r

(3) (network analysis) A line segment joining two nodes, or joining one node to itself. *See also:* network analysis; directed branch. (CAS) 155-1960w

(4) (A) A set of instructions that are executed between two successive decision instructions. **(B)** To select a branch as in definition (A). **(C)** Loosely, a conditional jump. *See also:* conditional jump. (C) [85]

(5) A portion of a network consisting of one or more two-terminal elements, comprising a section between two adjacent branch-points. *See also:* principal branch; auxiliary branch. (CAS) [13]

(6) *See also:* turn-off branch; principal branch; regenerative branch; auxiliary branch; subtree.

(7) A junction at which a root arrow segment (going from source to use) divides into two or more arrow segments. May denote unbundling of arrow meaning, i.e., the separation of object types from an object type set. Also refers to an arrow segment into which a root arrow segment has been divided. (C/SE) 1320.1-1998

branch cable In 10BROAD36, the Attachment Unit Interface (AUI) cable interconnecting the data terminal equipment and Medium Attachment Unit (MAU) system components. (C/LM) 802.3-1998

branch circuit (1) (electrical heating applications to melting furnaces and forehearths in the glass industry). One, two, or more circuits whose main power is connected through the same main switch. (IA) 668-1987w

(2) The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s). *See also:* thermal cutout; thermal relay. (NESC/NEC) [86]

(3) (packaging machinery) That portion of a wiring system extending beyond the final overcurrent device protecting the circuit. (A device not approved for branch circuit protection, such as a thermal cutout or motor overload protective device, is not considered as the overcurrent device protecting the circuit.). (IA/PKG) 333-1980w

(4) (or final subcircuit) That portion of a wiring system that extends beyond the final overcurrent device protecting the circuit. (IA/MT) 45-1998

branch-circuit distribution center A distribution center at which branch circuits are supplied. *See also:* distribution center. (EEC/PE) [119]

branch circuit, general purpose A branch circuit that supplies a number of outlets for lighting and appliances. (NESC) [86]

branch circuit, individual A branch circuit that supplies only one utilization equipment. (NESC) [86]

branch-circuit load The load on that portion of a wiring system extending beyond the final overcurrent device protecting the circuit. (IA/PSE) 241-1990r

branch circuit, multiwire A circuit consisting of two or more ungrounded conductors having a potential difference between them, and an identified grounded conductor having equal potential difference between it and each ungrounded conductor of the circuit and that is connected to the neutral conductor of the system. (NESC) [86]

branch-circuit selection current The value in amperes to be used instead of the rated-load current in determining the ratings of motor branch-circuit conductors, disconnecting means, controllers and branch-circuit short-circuit and ground-fault protective devices wherever the running overload protective device permits a sustained current greater than the specified percentage of the rated-load current. The value of branch-circuit selection current will always be greater than the marked rated-load current. (NESC/NEC) [86]

branch circuits incorporating Type FCC cable (A) *type FCC cable*. Type FCC cable consists of three or more flat copper conductors placed edge to edge and separated and enclosed within an insulating assembly. *Note:* The wiring system is designed for installation under carpet squares. **(B)** *FCC system*. A complete wiring system for branch circuits that is designed for installation under carpet squares. The FCC system includes Type FCC cable and associated shielding, connectors, terminators, adapters, boxes, and receptacles. **(C)** *cable connector*. A connector designed to join Type FCC cables without using a junction box. **(D)** *insulating end*. An insulator designed to electrically insulate the end of a Type FCC cable. **(E)** *top shield*. A grounded metal shield covering under carpet components of the FCC system for the purposes of providing electrical safety and protection against physical damage. **(F)** *bottom shield*. A shield mounted on the floor under the FCC system to provide protection against physical damage. **(G)** *transition assembly*. An assembly to facilitate connection of the FCC system to other approved wiring systems, incorporating: (1) a means of electrical interconnection; and (2) a suitable box or covering for providing electrical safety and protection against physical damage. **(H)** *metal shield connections*. Means of connection designed to electrically and mechanically connect a metal shield to another metal shield, to a receptacle housing or self-contained device or to a transition assembly. (NESC) [86]

branch conductor (lightning protection) A conductor that branches off at an angle from a continuous run of conductor. (EEC/PE) [119]

branch input signal (network analysis) The signal *xj* at the input end of branch *jk*. (CAS) 155-1960w

branch instruction (1) An instruction in the program that provides a choice between alternative subprograms in accordance with the test logic. (MIL) [2]

(2) A computer instruction that changes the sequence in which computer instructs are performed. *Note:* A branch instruction generally specifies the next instruction in terms of a relative address based on the program counter. *Synonym:* decision instruction. *See also:* conditional branch instruction; jump instruction. (C) 610.10-1994w

branch joint (1) (general) A joint used for connecting a branch conductor or cable to a main conductor or cable, where the latter continues beyond the branch. *Note:* A branch joint may be further designated by naming the cables between which it is made; for example, single-conductor cables, three-conductor main cable to single-conductor branch cable, etc. With the term "multiple joint" it is customary to designate the various kinds as 1-way, 2-way, 3-way, 4-way, etc., multiple joint. *See also:* reducing joint; straight joint; cable joint. (T&D/PE) [10]

(2) (power cable joints) A cable joint used for connecting one or more cables to a main cable. *Note:* A branch joint may be further designated by naming the cables between which it is made, for example, single conductor cable, three conductor cable, three conductor main cable to single conductor branch, etc. It is customary to designate the various kinds as *Y* joint, *T* joint, *H* joint, cross joint, etc. (PE/IC) 404-1986s

branch metric The result of dividing the total number of modules in which every branch has been executed at least once by the total number of modules. *Note:* This definition assumes

that the modules are essentially the same size. (C/SE) 730-1998

branch node *See:* nonterminal node.

branch number (*b*) (subroutines for CAMAC) The symbol *b* represents an integer which is the branch number component of a CAMAC address. It may represent a physical highway number in multiple highway systems, or it may represent sets of crates grouped together for functional or other reasons. In some systems it may be ignored, although it must be included in the parameter list for the sake of compatibility. (NPS) 758-1979r

branch output signal (network analysis) (branch *jk*) The component of signal *xk* contributed to node *k* via branch *jk*. (CAS) 155-1960w

branchpoint *See:* node; branch.

branch point (1) (electric networks) A junction where more than two conductors meet. *See also:* network analysis; node. (PE/EEC) [119]

(2) (computers) A place in a routine where a branch is selected. *See also:* network analysis. (C) [85]

branch testing Testing designed to execute each outcome of each decision point in a computer program. *Contrast:* path testing; statement testing. (C) 610.12-1990

branch, thermoelectric Alternative term for thermoelectric arm. *See also:* thermoelectric device. (ED/ED) [46], 221-1962w

branch transmittance (network analysis) The ratio of branch output signal to branch input signal. (CAS) 155-1960w

BRE *See:* basic regular expression.

breadboard An experimental model of a circuit, usually roughly conceived, that can be used as a prototype for planning, design, and feasibility evaluation. (C) 610.10-1994w

breadboard construction (communication practice) An arrangement in which components are fastened temporarily to a board for experimental work. (EEC/PE) [119]

break (1) (circuit-opening device) The minimum distance between the stationary and movable contacts when these contacts are in the open position.

a) The length of a single break is as defined above.
b) The length of a multiple break (breaks in series) is the sum of two or more breaks.

See also: contactor. (IA/IAC) [60]

(2) (communication circuits) For the receiving operator or listening subscriber to interrupt the sending operator or talking subscriber and take control of the circuit. *Note:* The term is used especially in connection with half-duplex telegraph circuits and two-way telephone circuits equipped with voice-operated devices. *See also:* telegraphy. (EEC/PE) [119]

breakaway The condition of a motor at the instant of change from rest to rotation. (PE) [9]

breakaway starting current (rotating machinery) (alternating-current motor) The highest root mean square current absorbed by the motor when at rest, and when it is supplied at the rated voltage and frequency. *Note:* This is a design value and transient phenomena are ignored. (PE) [9]

breakaway torque (rotating machinery) The torque that a motor is required to develop to break away its load from rest to rotation. *See also:* asynchronous machine. (PE) [9]

break distance (of a switching device) The minimum open-gap distance between the main-circuit contacts, or live parts connected thereto, when the contacts are in the open position. *Note:* In a multiple-break device, it is the sum of the breaks in series. (SWG/PE) C37.100-1992, C37.40-1993

breakdown (1) (gas-tube surge protective devices) (low-voltage air-gap surge-protective devices) The abrupt transition of the gap resistance from a practically infinite value to a relatively low value. In the case of a gap, this is sometimes referred to as sparkover or ignition. *See also:* sparkover. (PE/SPD) C62.31-1981s, C62.32-1987r

(2) (germanium gamma-ray detectors) (x-ray energy spectrometers) (charged-particle detectors) (of a semiconductor diode) A phenomenon occurring in a reverse-biased semiconductor diode, the initiation of which is observed as a transition from a region of high dynamic resistance to a region of substantially lower dynamic resistance for increasing magnitude of reverse current. (NPS/NID) 759-1984r, 300-1988r

(3) (rotating machinery) The condition of operation when a motor is developing breakdown torque. *See also:* asynchronous machine. (PE) [9]

(4) (thyristor converter) A failure that permanently deprives a rectifier diode or a thyristor of its property to block voltage in the reverse direction (reverse breakdown) or a thyristor in the forward direction (forward breakdown). (IA/IPC) 444-1973w

(5) A disruptive discharge occurring through a dielectric. (PE/IC) 48-1996

(6) A phenomenon occurring in a reverse-biased semiconductor diode that appears as an increase in noise, reverse current, or both when the bias is increased beyond a certain value. (NPS) 325-1996

breakdown current (semiconductor) The current at which the breakdown voltage is measured. (IA) [12]

breakdown impedance (semiconductor diode) The small-signal impedance at a specified direct current in the breakdown region. *See also:* semiconductor. (ED) 216-1960w

breakdown maintenance Those repair actions that are conducted after a failure in order to restore equipment or systems to an operational condition. (IA/PSE) 902-1998

breakdown region (germanium gamma-ray detectors) (x-ray energy spectrometers) (of a semiconductor diode characteristic) (charged-particle detectors) That entire region of the voltage-current characteristic beyond the initiation of breakdown for increasing magnitude of reverse current. (NPS/NID) 325-1986s, 300-1988r, 759-1984e5r

breakdown strength *See:* dielectric strength.

breakdown torque (1) (rotating machinery) The maximum shaft-output torque that an induction motor (or a synchronous motor operating as an induction motor) develops when the primary winding is connected for running operation, at normal operating temperature, with rated voltage applied at rated frequency. *Note:* A motor with a continually increasing torque as the speed decreases to standstill is not considered to have a breakdown torque. (PE) [9]

(2) The maximum torque a motor will develop, with rated voltage applied at rated frequency, without an abrupt drop in speed. (IA/MT) 45-1998

breakdown-torque speed (rotating machinery) The speed of rotation at which a motor develops breakdown torque. *See also:* asynchronous machine. (PE) [9]

breakdown transfer characteristic (gas tube) A relation between the breakdown voltage of an electrode and the current to another electrode. *See also:* gas tube. (ED) 161-1971w

breakdown voltage (1) (diode) (nonlinear, active, and nonreciprocal waveguide components) The reverse voltage at which there is a conduction of current due to the Zener effect or the avalanche multiplication process. This voltage is usually specified at 10 μA of reverse current. (MTT) 457-1982w

(2) (germanium gamma-ray detectors) (charged-particle detectors) (x-ray energy spectrometers) (of a semiconductor diode) The voltage measured at a specified current in the breakdown region. (NPS/NID) 759-1984r, 300-1988r

(3) (rotating machinery) The voltage at which a disruptive discharge takes place through or over the surface of the insulation. (PE/EM) 95-1977r

(4) (gas) The voltage necessary to produce a breakdown. *See also:* gas tube. (ED) [45]

(5) (electrode of a gas tube) The voltage at which breakdown occurs to that electrode. *Notes:* 1. The breakdown voltage is a function of the other electrode voltages or currents and of

the environment. 2. In special cases where the breakdown voltage of an electrode is referred to an electrode other than the cathode, this reference electrode shall be indicated. 3. This term should be used in preference to pickup voltage, firing voltage, starting voltage, etc., which are frequently used for specific types of gas tubes under specific conditions. *See also:* critical grid voltage. (ED) 161-1971w

(6) (A) (ac). The minimum rms value of a sinusoidal voltage at frequencies between 15 Hz and 62 Hz that results in arrester sparkover. **(B)** (dc). The minimum slowly rising dc voltage that causes breakdown or sparkover when applied across the terminals of an arrester. (SPD/PE) C62.31-1987r

(7) The voltage measured at a specified current in the breakdown region. (NPS) 325-1996

breakdown voltage, ac *See:* alternating-current breakdown voltage.

breakdown voltage alternating current (gas tube surge arresters) The minimum root-mean-square (rms) value of sinusoidal voltage at frequencies between 15 Hz and 62 Hz that results in arrester sparkover. (PE) [8]

breakdown voltage, dc *See:* direct-current breakdown voltage.

