G

g (1) Acceleration due to gravity; approximately 9.80 m/s^2 (32.2 ft/s^2). (C/BA) 1101.7-1995
(2) Acceleration due to gravity, that is 9.81 m/s^2 (32.2 ft/s^2). (PE/SUB) 693-1997

G Acceleration normalized with respect to acceleration of gravity at the surface of the Earth (9.81 ms^{-2}) (sea level). (C/BA) 1156.4-1997

GA *See:* geographical address.

GAC *See:* geographical address control.

gaff Tool used to handle and roll poles. *Synonym:* gaff hook. (T&D/PE) 751-1990

gaff hook *See:* gaff.

gain (1) (waveguide) The power increase in a transmission path in the mode or form under consideration. It is usually expressed as a positive ratio, in decibels. (MTT) 146-1980w
(2) (A) (wood structures used in power transmission and distribution) A flat surface cut into the side of a pole to facilitate connections. **(B) (wood structures used in power transmission and distribution)** A connection device to accomplish the same purpose without cutting the pole. (PE/T&D) 751-1990
(3) (in a given direction) The ratio of the radiation intensity, in a given direction, to the radiation intensity that would be obtained if the power accepted by the antenna were radiated isotropically. *Notes:* 1. Gain does not include losses arising from impedance and polarization mismatches. 2. The radiation intensity corresponding to the isotropically radiated power is equal to the power accepted by the antenna divided by 4π. 3. If an antenna is without dissipative loss, then in any given direction, its gain is equal to its directivity. 4. If the direction is not specified, the direction of maximum radiation intensity is implied. 5. The term **absolute gain** is used in those instances where added emphasis is required to distinguish gain from relative gain; for example, absolute gain measurements. *Synonym:* absolute gain. (AP/ANT) 145-1993
(4) In a circuit or device, the ratio between the input and output signals. (C) 610.10-1994w
(5) *See also:* realized gain; partial gain. (AP/ANT) 145-1993

gain and offset (A) (independently based). Gain and offset are the values by which the input values are multiplied and then to which the input values are added, respectively, to minimize the mean squared deviation from the output values. (B) (terminal-based). Gain and offset are the values by which the input values are multiplied and then to which the input values are added, respectively, to cause the deviations from the output values to be zero at the terminal points, that is, at the first and last codes. (IM/WM&A) 1057-1994w

gain-crossover frequency (hydraulic turbines) The frequency at which the gain becomes unity and its decibel value zero. (PE/EDPG) 125-1977s

gain hit or change A sudden increase or decrease in amplitude, usually not exceeding 12 dB of the received signal. Gain hits last at least 4 ms but may continue for hours. (Example: Modems that use amplitude modulation carry the information by the level of the signal, and a gain hit may look like data to these modems.) *Contrast:* impulse noise. (PE/IC) 1143-1994r

gain integrator (1) (analog computer) For each input, the ratio of the input to the corresponding time rate of change of the output. For fixed input resistors, the "time constant" is determined by the integrating feedback capacitor. (C) 165-1977w
(2) In an analog computer, a device which provides the ratio of the input to the corresponding time rate of change of the output, for each input. (C) 610.10-1994w

gain/loss The logarithmic ratio (expressed in decibels) of output power to input power. (COM/TA) 1007-1991r

gain margin (1) (hydraulic turbines) The reciprocal of the gain at the frequency at which the open-loop phase angle reaches 180 degrees. (PE/EDPG) 125-1977s
(2) The reciprocal of the gain of a control loop at the frequency for which there is 180 degrees of phase shift around the control loop. (PEL) 1515-2000

gain medium (laser gyro) A medium that, when energized, provides amplification of coherent light waves to maintain lasing within a closed optical path. (AES/GYAC) 528-1994

gain, partial *See:* partial gain.

gain, photomultiplier tube *See:* photomultiplier tube gain.

gain stability The ability of a device to maintain its gain within specified limits, under specified environmental and power variations. (COM/TA) 1007-1991r

gain time control *See:* sensitivity time control.

gain, transmission *See:* transmission gain.