breaker failure The failure of a circuit breaker to operate or to interrupt a fault. (PE/PSR) C37.113-1999

break indication (A) The state where the physical layer (PHY) is unable to recover data from the incoming signal, or the incoming signal power level is less than a defined threshold. **(B)** The state where the Physical Layer (PHY) is unable to recover data from the incoming signal, or the incoming signal power level is less than a defined threshold. (LM/C) 802.5c-1991

breaking capacity (interrupting capacity) The current that the device is capable of breaking at a stated recovery voltage under prescribed conditions of use and behavior. *See also:* control. (IA/ICTL/IAC) [60], [84]

breaking current (pole of a breaking device) The current in that pole at the instant of contact separation, expressed as a root-mean-square value. *See also:* interrupting current; contactor. (SWG/PE/IA/ICTL/IAC) C37.100-1981s, [60], [84]

breaking point (transmission system or element thereof). A level at which there occurs an abrupt change in distortion or noise that renders operation unsatisfactory. *See also:* level. (EEC/PE) [119]

break key *See:* attention key.

break link A weak section of rope connected between the cable pulling attachment and the pull rope that is intended to break when the pulling tension exceeds a certain limit. (PE/IC) 1185-1994

break-make relay contacts A contact form in which one contact opens its connection to another contact and then closes its connection to a third contact. (EEC/REE) [87]

breakover current (thyristor) The principal current at the breakover point. *See also:* principal current. (ED/IA) [46], [62]

breakover point (thyristor) Any point on the principal voltage-current characteristic for which the differential resistance is zero and where the principal voltage reaches a maximum value. *See also:* principal voltage-current characteristic. (ED) [46]

breakover voltage (thyristor) The principal voltage at the breakover point. *See also:* principal voltage-current characteristic. (ED/IA) [46], [62]

break, % break (dial-pulse address signaling systems) (telephony) In dial-pulse signaling, that portion of the signal in which the dialing contacts are open (broken). % break is the ratio of break time to the total pulse period; (make + break) time. (COM/TA) 753-1983w

breakpoint (1) (A) (computer routine) Pertaining to a type of instruction, instruction digit, or other condition used to interrupt or stop a computer at a particular place in a routine when manually requested. **(B) (computer routine)** A place in a routine where such an interruption occurs or can be made to occur. (C) 162-1963

(2) (software) A point in a computer program at which execution can be suspended to permit manual or automated monitoring of program performance or results. Types include code breakpoint, data breakpoint, dynamic breakpoint, epilog breakpoint, programmable breakpoint, prolog breakpoint, static breakpoint. *Note:* A breakpoint is said to be set when both a point in the program and an event that will cause suspension of execution at that point are defined; it is said to be initiated when program execution is suspended. (C) 610.12-1990

(3) A position within a pattern set where the pattern may be segmented into multiple independent bursts while still achieving predictable behavior of the device. (C/TT) 1450-1999

breakpoint halt *See:* breakpoint instruction.

breakpoint instruction (A) A computer instruction that causes program flow to be halted. *See also:* address stop. **(B)** A computer instruction that causes program flow to be redirected to a monitor or debugging program. *Synonym:* breakpoint halt; dynamic stop. (C) 610.10-1994

breakthrough (thyristor converter) The failure of the forward-blocking action of an arm of a thyristor connection during a normal off-state period with the result that it allows on-state current to pass during a part of this period. *Note:* Breakthrough can occur in rectifier operation as well as inverter operation and for various reasons, for example, excessive virtual junction temperature, voltage surges in excess of rated peak off-state voltage, excessive rate of rise of off-state voltage, advance gating, or forward breakdown. (IA/IPC) 444-1973w

breather A device fitted in the wall of an explosion-proof compartment, or connected by piping thereto, that permits relatively free passage of air through it, but that will not permit the passage of incendiary sparks or flames in the event of gas ignition inside the compartment. (EEC/PE) [119]

breathing (carbon microphones) The phenomenon manifested by a slow cyclic fluctuation of the electric output due to changes in resistance resulting from thermal expansion and contraction of the carbon chamber. *See also:* close-talking pressure-type microphones. (SP) 258-1965w

breezeway (television synchronizing waveform for color transmission) The time interval between the trailing edge of the horizontal synchronizing pulse and the start of the color burst. (BT/AV) [34]

b-register *See:* index register.

BRE (ERE) matching a single character A basic or extended regular expression that matches either a single character or a single collating element. Only a BRE or ERE of this type that includes a bracket expression can match a collating element. (C/PA) 9945-2-1993

BRE (ERE) matching multiple characters A basic or extended regular expression that matches a concatenation of single characters or collating elements. Such a BRE or ERE is made up from a *BRE ERE matching a single character* and *BRE ERE special characters*. (C/PA) 9945-2-1993

Brewster angle The angle of incidence of a wave on the planar bounding surface of a lossless medium for which the reflection coefficient for parallel polarization is zero. *Note:* For a lossy medium, the pseudo-Brewster angle is that angle at which the modulus of the reflection coefficient is a minimum. (AP/PROP) 211-1997

Brewster's angle (fiber optics) For light incident on a plane boundary between two regions having different refractive indices, that angle of incidence at which the reflectance is zero for light, and that has its electric field vector in the plane defined by the direction of propagation and the normal to the surface. For propagation from medium 1 to medium 2, Brewster's angle is $\arctan(n_2 n_1)$. *See also:* reflectance; refractive index; angle of incidence. (Std100) 812-1984w

Bridge An interconnect between two or more buses that provides signal and logical protocol translation from one bus to another. The buses may adhere to different bus standards for mechanical, electrical, and logical operation (such as a bus

Bridge from Futurebus+ to VME64). (C/BA) 1014.1-1994w

bridge (1) (A) (data transmission) A network with minimum of two ports or terminal pairs capable of being operated in such a manner that when power is fed into one port, by suitable adjustment of the elements in the network or the element connected to one or more other ports, zero output can be obtained at another port. Under these conditions the bridge is balanced. **(B) (data transmission)** An instrument or intermediate means in a measurement system that embodies all or part of a bridge circuit, and by means of which one or more of the electrical constants of a bridge may be measured. (PE) 599-1985

(2) (protection and coordination of industrial and commercial power systems) That narrowed portion of a fuse link that is expected to melt first. One link may have two or more bridges in parallel and in series as well. The shape and size of the bridge is a factor in determining the fuse characteristics under overload and fault current conditions. (IA/PSP) 242-1986r

(3) A pair of communicating nodes, each of which selectively (based on target address) accepts certain packets for retransmission by the other. For example, a symmetric bridge may be used to connect two SCI ringlets. Such a bridge (the simplest kind of switch) acts as an agent, taking the place of the target on one ringlet and of the source on the other. It acts like a node that has many addresses. Bridges may also connect dissimilar systems, such as SCI and VME. Such bridges are generally much more complex, because they must translate protocols. (C/MM) 1596-1992

(4) A hardware adapter that forwards transactions between buses. (C/MM) 1212-1991s

(5) A functional unit that interconnects two subnetworks that use a single Logical Link Control (LLC) procedure but may use different Medium Access Control (MAC) procedures. Local area networks (LANs and metropolitan area networks (MANs) are examples of the subnetworks that a bridge may interconnect. (LM/C) 8802-6-1994

(6) In networking, a device that connects two systems using the similar or identical data link layer protocols. *Note:* Bridges are independent of the protocol of the network layer and above. *Contrast:* gateway. *See also:* learning bridge; router; mail bridge; brouter. (C) 610.7-1995

(7) An interface between heterogeneous memory-mapped buses. Due to the distinct capabilities of the attached buses, a bridge is expected to perform address translations, fragmentation (one transaction is decomposed into several smaller transactions), concatenation (multiple writes are combined into one), or prefetching (one read initiates speculative reads of likely-to-be-used addresses). (C/MM) 1596.4-1996

(8) A layer 2 interconnection device that does not form part of a CSMA/CD collision domain but conforms to the ISO/IEC 15802-3: 1998 [ANSI/IEEE 802.1D, 1998 Edition] International Standard. A bridge does not form part of a CSMA/CD collision domain but, rather appears as a Media Access Control (MAC) to the collision domain. (C/LM) 802.3-1998

(9) A system element that converts from one data format to another. Bridging can be incorporated in most Year 2000 remediations to interpret date-data formats. This may be helpful in transferring dates between date formats for remediated system elements and those used in the original system. There may also be situations in which multiple remediation techniques requiring different date formats are used, creating a need for bridges between them. (C/PA) 2000.2-1999

(10) A layer 2 interconnection device that conforms to ISO/IEC DIS 15802-3.local area networks. (C) 802.12c-1998

(11) An intermediary mechanism that converts data passed between system elements. (C/PA) 2000.1-1999

bridge circuit A circuit of elements that is arranged such that when an elecromotive force is present in one branch, the response of a detecting device in another branch can be zeroed by adjusing the electrical constants of the other branches. *See also:* bridge limiter. (C) 610.10-1994w

bridge control Apparatus and arrangement providing for direct control from the bridge or wheelhouse of the speed and direction of a vessel. (EEC/PE) [119]

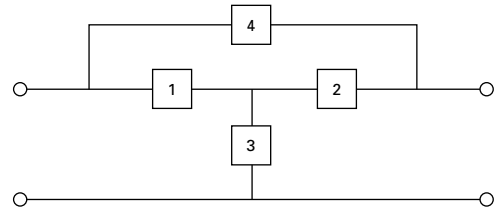
bridge current (power supply) The circulating control current in the comparison bridge. *Note:* Bridge current equals the reference voltage divided by the reference resistor. Typical values are 1 milliampere and 10 milliamperes, corresponding to control ratios of 1000 ohms per volt and 100 ohms per volt, respectively. (AES) [41]

Bridged Local Area Network (1) A concatenation of individual Local Area Networks interconnected by MAC Bridges. (C/LM) 10038-1993, 802.1G-1996

(2) A concatenation of individual IEEE 802 LANs interconnected by MAC Bridges. (C/LM) 802.1D-1998

bridged tap (telephone loop performance) Any portion of a metallic circuit that is not in the path between the end office and the customer. The bridged tap may be connected at an intermediate location or be an extension of the circuit beyond the customer location. The pair associated with the bridged tap introduces a frequency-dependent bridging loss in the loop. (COM/TA) 820-1984r

bridged-T network A T network with a fourth branch connected across the two series arms of the T, between an input terminal and an output terminal. *See also:* network analysis.



bridged-T network

(Std100) 106-1972

bridge duplex system A duplex system based on the Wheatstone bridge principle in which a substantial neutrality of the receiving apparatus to the sent currents is obtained by an impedance balance. *Note:* Received currents pass through the receiving relay that is bridged between the points that are equipotential for the sent currents. *See also:* telegraphy. (EEC/PE) [119]

Bridge Interconnect Bus The medium used to connect two or more Bridge modules together. (C/BA) 1014.1-1994w

bridge limiter (1) A bridge circuit that is used as a limiter circuit. (C) 610.10-1994w

(2) *See also:* limiter circuit.

Bridge Port A LAN Port or Virtual Port. (C/LM) 802.1G-1996

bridger (or bridging amplifier) The point of amplification of signals between a trunk and a feeder cable, usually consisting of an additional amplifier module fitted into a trunk amplifier station. (LM/C) 802.7-1989r

bridge rectifier (power semiconductor) A rectifier unit which makes use of a bridge-rectifier circuit. (IA) [12]

bridge rectifier circuit A full-wave rectifier with four rectifying elements connected as the arms of a bridge circuit. *See also:* single-way rectifier circuit; rectifier; double-way rectifier circuit. (AP/ANT) 145-1983s

bridge semiconverter A bridge in which one commutating group uses thyristors and the other uses diodes. (IA/IPC) 444-1973w

bridge thyristor converter (double-way) A bridge thyristor converter in which the current between each terminal of the alternating-voltage circuit and the thyristor converter circuit elements conductively connected to it flows in both directions. *Note:* The terms single-way and double-way (bridge) provide a means for describing the effect of the thyristor converter circuit on current flow in the transformer windings con-

nected to the converter. Most thyristor converters may be classified into these two general types. The term bridge relates back to the single-phase "bridge" which resembles the Wheatstone bridge. (IA/IPC) 444-1973w

bridge transition A method of changing the connection of motors from series to parallel in which all of the motors carry like currents throughout the transfer due to the Wheatstone bridge connection of motors and resistors. *See also:* multiple-unit control. (EEC/PE) [119]

bridging (1) (signal circuits) The shunting of one signal circuit by one or more circuits usually for the purpose of deriving one or more circuit branches. *Note:* A bridging circuit often has an input impedance of such a high value that it does not substantially affect the circuit bridged. (SP) 151-1965w

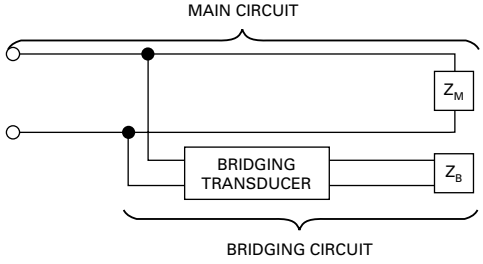
(2) (soldered connections) Solder that forms an unwanted conductive path. (EEC/AWM) [105]

(3) (relays) *See also:* relay bridging.

bridging amplifier An amplifier with an input impedance sufficiently high so that its input may be bridged across a circuit without substantially affecting the signal level of the circuit across which it is bridged. *See also:* amplifier. (SP) 151-1965w

bridging connection (data transmission) A parallel connection by means of which some of the signal energy in a circuit may be withdrawn, frequently with imperceptible effect on the normal operation of the circuit. (PE) 599-1985w

bridging gain (data transmission) The ratio of the signal power a transducer delivers to its load (Z_B) to the signal power dissipated in the main circuit load (Z_M) across which the input transducer is bridged.



bridging gain

(PE) 599-1985w

bridging loss (A) (data transmission) The ratio of the signal power delivered to that part of the system following the bridging point, before the insertion of the bridging element to this signal power delivered to the same part after the bridging. *Note:* Bridging loss is the inverse of bridging gain, and is usually expressed in decibels. **(B) (data transmission)** The ratio of the power dissipated in a load B across which the input of a transducer delivers to its load A. *Note:* Bridging loss is the inverse of bridging gain, and is usually expressed in decibels. (PE) 599-1985

bridging relay contacts A contact form in which the moving contact touches two stationary contacts simultaneously during transfer. (EEC/REE) [87]

bridle wire Insulated wire for connecting conductors of an open wire line to associated pole-mounted apparatus. (EEC/PE) [119]

bright dip (electroplating) A dip used to produce a bright surface on a metal. *See also:* electroplating. (PE/EEC) [119]

brightener (electroplating) An addition agent used for the purpose of producing bright deposits. *See also:* electroplating. (PE/EEC) [119]

brightness (1) (fiber optics) An attribute of visual perception, in accordance with which a source appears to emit more or less light; obsolete. *Notes:* 1. Usage should be restricted to nonquantitative reference to physiological sensations and perceptions of light. 2. "Brightness" was formerly used as a synonym for the photometric term "luminance" and (incorrectly) for the radiometric term "radiance." *See also:* radiance; radiometry. (BT/AV) 201-1979w, 812-1984w

(2) (illuminating engineering) (of a perceived aperture color) The attribute by which an area of color of finite size is perceived to emit, transmit, or reflect a greater or lesser amount of light. No judgement is made as to whether the light comes from a reflecting, transmitting, or self-luminous object. (EEC/IE) [126]

(3) (computer graphics) A measure of the visible light intensity of the image displayed on the surface of a display device. (C) 610.6-1991w

(4) (image processing) A value associated with a point of an image, representing the amount of light projected from a scene in a given direction. (C) 610.4-1990w

(5) (electric power systems in commercial buildings) The subjective attribute of any light sensation, including the entire scale of the qualities "bright," "light," "brilliant," "dim," and "dark." (IA/PSE) 241-1990r

(6) *See also:* spectral brightness. (AP/PROP) 211-1997

brightness channel *See:* television.

brightness contrast threshold (illuminating engineering) When two patches of color are separated by a brightness contrast border as in the case of a bipartite photometric field or in the case of a disk shaped object surrounded by its background, the border between the two patches is a brightness contrast border. The contrast which is just detectable is known as the brightness contrast threshold. (EEC/IE) [126]

brightness control (television) A control, associated with a picture display device, for adjusting the average luminance of the reproduced picture. *Note:* In a cathode-ray tube the adjustment is accomplished by shifting bias. This affects both the average luminance and the contrast ratio of the picture. In a color-television system, saturation and hue are also affected. (EEC/PE) [119]

brightness of surface (radio-wave propagation) The power radiated per unit area, per unit bandwidth, per unit solid angle. (AP/PROP) 211-1990s

brightness signal *See:* luminance signal.

brightness temperature For a region or an extended source at a given wavelength, the temperature of an equivalent blackbody radiator that has the same brightness. (AP/PROP) 211-1997

bright signal* *See:* luminance signal.

* Deprecated.

brine A salt solution. (EEC/PE) [119]

brittle metal component A metallic component that fails at an elongation of less than 10% in 5 cm (2 in). (PE/SUB) 693-1997

British thermal unit The quantity of heat required to raise one pound of water 1°F. (IA/PSE) 241-1990r

broadband (1) In general, wide bandwidth equipment or systems that can carry signals occupying a large portion of the electromagnetic spectrum. A broadband communication system can simultaneously accommodate television, voice, data, and many other services. (LM/C) 802.7-1989r

(2) (electrical noise) Electrical noise that contains energy covering a wide frequency range. *Contrast:* narrow-band electrical noise. (PE/INT/IC) 1143-1994r

broadband coaxial system A broadband system employing coaxial cables as a data transmission medium. (C) 610.7-1995

broadband interference (measurement) A disturbance that has a spectral energy distribution sufficiently broad, so that the response of the measuring receiver in use does not vary significantly when tuned over a specified number of receiver bandwidths. *See also:* electromagnetic compatibility. (EMC) [53]

broadband local area network A local area network (LAN) in which information is transmitted on modulated carriers, allowing coexistence of multiple simultaneous services on a single physical medium by frequency division multiplexing. (LM/C) 802.3-1998, 610.7-1995

broadband radio noise Radio noise having a spectrum broad in width as compared to the nominal bandwidth of the measuring instrument, and whose spectral components are sufficiently close together and uniform so that the measuring instrument cannot resolve them. (EMC) C63.4-1988s

broadband response spectrum (seismic qualification of Class 1E equipment for nuclear power generating stations) A response spectrum that describes motion in which amplified response occurs over a wide (broad) range of frequencies. (PE/NP) 344-1987r

broadband signaling The transmission of a signal in an analog form that may use frequency division multiplexing to allow multiple channels. *Contrast:* baseband signaling. (C) 610.7-1995

broadband spurious emission (land-mobile communications transmitters) The term as used in IEEE Std 377-1980 is applicable to modulation products near the carrier frequency generated as a result of the normal modulation process of the transmitter and appearing in the spectrum outside the authorized bandwidth (FCC). The products may result from overdeviation or internal distortion and noise and may have a Gaussian distribution. (EMC) 377-1980r

broadband system A system used for networking in which information is encoded, modulated onto a carrier, and pass band filtered or otherwise constrained to occupy only a limited frequency spectrum on the transmission medium. *Note:* Generally used for large amounts of voice, data, and video signals. *Contrast:* baseband system. (C) 610.7-1995

broadband tube (microwave gas tubes) A gas-filled fixed-tuned tube incorporating a bandpass filter of geometry suitable for radio-frequency switching. *See also:* transmit-receive tube; pretransmit-receive tube; gas tube. (ED) 161-1971w, [45]

broadcast (1) (FASTBUS acquisition and control) (broadcast operation) An operation directed to one or more slaves on one or more segments. (NID) 960-1993

(2) A mode of information transfer in which a single message is transmitted simultaneously to multiple receivers. (SUB/PE) 999-1992w

(3) A transmission mode in which a single message is sent to all network destinations, (i.e., one-to-all). Broadcast is a special case of multicast. (DIS/C) 1278.2-1995

(4) A mode of operation of the MTM-Bus in which an MTM-Bus Master transmits data to all connected S-modules simultaneously throughout a message. Also, a message transmitted in this mode. (TT/C) 1149.5-1995

(5) A technique that allows copies of a single packet from one node on a LAN to be passed to all possible nodes on a LAN. *Contrast:* multicast. (C) 610.7-1995

(6) The act of sending a frame addressed to all stations. (C/LM) 8802-5-1998

(7) The transfer of data from one endpoint to several endpoints. (C) 1003.5-1999

broadcast address (1) (FASTBUS acquisition and control) A primary address asserted by a master during a broadcast. (NID) 960-1993

(2) A predefined destination address that denotes the set of all service access points (SAPs) within a given layer. (LM/C) 8802-6-1994

(3) A predefined address that denotes the set of all stations on a given local area network. *Note:* This allows a message to be "broadcast" to all users simultaneously. (C) 610.7-1995

(4) A special address consisting of all 1's indicating all end nodes on the network.local area networks. (C) 8802-12-1998

(5) A unique multicast address that specifies all stations. (C/LM) 8802-11-1999

broadcast, global *See:* global broadcast.

broadcast, linear *See:* linear broadcast.

broadcast, local *See:* local broadcast.

broadcast message A sequence of one or more data transfers from the bus owner to all replying agents, with uninterrupted bus ownership. (C/MM) 1296-1987s

broadcast mode Beacon-initiated transmissions that are intended for all onboard equipment (OBE) in the communications zone. (SCC32) 1455-1999

Broadcast/Multicast Received (BMR) bit A bit in the Bus Error register of all S-modules. An S-module sets this bit to indicate that the last broadcast or multicast message was received without error. (TT/C) 1149.5-1995

broadcast_physical_ID A physical_ID with a value of 1111112. (C/MM) 1394-1995

broadcast transaction (1) A transaction that may be processed by more than one responder. Although a broadcast transaction is distributed to all nodes on the ringlet, it is only accepted by nodes that support the broadcast option. Broadcast transactions are flow-controlled, and bridges or switches may forward these transactions to other ringlets in the system. Only *move* transactions can be broadcast, so higher-level protocols are needed to confirm when all broadcast transactions have completed in a multiple-ringlet system. (C/MM) 1596-1992

(2) A transaction that is distributed to all nodes on a bus. (C/MM) 1212-1991s

broadcast transmission (token ring access method) A transmission addressed to all stations. (LM/C) 802.5-1989s

broadside array antenna A linear or planar array antenna whose direction of maximum radiation is perpendicular to the line or plane, respectively, of the array. (AP/ANT) 145-1993

bronze conductor A conductor made wholly of an alloy of copper with other than pure zinc. *Note:* The copper may be alloyed with tin, silicon, cadmium, manganese, or phosphorus, for instance, or several of these in combination. *See also:* conductor. (T&D/PE) [10]

bronze leaf brush (rotating machinery) A brush made up of thin bronze laminations. *See also:* brush. (PE) [9]

brother *See:* sibling node.

brouter A device that performs router and bridging functions. Also known as a routing bridge. *See also:* router; gateway; bridge. (C) 610.7-1995

browsing Attempts by a user or intruder to access information to which read access is not authorized or intended. Browsing includes the threat of inadvertent access to sensitive information by users and nonusers (e.g., over displays visible to others, hardcopy output at printers, misrouted electronic mail). Browsing could violate the principle of least privilege, need-to-know requirements, or clearance authorizations and could result in the unauthorized disclosure of sensitive or classified information. (C/BA) 896.3-1993w

brush (1) A conductor, usually composed in part of some form of the element carbon, serving to maintain an electric connection between stationary and moving parts of a machine or apparatus. *Note:* Brushes are classified according to the types of material used, as follows: carbon, carbon-graphite, electrographitic, graphite, and metal-graphite. (PE/EM) [9]

(2) (relay) *See also:* relay wiper.

brush box (rotating machinery) The part of a brush holder that contains a brush. *See also:* brush. (EEC/LB) [101]

brush-by An electrostatic discharge from the human torso, such as from the hip or shoulder. (SPD/PE) C62.47-1992r

brush chamfer The slight removal of a sharp edge. *See also:* brush. (EEC/EM/LB) [101]

brush contact loss (rotating machinery) The I2R loss in brushes and contacts of the field collector ring or the direct-current armature commutator. *See also:* brush. (PE) [9]

brush convex and concave ends Partially cylindrical surfaces of a given radius. *Note:* When concave bottoms are applied to bevels, both bevel angle and radius shall be given. *See also:* brush. (EEC/EM/LB) [101]

brush corners The point of intersection of any three surfaces. *Note:* They are designated as top or face corners. *See also:* brush. (EEC/EM/LB) [101]

brush diameter The dimension of the round portion that is at right angles to the length. *See also:* brush. (EEC/EM/LB) [101]

brush edges The intersection of any two brush surfaces. *See also:* brush. (EEC/EM/LB) [101]

brush ends The surface defined by the width and thickness of the brush. *Note:* They are designated as top or holder end and bottom or commutator end. The end that is in contact with the commutator or ring is also knows as the brush face. *See also:* brush. (EEC/EM/LB) [101]

brush friction loss (rotating machinery) The mechanical loss due to friction of the brushes normally included as part of the friction and windage loss. *See also:* brush. (PE) [9]

brush hammer, lifting, or guide clips (electric machines) Metal parts attached to the brush that serve to accommodate the spring finger or hammer or to act as guides. *Note:* Where these serve to prevent the wear of the carbon due to the pressure finger, they are called hammer or finger clips. Rotary converter brushes may have clips that serve the dual purpose of lifting the brushes and of preventing wear from the spring finger. These are generally called lifting clips. *See also:* brush. (EEC/LB) [101]

brush holder (rotating machinery) A structure that supports a brush and that enables it to be maintained in contact with the sliding surface. *See also:* brush. (PE) [9]

brush-holder bolt insulation (rotating machinery) A combination of members of insulating materials that insulate the brush yoke mounting bolts, brush yoke, and brush holders. *See also:* brush. (PE) [9]

brush-holder insulating barriers (rotating machinery) Pieces of sheet insulation installed in the brush yoke assembly to provide longer leakage paths between live parts and ground, or between live parts of different polarities. *See also:* brush. (PE) [9]

brush-holder spindle insulation (rotating machinery) Insulation members that (when required by design) insulate the spindle on which the brush spring is mounted from the brush yoke and the brush holder. *See also:* brush. (PE) [9]

brush-holder spring That part of the brush holder that provides pressure to hold the brush against the collector ring or commutator. *See also:* brush. (PE) [9]

brush holder stud (rotating machinery) An intermediate member between the brush holder and the supporting structure. *See also:* brush. (PE) [9]

brush-holder-stud insulation (rotating machinery) An assembly of insulating material that insulates the brush holder or stud from the supporting structure. *See also:* brush. (PE) [9]

brush-holder support (rotating machinery) The intermediate member between the brush holder or holders and the supporting structure. *Note:* This may be in the form of plates, spindles, studs, or arms. *See also:* brush. (PE) [9]

brush-holder yoke A rocker arm, ring, quadrant, or other support for maintaining the brush holders or brush-holder studs in their relative positions. *See also:* brush. (PE) [9]

brush length The maximum overall dimension of the carbon only, measured in the direction in which the brush feeds to the commutator or collector ring. *See also:* brush. (EEC/EM/LB) [101]

brushless (rotating machinery) Applied to machines with primary and secondary or field windings that are constructed such that all windings are stationary, or in which the conventional brush gear is eliminated by the use of transformers having both moving and stationary windings, or by the use of rotating rectifiers. *See also:* brush. (PE) [9]

brushless exciter (1) (control of small hydroelectric power plants) Direct-connected ac generator with shaft-mounted rotating rectifiers and without a commutator and brushes. (PE/EDPG) 1020-1988r