galactic radio waves Radio waves originating in our galaxy. (AP/PROP) 211-1997

gallon One U.S. gallon equals 3.785 liters. (SUB/PE) 980-1994

galloping The sudden surging and stopping action of cables during high-tension pulls when excessive stretching occurs in the pull rope. (PE/IC) 1185-1994

gal/min Gallons per minute. (T&D/PE) 957-1987s

gal/s Gallons per second. (PE/T&D) 957-1987s

galvanic action Noise currents due to the junction or thermal potentials resulting from a combination of different metals. This current can be a part of the disturbing current passing through the conductors or shield of the signal cable. (PE/IC) 1143-1994r

galvanic isolation A method of electrical isolation where neither the signal nor the common of the output of the isolator is dc coupled to the signal or common of the input of the isolator, except for low-level leakage associated with nonideal components. (VT) 1482.1-1999, 1476-2000

game A physical or mental competition in which the participants, called players, seek to achieve some objective within a given set of rules. *See also:* game theory. (C) 610.3-1989w

game theory (A) The study of situations involving competing interests, modeled in terms of the strategies, probabilities, actions, gains, and losses of opposing players in a game. *See also:* war game; management game. **(B)** The study of games to determine the probability of winning given various strategies. *See also:* war game; management game. (C) 610.3-1989

gaming simulation *See:* simulation game.

gamma (television) The exponent of that power law that is used to approximate the curve of output magnitude versus input magnitude over the region of interest. (BT/AV) 201-1979w

gamma correction (television) The insertion of a nonlinear output-input characteristic for the purpose of changing the system transfer characteristic. (BT/AV) 201-1979w

gamma key The connector keying pin located at the center of the module connector, next to the guide pin. (C/BA) 1101.3-1993

gamma-ray branching ratio For a given excited state, the ratio of the emission rate of a particular gamma ray to the total transition rate from the level (not to be confused with emission probability per decay). (NI) N42.14-1991

gamma-ray emission rate The rate at which a gamma ray of a given energy from the decay of a particular radionuclide is emitted from a given source. The gamma-ray emission rate is the activity times the gamma-ray emission probability. (NI) N42.14-1991

gamma-ray resolution (1) (germanium detectors) The measured full width at half maximum (FWHM), after background subtraction, of a gamma-ray peak distribution, expressed in units of energy. (PE/EDPG) 485-1983s

(2) (sodium iodide detector) The measured full width at half maximum (FWHM), after background subtraction, of a gamma-ray peak distribution, expressed as a percentage of the energy corresponding to the centroid of the distribution. (NI) N42.12-1980s

GAMMA 3 A programming language used for generating matrices and reports in conjunction with a mathematical programming system. (C) 610.13-1993w

gang punch To punch identical hole patterns into each punch card of a card deck. (C) 610.10-1994w

gap (1) In Physical Design Exchange Format (PDEF), the spacing between rows and/or columns in a datapath. (C/DA) 1481-1999

(2) A period of idle bus. (C/MM) 1394a-2000

gap character A character that is included in a computer word for technical reasons but that does not represent data. (C) 610.5-1990w

gap discharge *See:* microspark.

gapless Not possessing gaps, series or parallel, as in "gapless arrester." (SPD/PE) C62.11-1999

gap loss (fiber optics) That optical power loss caused by a space between axially aligned fibers. *Note:* For waveguide-to-waveguide coupling, it is commonly called "longitudinal offset loss." *See also:* coupling loss. (Std100) 812-1984w

gap width The dimension of the air gap in a read/write head, measured along the radius of the disk. (C) 610.10-1994w

garage A building or portion of a building in which one or more self-propelled vehicles carrying volatile flammable liquid for fuel power are kept for use, sale, storage, rental, repair, exhibition, or demonstrating purposes, and all that portion of a building which is on or below the floor or floors in which such in which such vehicles are kept and which is not separated therefrom by suitable cutoffs. (NESC/NEC) [86]

garbage Unwanted or meaningless data. (C) 610.5-1990w

garbage collection (1) (A) (data management) A space optimization technique in which superfluous data are eliminated.

(B) (data management) A database reorganization technique in which the contents of a database are made more compact by physically deleting garbage such as records that have been deleted logically but remain physically in the database. (C) 610.5-1990

(2) (software) In computer resource management, a synonym for memory compaction *Synonym:* memory compaction. (C) 610.12-1990

gas-accumulator relay A relay so constructed that it accumulates all or a fixed proportion of gas released by the protected equipment and operates by measuring the volume of gas so accumulated. (SWG/PE) C37.100-1992

gas admixture ratio (nonlinear, active, and nonreciprocal waveguide components) The ratio of partial pressures of the separate constituent gases of the total gas composition used in gas tubes. (MTT) 457-1982w

gas amplification *See:* gas multiplication factor.

gas-barrier insulator (1) An insulating support specifically designed to prevent passage of gas from one gas compartment to another. (SUB/PE) C37.122-1993, C37.122.1-1993