(2) (excitation systems for synchronous machines) An alternator-rectifier exciter employing rotating rectifiers with a direct connection to the synchronous machine field, thus eliminating the need for field brushes. (PE/EDPG) 421.1-1986r

(3) An ac (rotating armature type) exciter whose output is rectified by semiconductor devices to provide excitation to an electric machine. The semiconductor devices are mounted on, and rotate with, the ac exciter armature. (IA/MT) 45-1998

brushless synchronous machine A synchronous machine that has a brushless exciter with its rotating armature and semiconductor devices on a common shaft with the field of the main machine. This type of machine has no collector, commutator, or brushes. (IA/MT) 45-1998

brush-operating device (power system device function numbers) (or slip-ring short-circuiting device) A device for raising, lowering, or shifting the brushes of a machine, or for short-circuiting its slip rings, or for engaging or disengaging the contacts of a mechanical rectifier. (SUB/PE) C37.2-1979s

brush or sponge plating (electroplating) A method of plating in which the anode is surrounded by a brush or sponge or other absorbent to hold electrolyte while it is moved over the surface of the cathode during the plating operation. *See also:* electroplating. (PE/EEC) [119]

brush rigging (rotating machinery) The complete assembly of parts whose main function is to position and support all of the brushes for a commutator or collector. *See also:* brush. (PE) [9]

brush rocker (rotating machinery) The structure from which the brush holders are supported and fixed relative to each other and so arranged that the whole assembly may be moved circumferentially. *Synonym:* brush yoke. *See also:* brush. (PE) [9]

brush-rocker gear (rotating machinery) The worm wheel or other gear by means of which the position of the brush rocker may be adjusted. *See also:* brush. (PE) [9]

brush shoulders When the top of the brush has a portion cut away by two planes at right angles to each other, this is designated as a shoulder. *See also:* brush. (EEC/EM/LB) [101]

brush shunt (rotating machinery) The stranded cable or other flexible conductor attached to a brush to connect it electrically to the machine or apparatus. *Note:* Its purpose is to conduct the current that would otherwise flow from the brush to the brush holder or brush-holder finger. *See also:* brush. (PE) [9]

brush shunt length The distance from the extreme top of the brush to the center of the hole or slot in the terminal, or the center of the inserted portion of a plug terminal or, if there is no terminal, to the end of the shunt. *See also:* brush. (PE/EM) [9]

brush sides (A) Front and back (bounded by width and length). *Note:* If the brush has one or both ends beveled, the short side of the brush is the front. *See also:* brush. **(B)** If there are no top or bottom bevels and width is greater than thickness and there is a top clip, the side to which the clip is attached is the back, except in the case of angular clips where the front or short side is determined by the slope of the clip and not by the side to which it is attached. *See also:* brush. **(C)** Left side and right side (bounded by thickness and length). *See also:* brush. (EEC/EM/LB) [101]

brush slots, grooves, and notches Hollows in the brush. *See also:* brush. (EEC/EM/LB) [101]

brush spring (rotating machinery) The portion of a brush holder that exerts pressure on the brush to hold it in contact with the sliding surface. (PE) [9]

brush thickness The dimension at right angles to the length in the direction of rotation. *See also:* brush. (EEC/EM/LB) [101]

brush width The dimension at right angles to the length and to the direction of rotation. *See also:* brush. (EEC/EM/LB) [101]

brush yoke *See:* brush rocker.

BS *See:* backspace character.

BSAM *See:* basic sequential access method.

B-scope A cathode-ray oscilloscope arranged to present a B-display. (AES/RS) 686-1990

BSE *See:* Bus Error.

BSL *See:* basic switching impulse insulation level.

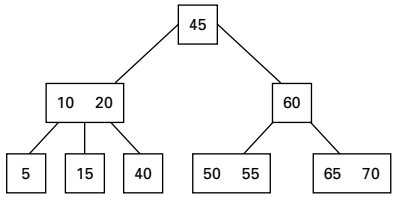
***B* stage** An intermediate stage in the reaction of certain thermosetting resin in which the material swells when in contact with certain liquids and softens when heated, but may not entirely dissolve or fuse. *Note:* The resin in an uncured thermosetting moulding compound is usually in this stage. (PE) [9]

***B* switchboard (telephone switching systems)** A telecommunications switchboard in a local central office, used primarily to complete calls received from other central offices. (COM) 312-1977w

BT The time required for one data bit to cross the Medium Independent Interface (MII)—Bit Time = 1/TxClk.local area networks. (C) 8802-12-1998

***B*-trace (navigation aid terms) (loran)** The second (lower) trace on the scope display. (AES/GCS) 172-1983w

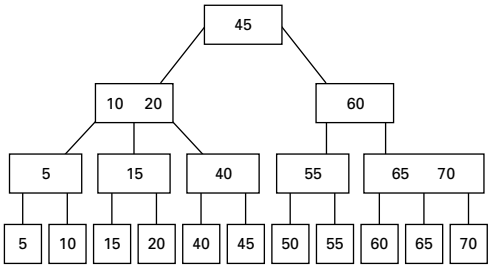
B-tree (A) A height-balanced search tree of order n in which each node contains keys $\{k_1, k_2, ...k_m\}$ in ascending order, where $m \leq n - 1$. The ith subtree of that node contains all the key values falling between k_{i-1} and k_i, with the first subtree containing all key values less than k_1 and the last subtree containing all key values greater than k_m. For example, in the B-tree in the figure below, the lowest notes contain "values less than 10," "11−19," "20−44," "45−59," and "values greater than 60," respctively. *Note:* The height balance of a B-tree is zero. *Synonym:* B-tree index. *See also:* B*-tree; B′-tree. **(B)** A B-tree as in definition (A) in which every nonterminal node except the root has at least $n/2$ subtrees. *Note:* When a node overflows, it is split into two separate nodes, with the parent node updated accordingly. *See also:* binary tree.



B-tree of order 3

(C) 610.5-1990

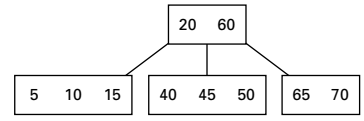
B′-tree A modified B-tree in which identifiers for all nodes are stored in terminal nodes.



B′-tree of order 3

(C) 610.5-1990w

B*-tree A B-tree in which the root node has between 2 and 2+1 descendants, and each remaining node has between (2m−1)/3 and m descendants. That is, two-thirds of the available space in each node is used. *Note:* When a node overflows, keys from that node are moved into one of its sibling nodes if possible; otherwise the node, together with one of its sibling nodes, is split into three nodes.

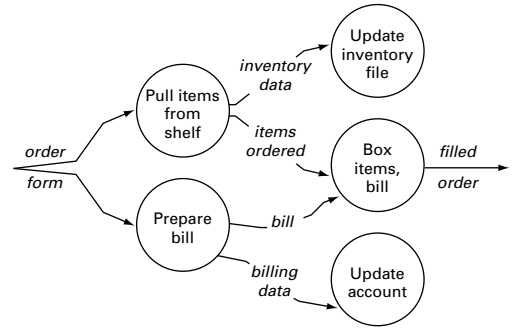


B*-tree of order 3

(C) 610.5-1990w

B-tree index *See:* B-tree.

bubble chart A data flow, data structure, or other diagram in which entities are depicted with circles (bubbles) and relationships are represented by links drawn between the circles. *See also:* box diagram; input-process-output chart; block diagram; flowchart; graph; structure chart.



bubble chart

(C) 610.12-1990

bubble memory A type of nonvolatile storage that uses magnetic fields to create regions of magnetization; a pulsed field breaks the regions into isolated bubbles, free to move along the surface and the presence or absence of a bubble represents digital information. *Synonym:* magnetic bubble memory. (C) 610.10-1994w

bubble sort An exchange sort in which adjacent pairs of items are compared and exchanged, if necessary, and all passes through the set proceed in the same direction. *Synonyms:* propagation sort; sifting sort; exchange selection sort. *Contrast:* cocktail shaker sort. (C) 610.5-1990w

Buchmann-Meyer pattern *See:* light pattern.

buck arm A crossarm placed approximately at right angles to the line crossarm and used for supporting branch or lateral conductors or turning large angles in line conductors. *See also:* tower. (T&D/PE) [10]

bucket (1) (A) (data management) An area of storage that may contain more than one record and that is referenced as a whole by some addressing technique. **(B) (data management)** In hashing, a section of a hash table that can hold all records with identical hash values. (C) 610.5-1990

(2) A device designed to be attached to the boom tip of a line truck, crane, or aerial lift and used to support workers in an elevated working position. It is normally constructed of fiberglass to reduce its physical weight, maintain strength, and obtain good dielectric characteristics *Synonym:* basket. (T&D/PE) 516-1995, 524-1992r

(3) A colloquial reference for an area of storage that may contain more than one record and that is referenced as a whole by some addressing technique. (C) 610.10-1994w

bucket belt *See:* aerial belt.

buffalo *See:* conductor grip.

buffer (1) (A) (supervisory control, data acquisition, and automatic control) (buffer storage) A device in which data are stored temporarily, in the course of transmission from one point to another; used to compensate for a difference in the flow of data, or time of occurrence of events, when transmitting data from one device to another. **(B) (supervisory con-**

trol, data acquisition, and automatic control) (buffer storage) An isolating circuit used to prevent a driven circuit from influencing a driving circuit. **(C) (computers)** A device or storage area used to store data temporarily to compensate for differences in rates of data flow, time of occurrence of events, or amounts of data that can be handled by the devices or processes involved in the transfer or use of the data. *Synonym:* input buffer. **(D) (computers)** A routine that accomplishes the objectives in definition (A). **(E) (computers)** To allocate, schedule, or use devices or storage areas as in definition (A). *See also:* simple buffering; anticipatory buffering; dynamic buffering. (SWG/SUB/PE) C37.1-1987

(2) (data processing) A storage device used to compensate for a difference in rate of flow of information or time of occurrence of events when transmitting information from one device to another. (C) 162-1963w

(3) (elevators) A device designed to stop a descending car or counterweight beyond its normal limit of travel by storing or by absorbing and dissipating the kinetic energy of the car or counterweight. *See also:* elevator. (PE/EEC) [119]

(4) A device or storage area used to store data temporarily to compensate for differences in rates of data flow, time or occurrence of events, or amounts of data that can be handled by the devices or processes involved in the transfer or use of the data. *Synonyms:* input-output area; output buffer; input buffer. (C) 610.10-1994w

(5) An intermediate data storage location used to compensate for the difference in rate of flow of data or time of occurrence of events when transmitting information from one device to another. (IM/ST) 1451.2-1997

(6) (relay) *See also:* relay spring stud.

buffer amplifier (1) (general) An amplifier in which the reaction of output-load-impedance variation on the input circuit is reduced to a minimum for isolation purposes. *See also:* unloading amplifier; amplifier. (AP/C/ANT) 145-1983s, 165-1977w

(2) An amplifier employed in analog computers that produces an output signal equal in magnitude to the input signal but always of one polarity. *Note:* This isolates a preceding circuit from the effects of the following circuit. *See also:* unloading amplifier. (C) 610.10-1994w

buffered channel A channel in which the data is placed into a buffer prior to a trigger event and then transmitted or acted upon following that trigger event. This contrasts with an unbuffered channel in which the data is not taken by, or available to, the channel until following the trigger event. (IM/ST) 1451.2-1997

buffered computer A computer that can perform input-output and process operations simultaneously by using input and output buffers. (C) 610.10-1994w

buffered input Input that is received using buffers. (C) 610.5-1990w

buffered interconnect (BI) A device that implements an intersegment connection such that the FASTBUS protocol (FBP) on one segment is not synchronized with that on the other. (NID) 960-1993

buffered write A write transaction that appears to complete when the request is queued in the agent or responder. A buffered-write transaction returns an optimistic (done_correct) status before the responder's completion status (which could report an error) is available. (C/MM) 1212-1991s

buffering The process of using a buffer. *See also:* dynamic buffering. (C) 610.10-1994w

buffer memory (sequential events recording systems) The memory used to compensate for the difference in rate of flow of information or time of occurrence of events when transmitting information from one device to another. *See also:* storage; buffer; event. (PE/EDPG) [1]

buffer pool A collection of buffers that can be allocated and used as needed. (C) 610.5-1990w

buffer prefix An area contained within a buffer that is used to store control information for the buffer. (C) 610.10-1994w

buffer register *See:* data buffer register; input buffer register.

buffers (buffer salts) Salts or other compounds that reduce the changes in the pH of a solution upon the addition of an acid or alkali. *See also:* ion. (EEC/PE) [119]

buffer salts *See:* buffers.

buffer storage (1) An intermediate storage medium between data input and active storage. (IA) [61]

(2) (data management) A storage device that is used as a buffer. *Synonym:* buffer store. (C) 610.5-1990w

(3) (telecommunications) Memory provided in a digital switching system or digital facility interface (DFI) to compensate for timing drift and frame registration differences between a DFI and the switching system. Reduces the probability of slips caused by environmentally produced phase modulation, such as those resulting from diurnal temperature variations. The mechanism for absorbing slips in the DFI of a local digital switch could consist of several single frame stores that are alternately written and read. This scheme allows the two clocks to drift within the limits of the buffer storage. In addition, a type of hysteresis should be provided at the DFI whereby a buffer that was involved in a slip is protected against an immediate slip in the reverse direction. Enough buffering should be used to minimize such occurrences. (COM/TA) 973-1990w

(4) (A) A type of storage that is used as temporary storage; to compensate for differences in data rate and data flow. *See also:* dynamic buffering. **(B)** A portion of main storage that is assigned to temporary storage as in definition (A). (C) 610.10-1994

buffer store *See:* buffer storage.

buffing (electroplating) The smoothing of a metal surface by means of flexible wheels, to the surface of which fine abrasive particles are applied, usually in the form of a plastic composition or paste. *See also:* electroplating. (EEC/PE) [119]

bug (1) (telegraphy) A semiautomatic telegraph key in which movement of a lever to one side produces a series of correctly spaced dots and movement to the other side produces a single dash. *See also:* fault; error. (EEC/PE) [119]

(2) In computer hardware, a recurring physical problem that prevents a system or system component from working together properly. (C) 610.10-1994w

bugduster An attachment used on shortwall mining machines to remove cuttings (bugdust) from back of the cutter and to pile them at a point that will not interfere with operation. (EEC/PE) [119]

bug seeding *See:* fault seeding; error seeding.

build (software) An operational version of a system or component that incorporates a specified subset of the capabilities that the final product will provide. (C) 610.12-1990

(2) (A) A version of the software that meets a specified subset of the requirements that the completed software will meet. **(B)** The period of time during which such a version is developed. *Note:* The relationship of the terms "build" and "version" is up to the developer; for example, it may take several versions to reach a build, a build may be released in several parallel versions (such as to different sites), or the terms may be used as synonyms. (C/SE) J-STD-016-1995

builder The entity manufacturing the product. (VT) 1475-1999, 1476-2000

building A structure which stands alone or which is cut off from adjoining structures by fire walls with all openings therein protected by approved fire walls. (NESC/NEC) [86]

building block (1) (software) An individual unit or module which is utilized by higher-level programs or modules. (C/SE) 729-1983s

(2) (test, measurement, and diagnostic equipment) Any programmable measurement or stimulus device, such as multimeter, power supply switching unit, frequency meter, installed as an integral part of the automatic test equipment. (MIL) [2]

building bolt (rotating machinery) A bolt used to insure alignment and clamping of parts. (PE) [9]

building component Any subsystem, subassembly, or other system designed for use in or integral with or as part of a structure, which can include structural, electrical, mechanical, plumbing and fire protection systems and other systems affecting health and safety. (NESC/NEC) [86]

building out (communication practice) The addition to an electric structure of an element or elements electrically similar to an element or elements of the structure, in order to bring a certain property of characteristics to a desired value. *Note:* Examples are building-out capacitors, building-out sections of line, etc. (PE/EEC) [119]

building-out capacitor A capacitor employed to increase the capacitance of an electric structure to a desired value. *Note:* The use of "building-out condenser" as a synonym for this term is deprecated. *Synonym:* building-out condenser. (IM) [120]

building-out condenser* *See:* building-out capacitor.

* Deprecated.

building-out network An electric network designed to be connected to a basic network so that the combinations will simulate the sending-end impedance, neglecting dissipation, of a line having a termination other than that for which the basic network was designed. *See also:* network analysis. (EEC/PE) [119]

building pin (rotating machinery) A dowel used to insure alignment of parts. (PE) [9]

building system Plans, specifications, and documentation for a system of manufactured building or for a type or a system of building components, which can include structural, electrical, mechanical, plumbing, and fire protection systems, and other systems affecting health and safety, and including such variations thereof as are specifically permitted by regulation, and which variations are submitted as part of the building system or amendment thereto. (NESC/NEC) [86]

building up (electroplating) Electroplating for the purpose of increasing the dimensions of an article. *See also:* electroplating. (PE/EEC) [119]

buildup or decay (diode-type camera tube). The response to the camera tube to a positive or negative step in irradiance. (ED) 503-1978w

build-up time (T_R) (1) (automatic control) In a continuous step-forced response, the fictitious time interval, which would be required for the output to rise from its initial to its ultimate value, assuming that the entire rise were to take place at the maximum rate. *Note:* It can be evaluated as π/ω_O, where ω_O is the cut-off frequency of an ideal low-pass filter. (PE/EDPG) [3]

(2) Time from the input signal going above the threshold level until the time at which the output level reaches 3 dB below the complete removal of the insertion loss. *Synonyms:* attack time; rise time. (COM/TA) 1329-1999

built-in *See:* built-in utility.

built-in ballast (mercury lamp) A ballast specifically designed to be built into a lighting fixture. (EEC/LB) [95]

built-in check *See:* automatic check.

built-in class A class that is a primitive in the IDEF1X metamodel. (C/SE) 1320.2-1998

built-in device A device that is either permanently attached to the computer system, not easily removable, or present in all system configurations (i.e., not optional). (C/BA) 1275-1994

built-in font *See:* internal font.

built-in logic block observer (BILBO) A shift-register based structure used in some forms of self-testing circuit design. (TT/C) 1149.1-1990

built-in self-test (BIST) A test paradigm that incorporates circuitry in the device for executing and resolving test information about the device. (C/TT) 1450-1999

built-in simulation (computers) A special-purpose simulation provided as a component of a simulation language; for example, a simulation of a bank that can be made specific by stating the number of tellers, number of customers, and other parameters. (C) 610.3-1989w

built-in simulator (computers) A simulator that is built-in to the system being modeled; for example, an operator training simulator built into the control panel of a power plant such that the system can operate in simulator mode or in normal operating mode. (C) 610.3-1989w

built-in test (BIT) (1) An integral capability of the test subject used to provide self-test capability. (SCC20) 1226-1998

(2) A test approach using built-in-test equipment (BITE) or self-test hardware or software to test all or part of the unit under test (UUT). *See also:* built-in test equipment. (ATLAS/MIL) 1232-1995, [2]

built-in test equipment (BITE) (1) (test, measurement, and diagnostic equipment) Any device that is part of an equipment or system and is used for the express purpose of testing the equipment or system. BITE is an identifiable unit of the equipment or system. *See also:* self-test. (MIL/ATLAS) [2], 1232-1995

(2) Hardware included solely for the built-in test function. (SCC20) 1226-1998

built-in transformer A transformer specifically designed to be built into a luminaire. (EEC/LB) [98]

built-in utility A utility implemented within a shell. The utilities referred to as *special built-ins* have special qualities. *Synonym:* built-in. (C/PA) 9945-2-1993

built-up connection A toll call that has been relayed through one or more switching points between the originating operator and the receiving exchange. *See also:* telephone system. (EEC/PE) [119]

bulb (A) (electron tubes and electric lamp) The glass envelope used in the assembly of an electron tube or an electric lamp. **(B) (electron tubes and electric lamp)** The glass component part used in a bulb assembly. (EEC/GB) [106]

bulb unit Propeller turbine and generator, with the generator in a bulbous enclosure in the water passageway. *Note:* The term "bulb turbine" has no meaning. (PE/EDPG) 1020-1988r

bulk erase Operation of removing electrons from all of the bits of an array. (ED) 1005-1998

bulkhead mounting (of a filter) Installation in which the metallic case of the filter is bolted directly to a metallic bulkhead that is at reference or ground potential. (EMC) C63.13-1991

bulk parameters Complex permittivity, complex permeability, and conductivity properties of the bulk material used in the radio-frequency (RF) absorber. The conductivity may be included in the imaginary part of the complex permittivity. (EMC) 1128-1998

bulk power system (power operations) An interconnected system for the movement or transfer of electric energy in bulk on transmission levels. (PE/PSE) 858-1987s

bulk storage (test, measurement, and diagnostic equipment) A supplementary large volume memory or storage device. (MIL) [2]

bulk-storage plant A location where gasoline or other volatile flammable liquids are stored in tanks having an aggregate capacity of one carload or more, and from which such products are distributed (usually by tank truck). (NESC/NEC) [86]

bullet *See:* connector link.

bulletin board *See:* electronic bulletin board.

bull line A high-strength line, normally synthetic fiber rope, used for pulling and hoisting large loads. *Synonyms:* bull rope; pulling line. (T&D/PE) 524-1992r

bull ring A metal ring used in overhead construction at the junction point of three or more guy wires. *See also:* tower. (T&D/PE) [10]

bull rope *See:* bull line.

bullwheel (conductor stringing equipment) A wheel incorporated as an integral part of a bullwheel puller or tensioner to generate pulling or braking tension on conductors or pull-

ing lines, or both, through friction. A puller or tensioner normally has one or more pairs of wheels arranged in tandem incorporated in its design. The physical size of the wheels will vary for different designs, but 17 in (43 cm) face widths and diameters of 5 ft (150 cm) are common. The wheels are power driven or retarded and lined with single or multiple groove neoprene or urethane linings. Friction is accomplished by reeving the pulling line or conductor around the groove of each pair. (T&D/PE) 524-1992r

bullwheel puller (conductor stringing equipment) A device designed to pull pulling lines and conductors during stringing operations. It normally incorporates one or more pairs of urethane- or neoprene-lined, power-driven, single- or multiple-groove bullwheels where each pair is arranged in tandem. Pulling is accomplished by friction generated against the pulling line, which is reeved around the grooves of a pair of the bullwheels. The puller is usually equipped with its own engine which drives the bullwheels mechanically, hydraulically, or through a combination of both. Some of these devices function as either a puller or tensioner. *Synonym:* puller. (T&D/PE) 524a-1993r, 524-1992r

bullwheel tensioner (conductor stringing equipment) A device designed to hold tension against a pulling line or conductor during the stringing phase. Normally, it consists of one or more pairs of urethane- or neoprene-lined, power-braked, single- or multiple-groove bullwheels where each pair is arranged in tandem. Tension is accomplished by friction generated against the conductor which is reeved around the grooves of a pair of the bullwheels. Some tensioners are equipped with their own engines which retard the bullwheels mechanically, hydraulically, or through a combination of both. Some of these devices function as either a puller or tensioner. Other tensioners are equipped with only friction type retardation. *Synonyms:* retarder; brake; tensioner. (T&D/PE/T&D/PE) 524a-1993r, 524-1992r

bump *See:* pulse distortion.

bumper (elevators) A device other than an oil or spring buffer designed to stop a descending car or counterweight beyond its normal limit of travel by absorbing the impact. *See also:* elevator. (PE/EEC) [119]

buncher space (velocity-modulated tube) The part of the tube following the acceleration space where there is a high-frequency field, due to the input signal, in which the velocity modulation of the electron beam occurs. *Note:* It is the space between the input resonator grids. *See also:* velocity-modulated tube. (ED) [45], [84]

bunching The action in a velocity-modulated electron stream that produces an alternating convection-current component as a direct result of differences of electron transit time produced by the velocity modulation. *See also:* overbunching; reflex bunching; electron device; space-charge debunching; optimum bunching; underbunching. (ED) 161-1971w

bunching angle (electron stream) (given drift space) The average transit angle between the processes of velocity modulation and energy extraction at the same or different gaps. *See also:* electron device; effective bunching angle. (ED) 161-1971w

bunching, optimum *See:* optimum bunching.

bunching, parameter *See:* parameter bunching.

bunching time, relay *See:* relay bunching time.

bundle (1) (conductor stringing equipment) A circuit phase consisting of more than one conductor. Each conductor of the phase is referred to as a subconductor. A two-conductor bundle has two subconductors per phase. These may be arranged in a vertical or horizontal configuration. Similarly, a three-conductor bundle has three subconductors per phase. These are usually arranged in a triangular configuration with the vertex of the triangle up or down. A four-conductor bundle has four subconductors per phase. These are normally arranged in a square configuration. Although other configurations are possible, those listed are the most common. *Synonyms:* quad-bundle; twin-bundle; tri-bundle. *See also:* fiber bundle. (T&D/PE) 524a-1993r, 524-1980s, 1048-1990

(2) A software object, which is a grouping of other software objects, such as all or parts of other bundles and products. (C/PA) 1387.2-1995

(3) A group of signals that have a common set of characteristics and differ only in their information content. (C/LM) 802.3-1998