(2) A spacer insulator specifically designed to prevent passage of gas from one gas compartment to another. (SWG/PE) C37.100-1992, C37.122.1-1993

gas cleanup (nonlinear, active, and nonreciprocal waveguide components) The phenomenon that causes gas atoms or molecules to be absorbed into a solid medium during a gas discharge. (MTT) 457-1982w

gas density, minimum *See:* minimum gas density.

gas density, nominal *See:* nominal gas density.

gas density, normal *See:* normal gas density.

gas-discharge display device *See:* plasma display device.

gaseous discharge (illuminating engineering) The emission of light from gas atoms excited by an electric current. (EEC/IE) [126]

gas fill (nonlinear, active, and nonreciprocal waveguide components) The process by which a plasma limiter or gas tube is evacuated and an admixture of gases is inserted. (MTT) 457-1982w

gas filled joint (power cable joints) Joints in which the fluid filling the joint housing is in the form of a gas. (PE/IC) 404-1986s

gas-filled protector A discharge gap between two or more electrodes hermetically sealed in a ceramic or glass envelope. (PE/PSC) 487-1992

gas-filled transformer (power and distribution transformers) A sealed transformer, except that the windings are immersed in a dry gas which is other than air or nitrogen. (PE/TR) C57.12.80-1978r

gas-flow counter tube A radiation-counter tube in which an appropriate atmosphere is maintained by a flow of gas through the tube. (ED) [45]

gas flow error (laser gyro) The error resulting from the flow of gas in dc discharge tubes. (AES/GYAC) 528-1994

gas focusing (electron-beam tubes) A method of concentrating an electron beam by gas ionization within the beam. *See also:* gas tube. (ED) [45]

gas grooves (electrometallurgy) The hills and valleys in metallic deposits caused by streams of hydrogen or other gas rising continuously along the surface of the deposit while it is forming. *See also:* electrowinning. (EEC/PE) [119]

gas-insulated substation (1) A compact, multicomponent assembly, enclosed in a grounded metallic housing in which the primary insulating medium is a compressed gas and that normally consists of buses, switch-gear, and associated equipment (subassemblies). (SWG/PE/SUB) C37.100-1992, C37.122-1993, C37.122.1-1993

(2) A compact, multicomponent assembly, enclosed in a grounded metallic housing in which the primary insulating medium is a gas, and that normally consists of buses, switch-gear, and associated equipment (subassemblies). (PE/SUB) 80-2000

gas-insulated-substation (GIS) surge arrester A surge arrester specifically designed for use in a gas-insulated substation. (SWG/PE/SUB) C37.122-1983s, C37.100-1992

gas-insulated surge arrester A metal-enclosed surge arrester specifically designed for use in a gas-insulated substation. (SUB/PE) C37.122-1993, C37.122.1-1993

gasket-sealed relay A relay in an enclosure sealed with a gasket. *See also:* relay. (EEC/REE) [87]

gasket, waveguide *See:* waveguide gasket.

gas leakage (1) Loss of insulating gas from the pressurized compartment. (SUB/PE) C37.122-1993, C37.122.1-1993

(2) Loss of insulating gas from the pressurized system. (SWG/PE) C37.100-1992

gas multiplication factor The ratio of the charge collected from the sensitive volume to the charge produced in that volume by the initial ionizing event. (NI/NPS) 309-1999

gas-oil sealed system (1) (power and distribution transformers) A system in which the interior of the tank is sealed from the atmosphere, over the temperature range specified, by means of an auxiliary tank or tanks to form a gas-oil seal operating on the manometer principle. (PE/TR) C57.12.80-1978r

(2) An oil preservation system in which the interior of the tank is sealed from the atmosphere, over the temperature range specified, by means of an ancillary tank or tanks to form a gas-oil seal operating on the manometer principle. (PE/TR) C57.15-1999

gasoline dispensing and service station A location where gasoline or other volatile flammable liquids or liquified flammable gases are transferred to the fuel tanks (including aux-

iliary fuel tanks) of self-propelled vehicles. (NESC/NEC) [86]

GASP *See:* gas plasma display device; plasma display device.