(4) (A) (As a verb) To combine separate arrow meanings into a composite arrow meaning, expressed by joining arrow segments, i.e., the inclusion of multiple object types into an object type set. **(B)** (As a noun) An arrow segment that collects multiple meanings into a single construct or abstraction, i.e., an arrow segment that represents an object type set that includes more than one object type. (C/SE) 1320.1-1998

bundled cable A cable consisting of multiple twisted pairs.local area networks. (C) 8802-12-1998

bundled conductor An assembly of two or more conductors used as a single conductor and employing spacers to maintain a predetermined configuration. The individual conductors of this assembly are called subconductors. (NESC/T&D) C2-1997, C2.2-1960

bundle table A workstation-dependent table specifying the attributes of a display element. (C) 610.6-1991w

bundle, two-conductor, three-conductor, four-conductor, multiconductor A circuit phase consisting of more than one conductor. Each conductor of the phase is referred to as a *subconductor*. A two-conductor bundle has two subconductors per phase. These may be arranged in a vertical or horizontal configuration. Similarly, a three-conductor bundle has three subconductors per phase. These usually are arranged in a triangular configuration with the vertex of the triangle up or down. A four-conductor bundle has four subconductors per phase. These normally are arranged in a square configuration. Although other configurations are possible, those listed are the most common. *Synonyms:* twin-bundle; tri-bundle; quad-bundle. (T&D/PE) 524-1992r

***B* unit** A motive power unit designed primarily for use in multiple with an *A* unit for the purpose of increasing locomotive power, but not equipped for use as the leading unit of a locomotive or for full observation of the propulsion power and brake applications for a train. *Note: B* units are normally equipped with a single control station for the purpose of independent movement of the unit only, but are not usually provided with adequate instruments for full observation of power and brake applications. *See also:* electric locomotive. (EEC/PE) [119]

bunker material Expendable material used for protecting commodities during shipping or hauling. (T&D/PE) 751-1990

buoy (navigation aids) A floating object, other than a lightship, moored or anchored to the bottom of the sea, which is an aid to navigation. *See also:* combination buoy; danger buoy; lighted buoy; radio-beacon buoy; buoys classified to location; sound buoy; sonobuoy. (AES/GCS) 172-1983w

buoys classified to location (navigation aid terms) Channel, mid-channel, turning, fairway, bifurcation, junction, sea. *See also:* buoy. (AES/GCS) 172-1983w

burden (1) (metering) (instrument transformers) The impedance of the circuit connected to the secondary winding. *Note:* For voltage transformers it is convenient to express the burden in terms of the equivalent volt-amperes and power factor at a specified voltage and frequency. (ELM) C12.1-1982s

(2) Load imposed by a relay on an input circuit, expressed in ohms or volt-amperes. *See also:* relay. (PE/PSR) [6]

(3) That property of the circuit connected to the secondary winding that determines the real and reactive power at the secondary terminals. It is expressed either as total impedance with effective resistance and reactance components or as the total voltamperes and power factor at the specified value of current and frequency. (PEL/ET) 389-1990

(4) (of a relay) Load impedance imposed by a relay on an input circuit expressed in ohms and phase angle at specified conditions. *Note:* If burden is expressed in other terms such

as volt-amperes, additional parameters such as voltage, current, and phase angle must be specified.

(SWG/PE/PSR) C37.100-1992, C37.110-1996

(5) (of an instrument transformer) That property of the circuit connected to the secondary winding that determines the active and reactive power at the secondary terminals. *Note:* The burden is expressed either as total ohms impedance with the effective resistance and reactance components, or as the total voltamperes and power factor at the specified value of current or voltage, and frequency.

(PE/TR/PSR) C57.13-1993, C37.110-1996

burden regulation (capacitance potential devices) Refers to the variation in voltage ratio and phase angle of the secondary voltage of the capacitance potential device as a function of burden variation over a specified range, when energized with constant, applied primary line-to-ground voltage. *See also:* outdoor coupling capacitor. (PE/EM) 43-1974s

burglar-alarm system An alarm system signaling an entry or attempted entry into the area protected by the system. *See also:* protective signaling. (EEC/PE) [119]

burial depth (cable plowing) The depth of soil cover over buried cable, pipe, etc., measured on level ground.

(T&D/PE) 590-1977w

buried cable (1) (direct buried) A cable for installation under the surface of the earth in such a manner that it cannot be removed without disturbing the soil. It is designed for direct burial in the earth to withstand submersion in ground water, the pressure of backfill material, and in special applications, to withstand the gnawing of burrowing rodents.

(PE/PSC) 789-1988w

(2) A cable installed under the surface of the ground in such a manner that it cannot be removed without disturbing the soil. (EEC/PE) [119]

burn in (1) (station control and data acquisition) (supervisory control, data acquisition, and automatic control) A period, prior to on-line operation, during which equipment is continuously energized for the purpose of forcing infant mortality failures. (PE/SUB) C37.1-1994

(2) (Class 1E battery chargers and inverters) The operation of components or equipment, prior to type test or ultimate application, intended to stabilize their characteristics and to identify early failures. (PE/NP) 650-1979s

(3) The operation of items prior to their ultimate application, intended to stabilize their characteristics and to identify early failures. *See also:* reliability. (R) [29]

(4) The process of running a device for a period in order to identify early failures caused by "infant mortality." *Note:* This is not the same as programming, or "burning" electrically programmable read-only memory. (C) 610.10-1994w

(5) A test performed for the purpose of screening out devices with inherent defects or defects resulting from manufacturing aberrations that cause time and stress dependent failures. Burn-in is intended to eliminate infant mortality and early lifetime failures by stressing devices at or above maximum operating conditions. (C/BA) 1156.4-1997

burn-in period *See:* early-failure period.

burnishing The smoothing of metal surfaces by means of a hard tool or other article. *See also:* electroplating.

(EEC/PE) [119]

burnishing surface (mechanical recording) The portion of the cutting stylus directly behind the cutting edge, that smooths the groove. *See also:* phonograph pickup. (SP) [32]

burnout (nonlinear, active, and nonreciprocal waveguide components) The point at which a sensitive receiving device suffers a specified permanent degradation of noise figure or equivalent increase in noise temperature.

(MTT) 457-1982w

burnt deposit A rough or noncoherent electrodeposit produced by the application of an excessive current density. *See also:* electroplating. (EEC/PE) [119]

burnup, nuclear *See:* nuclear burnup.

burst (1) (pulse techniques) A wave or waveform composed of a pulse train or repetitive waveform that starts as a prescribed time and/or amplitude, continues for a relatively short duration and/or number of cycles, and upon completion returns to the starting amplitude. *See also:* pulse.

(IM/HFIM) [40]

(2) (audio and electroacoustics) An excursion of a quantity (voltage, current, or power) in an electric system that exceeds a selected multiple of the long-time average magnitude of this quantity taken over a period of time sufficiently long that increasing the length of this period will not change the result appreciably. This multiple is called the upper burst reference. *Notes:* 1. If measurements are made at different points in a system, or at different times, the same quantity must be measured consistently. 2. The excursion may be an electrical representation of a change of some other physical variable such as pressure, velocity, displacement, etc. (SP) [32]

(3) (radio-wave propagation) A transient increase in intensity of radiation over a short period, such as is observed from the sun. (AP) 211-1977s

(4) (A) To read or write data in such a manner that does not require or permit an interruption to occur. **(B)** To separate the pages of a continuous form, often by means of a device called a burster. (C) 610.10-1994

(5) A set of stimulus patterns and related unit under test (UUT) responses that are set up, applied, and read as a group. A test program may employ more than one burst to provide the stimuli and responses necessary to test the UUT.

(SCC20) 1445-1998

(6) Tester execution of a pattern or set of patterns. Generally controlled by "start" and "stop" definitions.

(C/TT) 1450-1999

(7) *See also:* pulse burst. (AES) 686-1997

burst4 Exactly four consecutive signal elements of the same polarity. (C/LM) 8802-5-1998

burst5 Five or more consecutive signal elements of the same polarity. (C/LM) 8802-5-1998

burst6 Six or more consecutive signal elements of the same polarity. (C/LM) 8802-5-1998

burst build-up interval The time interval between the burst leading-edge time and the instant at which the upper burst reference is first equaled. (SP) 257-1964w, [32]

burst corona (overhead-power-line corona and radio noise) Corona mode that may be considered as the initial stage of positive glow. It occurs at a positive electrode with electric field strengths at and slightly above the corona inception voltage gradient. Burst corona appears as a bluish film of velvet-like glow adhering closely to the electrode surface. The current pulses of burst corona are of low amplitude and may last for periods of milliseconds. (T&D/PE) 539-1990

burst decay interval (audio and electroacoustics) The time interval between the instant at which the peak burst magnitude occurs and the burst trailing-edge time. *See also:* burst; burst duration. (SP) 257-1964w, [32]

burst duration (audio and electroacoustics) The time interval during which the instantaneous magnitude of the quantity exceeds the lower burst reference, disregarding brief excursions below the reference, provided the duration of any individual excursion is less than a burst safeguard interval of selected length. *Notes:* 1. If the duration of an excursion is equal to or greater than the burst safeguard interval, the burst has ended. 2. These terms, as well as those defined below, are illustrated in the accompanying figure.

a) A burst is found with the aid of a "window" that is slid horizontally to the right with its base resting on the lower burst reference. The width of the window equals the burst safeguard interval and the height of the window equals the difference between the upper and lower burst references. The window is slid to the right until the trace crosses the top of the window. The upper burst reference has then been reached and a burst has occurred.

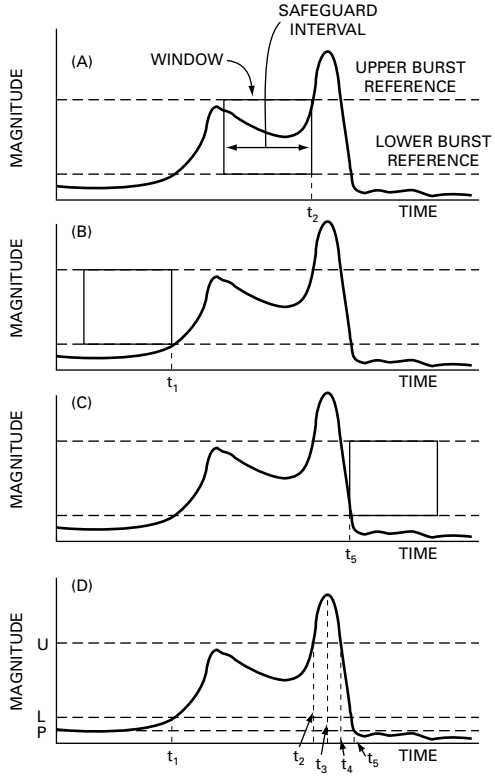
b) The burst leading-edge time is found by sliding the window to the left until the trace disappears from the window.

The right-hand side of the window marks the burst leading-edge time.

c) The burst trailing edge time is found by a similar procedure. The window is slid to the right past its position in (A) until the trace disappears from the window. The left-hand side of the window marks the burst trailing-edge time.

d) Terms used in defining a burst: burst leading-edge time, t_1; burst build-up interval, $t_2 - t_1$; burst rise interval, $t_3 - t_1$; burst trailing-edge time, t_5; burst decay interval, $t_5 - t_3$; burst fall-off interval, $t_5 - t_4$; burst duration, $t_5 - t_1$; upper burst reference, U; lower burst reference, L; long-time average power, P.

See also: burst.



Plot of instantaneous magnitude versus time to illustrate terms used in defining a burst.

burst duration
(SP) 257-1964w, [32]

burst duty factor (audio and electroacoustics) The ratio of the average burst duration to the average spacing. *Note:* This is equivalent to the product of the average burst duration and the burst repetition rate. *See also:* burst.
(SP) 257-1964w, [32]

burst error In data communications, a series of consecutive errors in data transmission that tend to be grouped together, with a longer time interval separating multiple bursts.
(C) 610.7-1995

burst fall-off interval (audio and electroacoustics) The time interval between the instant at which the upper burst reference is last equaled and the burst trailing edge time. *See also:* burst.
(SP) 257-1964w, [32]

burst flag (television) A keying or gating signal used in forming the color burst from a chrominance subcarrier source. *See also:* television.
(BT/AV) [34]

burst gate (television) A keying or gating device or signal used to extract the color burst from a color picture signal. *See also:* television.
(BT/AV) [34]

burst keying signal *See:* television; burst flag.

burst leading-edge time (audio and electroacoustics) The instant at which the instantaneous burst magnitude first equals the lower burst reference. *See also:* burst.
(SP) 257-1964w, [32]

burst measurements *See:* energy-density spectrum.

burst mode (1) A mode of transmission by which a system can send a burst of data at higher speed for some period of time.
(C) 610.7-1995

(2) An operational mode in which an end node may send one or more packets each time it is granted permission to transmit.local area networks.
(C) 802.12c-1998

burst-quiet interval (audio and electroacoustics) The time interval between successive bursts during which the instantaneous magnitude does not equal the upper burst reference. *See also:* burst.
(SP) 257-1964w, [32]

burst repetition rate (audio and electroacoustics) The average number of bursts per unit of time. *See also:* burst.
(SP) 257-1964w, [32]

burst rise interval (audio and electroacoustics) The time interval between the burst leading-edge time and the instant at which the peak burst magnitude occurs. *See also:* burst.
(SP) 257-1964w, [32]

burst safeguard interval (audio and electroacoustics) A time interval of selected length during which excursions below the lower burst reference are neglected; it is used in determining those instants at which the lower burst references are first and last equaled during a burst. *See also:* burst.
(SP) 257-1964w, [32]

burst spacing (audio and electroacoustics) The time interval between the burst leading-edge times of two consecutive bursts. *See also:* burst.
(SP) 257-1964w, [32]

burst trailing-edge time (audio and electroacoustics) The instant at which the instantaneous burst magnitude last equals the lower burst reference. *See also:* burst.
(SP) 257-1964w, [32]

burst train (audio and electroacoustics) A succession of similar bursts having comparable adjacent burst-quiet intervals. *See also:* burst.
(SP) 257-1964w, [32]

bus (1) A three-phase junction common to two or more ways.
(SWG/PE) C37.71-1984r

(2) (signals and paths) (microcomputer system bus) A signal line or a set of lines used by an interface system to connect a number of devices and to transfer data.
(MM/C/IM/AIN) 796-1983r, 488.1-1987r, 1000-1987r, 696-1983w, 959-1988r