GASP IV A simulation language designed to be used within a FORTRAN program to facilitate the representation of discrete, continuous, and combined models. (C) 610.13-1993w

gas panel *See:* plasma panel.

gas plasma display device (GASP) *See:* plasma display device.

gas-pressure relay A relay so constructed that it operates by the gas pressure in the protected equipment. (SWG/PE) C37.100-1992

gasproof So constructed or protected that the specified gas will not interfere with successful operation. (SWG/PE/IA/APP/IAC) C37.100-1981s, [56], [75], [60]

gasproof or vaporproof (rotating machinery) So constructed that the entry of a specified gas or vapor under prescribed conditions cannot interfere with satisfactory operating of the machine. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

gas ratio The ratio of the ion current in a tube to the electron current that produces it. *See also:* electrode current. (ED) [45]

gas seal (rotating machinery) A sealing arrangement intended to minimize the leakage of gas to or from a machine along a shaft. *Note:* It may be incorporated into a ball or roller bearing assembly. (PE) [9]

gassing The evolution of gases from one or more of the electrodes during electrolysis. *See also:* electrolytic cell. (EEC/PE) [119]

gas system (rotating machinery) The combination of parts used to ventilate a machine with any gas other than air, including facilities for charging and purging the gas in the machine. (PE) [9]

gastight (1) (lightning protection) So constructed that gas or air can neither enter nor leave the structure except through vents or piping provided for the purpose. (NFPA) [114]
(2) So constructed that the specified gas will not enter the enclosing case under specified pressure conditions. (SWG/PE) C37.100-1981s

gas tube An electron tube in which the pressure of the contained gas or vapor is such as to affect substantially the electrical characteristics of the tube. (ED) [45]

gas-tube relaxation oscillator (arc-tube relaxation oscillator) A relaxation oscillator in which the abrupt discharge is provided by the breakdown of a gas tube. *See also:* oscillatory circuit. (EEC/PE) [119]

gas-tube surge arrester (gas tube surge-protective device) A gap or series of gaps in an enclosed discharge medium, other than air at atmospheric pressure, designed to protect apparatus or personnel or both from high transient voltages. *Note:* The arrester in its mounting, with optional fuses and fail-safe devices, shall be called a "protector" to differentiate between the complete protection assembly and the arrester. (PE/SPD) [8], C62.31-1987r

gas-turbine-electric drive A self-contained system of power generation and application in which the power generated by a gas turbine is transmitted electrically by means of a generator and a motor (or multiples of these) for propulsion purposes. *Note:* The prefix gas-turbine-electric is applied to ships, locomotives, cars, buses, etc., that are equipped with this drive. *See also:* electric locomotive. (EEC/PE) [119]

gate (1) A device or element that, depending upon one or more specified inputs, has the ability to permit or inhibit the passage of a signal. *See also:* control. (IA/NPS/ICTL/APP/NID/IAC) [69], 759-1984r, [60]
(2) (A) A device having one output channel and one or more input channels, such that the output channel state is completely determined by the contemporaneous input channel states, except during switching transients. **(B)** A combinational logic element having at least one input channel. **(C)** An AND gate. **(D)** An OR gate. (C) 162-1963, [85], [20], 270-1966
(3) (cryotron) An output element of a cryotron. *See also:* superconductivity. (ED) [46]
(4) (thyristor) An electrode connected to one of the semiconductor regions for introducing control current. *See also:* anode. (IA/ED) 223-1966w, [62], [46], [12]
(5) (A) (navigation systems) An interval of time during which some portion of the circuit or display is allowed to be operative, or *See also:* navigation. **(B) (navigation systems)** the circuit which provides gating. *See also:* navigation. (AES/RS) [42]
(6) (metal-nitride-oxide field-effect transistor) This structural element of an insulated-gate field-effect transistor (IGFET) controls the current between source and drain by a voltage applied to its terminal. (ED) 581-1978w
(7) (nonlinear, active, and nonreciprocal waveguide components) (microwave) In elementary form, a two-port switch having a single-pole, single-throw function. *See also:* bang snuffer. (MTT) 457-1982w
(8) A combinational circuit that performs an elementary logic operation. *Note:* Usually involves at least one input and one output. *Synonym:* logic gate; logic element. (C) 610.10-1994w
(9) (A) An interval of time during which some portion of a circuit or display is allowed to be operative. **(B)** The circuit that provides gating. (AES) 686-1997
(10) In Physical Design Exchange Format (PDEF), the physical abstraction of a library primitive. (C/DA) 1481-1999

gate-controlled delay time (thyristor) The time interval, between a specified point at the beginning of the gate pulse and the instant when the principal voltage (current) has dropped (risen) to a specified value near its initial value during switching of a thyristor from the OFF state to the ON state by a gate pulse. *See also:* principal voltage-current characteristic. (IA/ED) 223-1966w, [62], [12], [46]