(3) One or more conductors used for transmitting signals or power from one or more sources to one or more destinations.
(C) 162-1963w

(4) (simple 32-bit backplane bus) A set of signal lines to which a number of devices are connected and over which information is transferred between them.
(MM/C) 1196-1987w

(5) (hydroelectric power plants) A conductor or group of electrical conductors serving as common connections between circuits, generally in the form of insulated cable, rigid rectangular or round bars, or stranded overhead cables held under tension.
(PE/EDPG) 1020-1988r

(6) The concatenation of the *transmission links* between *nodes* and the data path within nodes that provides unidirectional transport of the digital bit stream from the *Head of Bus function* past the *access unit (AU)* of each node to the end of bus.
(LM/C) 8802-6-1994

(7) One or more conductors that are used for the transmission of signals, data, or power. *See also:* address bus; data chain bus; data bus; memory bus; control bus; bidirectional bus; time-multiplexed bus.
(C) 610.10-1994w

(8) A conductor, or group of conductors, that serves as a common connection for two or more circuits.
(SWG/PE) C37.100-1992

(9) In PDEF, a physical collection of nets and/or pnets, or of pins and/or nodes. If the items collected in the PDEF bus are logical, the PDEF bus may or may not correspond to a logical bus described in the netlist.
(C/DA) 1481-1999

bus address A label used to define a communications path to a device in a bus environment where multiple devices share a common data path. (SCC20) 993-1997

bus bar A common metallized region that connects the individual interdigital transducer fingers and provides a contact area for external circuit connection via bonding or other means. (UFFC) 1037-1992w

bus-based architecture A computer architecture in which the components such as processors, peripheral devices and memory are interconnected by one or more busses. *Contrast:* non-bus-based architecture. (C) 610.10-1994w

bus bridge A bus bridge is an interconnect between two or more buses that provides signal and protocol translation from one bus to another. The buses may adhere to different bus standards for mechanical, electrical, and logical operation (such as a bus bridge from Futurebus+ to VMEbus or to Multibus II). (C/BA) 10857-1994, 896.2-1991w, 896.3-1993w, 896.4-1993w, 896.10-1997

bus clock cycle An amount of time equal to one bus clock period, nominally 100 ns. (C/MM) 1296-1987s

bus cycle (1) (general system) (microcomputer system bus) The process whereby digital signals effect the transfer of data bytes or words across the interface by means of an interlocked sequence of control signals. Interlocked denotes a fixed sequence of events in which one event must occur before the next event can occur. (MM/C) 796-1983r
(2) (696 interface devices) (signals and paths) The basic sequence of electrical events required to complete a transfer of data on the bus. A bus cycle contains at least three bus states. (MM/C) 696-1983w

bus-dependent (1) A term used to describe parameters that may vary among different bus standards, but are defined by them. Although the CSR Architecture may constrain the definition of these fields, their detailed definition is provided by the appropriate bus standard. (C/MM) 1212-1991s
(2) This term is used to describe technology-dependent parameters. Although the CSR Architecture may specify the size and address of these parameters, their format and definition is provided by the appropriate bus standards. (C/BA) 896.4-1993w

bus driver (A) A device capable of providing sufficient current to drive all loads connected to a bus. *See also:* bus slave. **(B)** A device that controls access to a bus. (C) 610.10-1994

Bus Error BSE bit A bit in the Slave Status register of every S-module that is set by the S-module when a Bus Error is recorded in the Bus Error register. (TT/C) 1149.5-1995

Bus Error register A status register that is required to be implemented in the MTM-Bus interface circuitry of every S-module. Bits in this register provide the S-module with the ability to record error conditions associated with message transmission. The register may be interrogated by the M-module. Some bits in the register are reserved for application-specific uses. (TT/C) 1149.5-1995

bushing (1) (rotating machinery) (electrical) Insulator to permit passage of a lead through a frame or housing. (PE) [9]
(2) An insulating structure including a through conductor, or providing a passageway for such a conductor, with provision for mounting on a barrier, conducting or otherwise, for the purpose of insulating the conductor from the barrier and conducting current from one side of the barrier to the other. (SWG/PE/NESC/TR/PSIM) C37.100-1992, C2-1997, C57.12.80-1978r, 62-1995
(3) (relay) *See also:* relay spring stud.

bushing condenser The component within a capacitive graded bushing in which the grading element is embedded in the major insulation. (PE/TR) C57.19.03-1996

bushing insert (separable insulated connectors) A connector component intended for insertion into a bushing well. (T&D/PE) 386-1995

bushing potential tap (outdoor apparatus bushings) An insulated connection to one of the conducting layers of a bushing providing a capacitance voltage divider to indicate the voltage applied to the bushing. (PE/TR) 21-1976

bushing, rotor *See:* rotor bushing.

bushings (A) (for combined voltage application) A bushing applied to the valve winding side of a converter transformer or a bushing applied to the converter transformer side of a dc converter valve. This bushing is exposed to a large ac stress superimposed on a dc bias. **(B)** (for pure DC application) A bushing applied to thedc side of a dc converter valve or a bushing applied on a dc smoothing reactor. This bushing is exposed to dc stress with a small AC ripple. (PE/TR) C57.19.03-1996

bushing tap (partial discharge measurement in liquid-filled power transformers and shunt reactors) Connection to a capacitor foil in a capacitively graded bushing designed for voltage or power factor measurement that also provides a convenient connecting point for partial discharge measurement. The tap-to-phase capacitance is generally designated as C_1 and the tap-to-ground capacitance is designated as C_2. *See also:* bushing test tap; capacitance; bushing potential tap. (SWG/PE/TR) 1291-1993r, C57.113-1988s

bushing test tap (1) (outdoor apparatus bushings) An insulated connection to one of the conduction layers of a bushing for the purpose of making insulation power factor tests. (PE/TR) 21-1976
(2) A connection to one of the conducting layers of a capacitance graded bushing for measurement of partial discharge, power factor, and capacitance values. (PE/TR) C57.19.03-1996

bushing type current transformer A current transformer (CT) that has an annular core with a secondary winding insulated from and permanently assembled on the core but has no primary winding or insulation for a primary winding. This type of CT is for use with a fully insulated conductor as a primary winding. A bushing type ct is usually used in equipment where the primary conductor is a component part of other apparatus. *Note:* This type of ct has very low leakage flux and is also known as a Low Inductance Type CT. (PE/PSR/TR) C37.110-1996, C57.13-1993, C57.12.80-1978r

bushing voltage tap A connection to one of the conducting layers of a capacitance graded bushing providing a capacitance voltage divider. *Note:* Additional equipment can be designed, connected to this tap and calibrated to indicate the voltage applied to the bushing. This tap can also be used for measurement of partial discharge, power factor and capacitance values. (PE/TR) C57.19.03-1996

bushing well (separable insulated conductors) An apparatus bushing having a cavity for insertion of a connector component, such as a bushing insert. (PE/T&D) 386-1995

bus_ID A 10-bit number uniquely specifying a particular bus within a system of multiple interconnected buses. (C/MM) 1394-1995

busied A status indication returned in an echo packet that indicates to the sender that the send packet was not accepted (and was discarded), probably because there was no room in the destination queue. The sender should retransmit the packet later. (C/MM) 1596-1992

bus implementation conformance statement (BICS) This is a completed BICS pro forma questionnaire. (C/BA) 896.4-1993w

bus implementation conformance statement pro forma (BICS pro forma) A questionnaire that lists implementation capabilities. (C/BA) 896.4-1993w

bus implementation extra information for testing (BIXIT) A completed BIXIT pro forma. (BA/C) 896.4-1993w

bus implementation extra information for testing pro forma (BIXIT pro forma) This questionnaire provides extra information about the module that might be necessary to configure and perform the tests. (C/BA) 896.4-1993w

business area (BA) The logical subdivision of an enterprise into areas of similar business directions, e.g., finance, sales, and marketing. (C/PA) 1003.23-1998

business data processing The use of computers for processing information to support the operational, logistical, and functional activities performed by an organization. (C) 610.2-1987

business function A set of processes that support the attainment of a particular business goal. (C/PA) 1003.23-1998

business graphics The use of computer graphics to display business data; for example, bar charts, histograms, pie charts. (C) 610.6-1991w

business information system *See:* management information system.

business system requirement (BSR) The enterprise-driven requirement for a business system, i.e., a set of processes, procedures, and documentation supported by technology to deliver either a major CSF or a KPI in the measurement of the attainment of the enterprise business goals and vision. *See also:* critical success factor; key performance indicator. (C/PA) 1003.23-1998

bus interface unit (BIU) The logic on a module that converts bus signals to and from signals that are compatible with the functional logic of the module. (C/BA) 896.3-1993w

bus line (1) (railways) A continuous electric circuit other than the electric train line, extending through two or more vehicles of a train, for the distribution of electric energy. *See also:* multiple-unit control. (EEC/PE) [119]

(2) Signal transmission line, that may be driven by several modules simultaneously using drivers with wire-OR capability. Therefore, a signal carried by a bus line is the combination of signals applied to that line from each module. (C/BA) 896.3-1993w

(3) The medium for the transmission of signals. Since Futurebus+ uses open collector drivers, a bus line may be driven by several boards simultaneously. Therefore, the signal carried by the bus line is the combination of signals applied to that line from each board. (C/BA) 896.2-1991w

(4) The medium for the transmission of signals. Since Futurebus+ requires drivers with wire-OR capability, a bus line may be driven by several modules simultaneously. Therefore, the signal carried by the bus line is the combination of signals applied to that line from each module. (C/BA) 10857-1994, 896.4-1993w

(5) The medium for the transmission of signals. Futurebus+ Spaceborne Profile uses both open collector and push-pull drivers to match whether a signal is expected to be driven by more than one board simultaneously. A bus line is driven by only one board for those signals that are push-pull. A bus line may be driven by several boards simultaneously for those signals that are open collector. Therefore, the signal carried by the bus line is the combination of signals applied to that line from each board in the open collector case or from the one board in the push-pull case. (C/BA) 896.10-1997

bus lock Method of a master ensuring continued tenure of the bus. Not identical to resource lock. (C/MM) 1196-1987w

bus loss The amount of time required for a valid signal transition to occur at every point on the backplane. This value is equivalent to two bus propagation delays plus the clock skew. (C/MM) 1296-1987s

bus manager (1) The node that provides advanced power management, optimizes Serial Bus performance, describes the topology of the bus, and cross-references the maximum speed for data transmission between any two nodes on the bus. The bus manager node may also be the isochronous resource manager node. (C/MM) 1394-1995

(2) The node that provides power management, sets the gap count in the cable environment, and publishes the topology of the bus and the maximum speed for data transmission between any two nodes on the bus. The bus manager node may also be the isochronous resource manager node. (C/MM) 1394a-2000

bus master A device connected to a bus which controls all other devices connected to the same bus. *Note:* The bus master controls which slave devices may, and when they may, place data on the bus. *Contrast:* bus slave. (C) 610.10-1994w

bus mouse A mouse that connects to the computer system using a bus, generally contained within a special expansion board. *Contrast:* serial mouse. (C) 610.10-1994w

bus node In the device tree, a descendant node that represents the interface, or "bridge," between an SBus and its parent (which could be another bus). (C/BA) 1275.2-1994w, 1275.4-1995

bus operation The basic unit of processing whereby digital signals effect the transfer of data across an interface by means of a sequence of control signals and an integral number of bus clock cycles. (C/MM) 1296-1987s

bus owner The agent that enters the acquisition phase of the arbitration operation and initiates one or more transfer operations. *See also:* transfer operation; arbitration operation; acquisition phase. (C/MM) 1296-1987s

bus reactor (power and distribution transformers) A current-limiting reactor for connection between two different buses or two sections of the same bus for the purpose of limiting and localizing the disturbance due to a fault in either bus. *See also:* reactor. (PE/TR) C57.12.80-1978r, [57]

bus request sequence A set of one or more arbitration operations in which all agents that simultaneously request the bus become the bus owner, one at a time. *See also:* bus owner; arbitration operation. (C/MM) 1296-1987s

bus-ring topology A topology where the stations are physically wired as a bus but logically act like a ring. Every station on the bus knows its logical predecessor and successor. Transmissions can be broadcast to all stations on the bus or addressed to another individual station. *See also:* bus topology; star-ring topology; ring topology; star topology; star-bus topology; loop topology; tree topology. (C) 610.7-1995

Bus Sizing The dynamic modification of the data transfer width to meet the SBus Slave's bus width requirements. (C/BA) 1496-1993w

bus slave (A) A device which responds to signals on a bus. *Contrast:* bus master. **(B)** A device connected to a bus which cannot put data onto the bus until given permission by the bus driver or bus master. (C) 610.10-1994

bus standard An abbreviated notation used throughout this document, rather than the more exact "bus standard document that claims conformance to this specification." (C/MM) 1212-1991s

bus state (696 interface devices) (signals and paths) A bus state is one clock cycle long and begins and ends just before the rising edge of ϕ. There are at least three bus states in every bus cycle. (C/MM) 696-1983w

bus structure An assembly of bus conductors, with associated connection joints and insulating supports. (PE/SUB) 605-1998

bus support (1) An insulating support for a bus. It includes one or more insulator units with fittings for fastening to the mounting structure and for receiving the bus. (SWG/PE) C37.100-1992