gate-controlled rise time (thyristor) The time interval between the instants at which the principal voltage (current) has dropped (risen) from a specified value near its initial value to a specified low (high) value, during switching of a thyristor from the OFF state to the ON state by a gate pulse. *Note:* This time interval will be equal to the rise time of the ON state current only for pure resistive loads. *See also:* principal voltage-current characteristic. (IA/ED) 223-1966w, [62], [12], [46]

gate-controlled turn-off time (turn-off thyristor) The time interval, between a specified point at the beginning of the gate pulse and the instant when the principal current has decreased to a specified value, during switching from the ON state to the OFF state by a gate pulse. *See also:* principal voltage-current characteristic. (IA/ED) 223-1966w, [46], [12], [62]

gate-controlled turn-on time (thyristor) The time interval, between a specified point at the beginning of the gate pulse and the instant when the principal voltage (current) has dropped (risen) to a specified low (high) value during switching of a thyristor from the OFF state to the ON state by a gate pulse. Turn-on time is the sum of delay time and rise time. *See also:* rise time; delay time; principal voltage-current characteristic. (IA/ED/CEM) 223-1966w, [58], [62], [46]

gate current (semiconductor) The current that results from the gate voltage. *Notes:* 1. Positive gate current refers to conventional current entering the gate terminal. 2. Negative gate current refers to conventional current leaving the gate terminal. (IA) [12]

gated integrator A circuit for obtaining an output pulse with an amplitude proportional to the integral of the input signal over a definite time interval. (NPS) 325-1996

gated sweep (oscilloscopes) A sweep controlled by a gate waveform. Also, a sweep that will operate recurrently (free-running, synchronized, or triggered) during the application of a gating signal. *See also:* oscillograph. (IM/HFIM) [40]

gate electric contact *See:* car-door contact.

gate limit (speed governing system, hydraulic turbines) A device which acts on the governor system to prevent the turbine-control servomotor from opening beyond the position for which the device is set. (PE/EDPG) [5]

gate nontrigger current (thyristor) The maximum gate current that will not cause the thyristor to switch from the OFF state to the ON state. *See also:* principal current; gate trigger current. (IA/ED/CEM) 223-1966w, [62], [58], [46]

gate nontrigger voltage (thyristor) The maximum gate voltage that will not cause the thyristor to switch from the OFF state to the ON state. *See also:* gate trigger voltage; principal voltage-current characteristic. (IA/ED/CEM) 223-1966w, [46], [58], [62]

gate power closer *See:* car-door closer.

gate protective action (thyristor converter) Protective action that takes advantage of the switching property in the converter protection network. (IA/IPC) 444-1973w

gate suppression (thyristor power converter) Removal of gating pulses. (IA/IPC) 444-1973w

gate terminal (thyristor) A terminal that is connected to a gate. *See also:* anode. (IA/ED/CEM) 223-1966w, [46], [58]

gate trigger current (thyristor) The minimum gate current required to switch a thyristor from the OFF state to the ON state. *See also:* principal current. (IA/ED/CEM) 223-1966w, [62], [58], [46]

gate trigger voltage (thyristor) The gate voltage required to produce the gate-trigger current. *See also:* principal voltage-current characteristic. (IA/ED/CEM) 223-1966w, [58], [46], [62]

gate turn-off current (gate turn-off thyristor) The minimum gate current required to switch a thyristor from the ON state to the OFF state. *See also:* principal current. (IA/ED/CEM) 223-1966w, [46], [58], [62]

gate turn-off voltage (gate turn-off thyristor) The gate voltage required to produce the gate turn-off current. *See also:* principal voltage-current characteristic. (IA/ED/CEM) 223-1966w, [58], [46], [62]

gate voltage (thyristor) The voltage between a gate terminal and a specified main terminal. *See also:* principal voltage-current characteristic. (IA/ED/CEM) 223-1966w, [62], [46], [58]

gateway A functional unit that interconnects a local area network (LAN) with another network having different higher layer protocols. (LM/C) 8802-6-1994

(2) (A) A dedicated computer that attaches to two or more networks and that routes packets from one to the other. **(B)** In networking, a device that connects two systems that use different protocols. *Contrast:* bridge. *See also:* router; mail gateway. (C) 610.7-1995

gather write A write operation in which information from nonadjacent storage areas is placed into a single physical record. *Contrast:* scatter read. (C) 610.10-1994w

gating (1) The process of selecting those portions of a wave that exist during one or more selected time intervals or that have magnitudes between selected limits. *See also:* wavefront; modulation. (AP/ANT) 145-1983s