(2) An insulating support for a bus. *Note:* A bus support includes one or more insulator units with fittings for fastening to the mounting structure and for receiving the bus. (PE/SUB) 605-1998

bus tenure The duration of a master's control of the bus; i.e., the time during which a module has the right to initiate and execute bus transactions. (C/BA) 1014.1-1994w, 896.4-1993w, 896.3-1993w, 10857-1994

bus tie reactor A current limiting reactor for connection between two different buses or two sections of the same bus for the purpose of limiting and localizing the disturbance due to a fault in either bus. (PE/TR) C57.16-1996

bus timer A functional module that measures the time each data transfer takes on the DTB and terminates the DTB cycle when the transfer time is not within reason. Without this module, when the master attempts to transfer data to or from a nonexistent slave location it could wait forever. The bus timer prevents this delay by terminating the cycle. (C/BA) 1014-1987

bus topology A topology in which stations are attached to a common transmission medium, known as a bus; data propagate the length of the medium and are received by all stations. *See also:* star-bus topology; tree topology; loop topology; ring topology; bus-ring topology; star topology; star-ring topology. (C) 610.7-1995

bus transaction An event initiated with a connection phase and terminated with a disconnection phase. Data may or may not be transferred during a bus transaction. *See also:* transaction (C/BA) 1014.1-1994w, 896.4-1993w, 10857-1994, 896.3-1993w

bus-type shunt (direct-current instrument shunts) An instrument shunt for switchboard use so that it can be installed in the bus or connection bar structure of the circuit whose current is to be measured. (PE/PSIM) 316-1971w

busway A grounded metal enclosure containing factory-mounted, bare or insulated conductors that are usually copper or aluminum bars, rods, or tubes. *See also:* cable bus. (NESC/NEC) [86]

busy (1) Pertaining to a system or component that is operational, in service, and in use. *See also:* up; down; idle. (C) 610.12-1990

(2) If a slave is unable to accept a bus transaction from a master, it may issue a busy status to the master of the transaction. The master must relinquish the bus and may reacquire the bus and retry the transaction after a suitable time interval. (C/BA) 10857-1994, 896.4-1993w, 896.3-1993w, 1014.1-1994w

busy hour (1) (telephone switching systems) That uninterrupted period of 60 min during the day when the traffic offered is a maximum. (COM) 312-1977w

(2) (data transmission) The peak 60 min period during a 24 h period when the largest volume of communication traffic is handled. (PE) 599-1985w

(3) (telecommunications) The hour having the highest average traffic for the three highest traffic months. A "busy hour" determination study uses only about two weeks worth of hour-by-hour data collected just in advance of the expected high-traffic months. *Synonym:* time-consistent busy hour. *See also:* time-consistent traffic measures. (COM/TA) 973-1990w

(4) An hour-long window during which the communication traffic load is at its maximum for a given 24 h period. (C) 610.7-1995

busy season The three months, not necessarily consecutive, that have the highest average traffic in the busy hour. *See also:* average busy season busy-hour load. (COM/TA) 973-1990w

busy slot A slot that contains information and is not available for Queued Arbitrated (QA) access. (LM/C) 8802-6-1994

busy test (telephone switching systems) A test made to determine if certain facilities, such as a line, link, junctor, trunk, or other servers, are available for use. (COM) 312-1977w, [48]

busy time In computer performance engineering, the period of time during which a system or component is operational, in service, and in use. *See also:* idle time; down time; setup time. (C) 610.12-1990

busy tone *See:* audible busy signal.

busy verification (telephone switching systems) A procedure for checking whether or not a called station is in use or out-of-order. (COM) 312-1977w

butt contacts An arrangement in which relative movement of the cooperating members is substantially in a direction perpendicular to the surface of contact. *See also:* contactor. (IA/ICTL/IAC) [60], [84]

Butterworth filter A filter whose pass-band frequency response has a maximally flat shape brought about by the use of Butterworth polynomials as the approximating function. (CAS) [13]

butt ground *See:* structure base ground.

butt joint (waveguides) A connection between two waveguides or transmission lines that provides physical contact between the ends of the waveguides in order to maintain electric continuity. *See also:* waveguide. (MTT) 147-1979w

button A generic term for any control that initiates an action when pressed. (C) 1295-1993w

button device *See:* choice device.

buyer (A) An individual or organization responsible for acquiring a product or service (for example, a software system) for use by themselves or other users. *See also:* customer. **(B)** The person or organization that accepts the system and pays for the project. (C/SE) 1362-1998

buzz A disturbance of relatively short duration, but longer than a specified value as measured under specified conditions. *Note:* For the specified values and conditions, guidance should be found in documents of the International Special Committee on Radio Interference. *See also:* electromagnetic compatibility. (EMC/IM) [53], [76]

buzzer A signaling device for producing a buzzing sound by the vibration of an armature. (EEC/PE) [119]

buzz stick A device for testing suspension insulator units for fault when the units are in position on an energized line. *Note:* It consists of an insulating stick, on one end of which are metal prongs of the proper dimensions for spanning and short-circuiting the porcelain of one insulator unit at a time, and thereby checking conformity to normal voltage gradient. *See also:* tower. (T&D/PE) [10]

BW *See:* backward-wave structure.

by-link (telephone switching systems) A temporary connection between trunks and registers set up before the normal connection between them can be established. (COM) 312-1977w

bypass (1) (hydroelectric power plants) A means to pass the flow of water around a turbine to the same discharge outlet. *See also:* jumper. (PE/EDPG) 1020-1988r

(2) The state of the station attachment when the TCU does not route the station signals onto the trunk ring. Instead, the station signals will be returned to the station for lobe testing, and trunk signals will continue along the trunk. (C/LM) 11802-4-1994

(3) *See also:* jumper. (T&D/PE) 516-1995

BYPASS A defined instruction for the test logic defined by IEEE Std 1149.1-1990. (TT/C) 1149.1-1990

bypass capacitor A capacitor for providing an alternating-current path of comparatively low impedance around some circuit element. *Synonym:* bypass condenser. (EEC/PE) [119]

bypass condenser* *See:* bypass capacitor.

* Deprecated.

bypass contacts For reactance-type load tap changers (LTCs), a set of through current-carrying contacts that commutates the current to the transfer contacts without any arc. (PE/TR) C57.131-1995

bypass current The current flowing through the bypass switch, protective device, or other devices, in parallel with the series capacitor. (PE/T&D) 824-1994

bypass device (series capacitor) A device such as a switch or circuit breaker used in parallel with a series capacitor and its protective device to shunt line current for some specified time, or continuously. This device may also have the capability of

inserting the capacitor into a circuit and carrying a specified level of current. (T&D/PE) 824-1985s

bypass gap A gap, or systems of gaps, to protect either the capacitor against overvoltage or the varistor against thermal overload, by carrying load or fault current around the protected equipment for some specified time. The bypass gap normally consists of a power gap and a trigger circuit. (T&D/PE) 824-1994

bypass interlocking device A device that requires all three phases of the switch to be in the same open or closed position. (T&D/PE) 824-1994

bypass/isolation switch (emergency and standby power) A manually operated device used in conjunction with an automatic transfer switch to provide a means of directly connecting load conductors to a power source and of disconnecting the automatic transfer switch. (IA/PSE) 446-1995

bypass key A signalling pattern sent by a fibre optic station to leave the ring and enter the BYPASS state. This pattern consists of a low light-level detected at the FOTCU for greater than 4 ms. (C/LM) 11802-4-1994

bypass switch A device such as a switch or circuit breaker used in parallel with a series capacitor and its protective device to shunt line current for some specified time or continuously. This device may also have the capability of inserting and bypassing the capacitor into a circuit carrying a specified level of current. (T&D/PE) 824-1994

byproduct energy (power operations) Electric energy produced as a byproduct incidental to some other operation. (PE/PSE) 858-1987s

byte (1) (programmable instrumentation) A group of adjacent binary digits operated on as a unit and usually shorter than a computer word (frequently connotes a group of eight bits). (IM/C/Std100/AIN) 488.1-1987r, 610.5-1990w, 1084-1986w, 610.12-1990, 610.7-1995

(2) (signals and paths) (microcomputer system bus) (MULTIBUS) A group of eight adjacent bits operated on as a unit. (MM/C) 796-1983r, 1296-1987s

(3) (software) An element of computer storage that can hold a group of bits. *See also:* bit; word. (C/Std100) 610.12-1990, 610.7-1995

(4) (696 interface devices) (signals and paths) A set of bit-parallel signals corresponding to binary digits operated on as a unit. Connotes a group of eight bits where the most significant bit carries the subscript 7 and the least significant bit carries the subscript 0. (MM/C) 696-1983w

(5) (STEbus) A set of eight signals, individually referred to as bits, which are operated on as a unit. (C/MM) 1000-1987r

(6) (NuBus) A set of 8 signals or bits taken as a unit. (C/MM) 1196-1987w

(7) A set of eight adjacent binary digits. (C/BA) 896.2a-1994w, 10857-1994, 896.3-1993w, 896.4-1993w

(8) A group of adjacent binary digits operated on as a unit. Usually 8 b. (SUB/PE/MM/C) 999-1992w, 959-1988r

(9) A unit of computer data consisting of 8 bits. (BA/C) 1275-1994

(10) A set of eight bit-parallel signals corresponding to binary digits operated on as a unit. The most significant bit carries the index value 7 and the least significant bit carries the index value 0. (C/BA) 1496-1993w

(11) Eight consecutive bits of data. *Note:* A byte is not necessarily equivalent to a character. (C/MM) 1754-1994

(12) An ordered set of eight binary digits (bits). (C/BA) 1014.1-1994w

(13) Eight bits of data. (C/MM/IM/ST) 1212-1991s, 1596.3-1996, 1394-1995, 1596.5-1993, 1596-1992, 1451.2-1997

(14) An individually addressable unit of data storage that is equal to or larger than an octet, used to store a character or a portion of a character.A byte is composed of a contiguous sequence of bits, the number of which is implementation defined. The least significant bit is called the *low-order* bit; the most significant is called the *high-order* bit. *Note:* This definition of *byte* is actually from the C Standard because POSIX.1 merely references it without copying the text. It has been reworded slightly to clarify its intent without introducing the C Standard terminology "basic execution character set," which is inapplicable to this standard. It deviates intentionally from the usage of *byte* in some other standards, where it is used as a synonym for *octet* (always 8 b). On a POSIX.1 system, a byte may be larger than 8 b so that it can be an integral portion of larger data objects that are not evenly divisible by 8 b (such as a 36 b word that contains four 9 b bytes). (C/PA) 1003.2-1992s

(15) A sequence of bits transmitted over a serial line. (C/PA) 1003.5-1992r

(16) A unit of machine storage containing an ordered sequence of 8 b. (C/PA) 1328-1993w, 1224-1993w, 1327-1993w

(17) A set of eight signals or bits taken as a unit. (C/MM) 1596.4-1996

(18) By common usage the term "byte" usually refers to eight bits of data, but within this context the size of a byte is implementation defined subject to the constraints given in IEEE Std 1003.5b-1996. The size of a byte is given by the constant POSIX.Byte_Size. *Note:* In the context of serial I/O, transmitting a byte of data may require the transmission of more bits than the size of a byte in memory, since for example stop bits and parity bits might be included. (C/PA) 1003.5b-1995

(19) A binary bit string that is operated on as a unit and is usually eight bits long and capable of holding one character in the local character set. (C/MM/ED) 855-1990, 1005-1998

(20) An entity composed of 8 bits, used to define a unit element of memory or transmitted data. It is capable of describing integers in the decimal range −128 to 127. (C/MM) 1284.1-1997

(21) A group of eight adjacent bits that function as a single unit. *See also:* octet. (PE/SUB) 1379-1997

(22) An 8 bit value. (C/MM) 1284.4-2000

byte clear Operation that sets all bits in an addressed byte of memory to a common "1" state. (ED) 1005-1998

byte clock A clock derived from the bit clock with a period equal to 10 clock cycles. (C/BA) 1393-1999

byte lane (1) A data path formed by eight data lines and one parity line, used to carry a single byte among the system modules. (C/BA) 10857-1994, 896.4-1993w, 896.3-1993w

(2) A data path formed by eight data lines and one parity line (if parity is implemented) that is used to carry a single byte of information among the system modules. (C/BA) 1014.1-1994w

byte select transistor The transistor, controlled by the word-line or row select line, that isolates each byte from the other bytes along the control line (each row of bytes). (ED) 1005-1998

Byte Mode An asynchronous, byte-wide reverse (peripheral-to-host) channel using the eight data lines of the interface for data and the control/status lines for handshaking. Byte Mode is used with Compatibility Mode to implement a bidirectional channel, with transfer direction controlled by the host when the host and peripheral both support bidirectional use of the data lines. The two modes cannot be active simultaneously. (C/MM) 1284-1994

byte serial (programmable instrumentation) (696 interface devices) (signals and paths) A sequence of bit-parallel data bytes used to carry information over a common bus. (IM/MM/C/AIN) 488.1-1987r, 696-1983w

byte Slave An SBus Slave having a data path only through bits D[31:24] of the data bus. (C/BA) 1496-1993w