(2) The application of enabling or inhibiting pulses during part of a cycle of equipment operation. (AES) 686-1997

gating signal (keying signal) A signal that activates or deactivates a circuit during selected time intervals. (PE/EEC) [119]

gating techniques (thyristor) Those techniques employed to provide controller (thyristor) gating signals. (IA/IPC) 428-1981w

gauss (centimeter-gram-second electromagnetic-unit system) The gauss is 10^{-4} webers per square meter or one maxwell per square centimeter. (Std100) 270-1966w

Gaussian beam (1) (fiber optics) A beam of light whose electric field amplitude distribution is gaussian. When such a beam is circular in cross section, the amplitude is $E(r) = E(0) \exp[-(r/w)^2]$ where r is the distance from beam center and w is the radius at which the amplitude is $1/e$ of its value on the axis; w is called the beamwidth. *See also:* beam diameter. (Std100) 812-1984w

(2) (laser maser) A beam of radiation having an approximately spherical wave front at any point along the beam and having transverse field intensity over any wave front that is a Gaussian function of the distance from the axis of the beam. (LEO) 586-1980w

Gaussian density function (radar) Sometimes referred to as normal probability distribution, the Gaussian probability-density function is given by

$$f(X) = \frac{1}{\sigma\sqrt{2\pi}} \exp - \left(\frac{x^2}{2\sigma^2}\right)$$

Often used to describe statistical nature of random noise, where σ = standard deviation. (AES/RS) 686-1982s

Gaussian distribution A probability distribution characterized by the probability density function

$$f(x) = \frac{1}{\sqrt{2\pi}\ \sigma} \exp\left[-\frac{(x-m)^2}{2\sigma^2}\right]$$

where

x = the random variable
m = the mean
σ = the standard deviation

The Gaussian distribution is often used for analytical modeling of radar noise and various measurement errors. *Synonym:* normal distribution. (AES) 686-1997

Gaussian filter A polynomial filter whose magnitude-frequency response approximates the ideal Gaussian response, the degree of approximation depending on the complexity of the filter. The ideal Gaussian response is given by

$$\left|H(j\omega)\right| = \exp[-0.3466(\omega/\omega_c)^2]$$

where ω_c 3 dB frequency. Gaussian filters, because of their good transient characteristics (small overshoot and ringing), find applications in pulse systems. (CAS) [13]

Gaussian frequency shift keying (GFSK) A modulation scheme in which the data is first filtered by a Gaussian filter in the baseband and then modulated with a simple frequency modulation. (C/LM) 8802-11-1999

Gaussian noise Noise characterized by a wide frequency range with regard to the desired signal of communication channel, statistical randomness, and other stochastic properties. (C) 610.7-1995

Gaussian pulse (1) (fiber optics) A pulse that has the waveform of a gaussian distribution. In the time domain, the waveform is

$$f(t) = \text{A} \exp[-(t/a)^2]$$

where A is a constant, and a is the pulse half duration at the $1/e$ points. *See also:* full width (duration) half maximum. (Std100) 812-1984w

(2) A pulse shape tending to follow the Gaussian curve corresponding to $A(t) = e - a(b - t)^2$. *See also:* pulse. (IM/HFIM) [40]

Gaussian random noise *See:* random noise.

Gaussian response (1) (amplifiers) A particular frequency-response characteristic following the curve $y(f) = e - af^2$. *Note:* Typically, the frequency response approached by an amplifier having good transient response characteristics. *See also:* amplifier. (IM/HFIM) [40]

(2) (oscilloscopes) (amplifiers) A particular frequency response characteristic following the curve

$$y(f) = e^{-af^2}$$

Typically, the frequency response approached by an amplifier having good transient response characteristics. (IM) 311-1970w

Gaussian system (units) A system in which centimeter-gram-second electrostatic units are used for electric quantities and

centimeter-gram-second electromagnetic units are used for magnetic quantities. *Note:* When this system is used, the factor c (the speed of light) must be inserted at appropriate places in the electromagnetic equations. (Std100) 270-1966w

Gauss' law (electrostatics) States that the integral over any closed surface of the normal component of the electric flux density is equal in a rationalized system to the electric charge Q_0 within the surface. Thus,

$$\int_{\text{closed surface}} (\mathrm{D} \cdot \mathrm{n})\mathrm{d}A = \int_{\text{volume enclosed}} \rho_0 \mathrm{d}V = Q_0$$

Here, D is the electric flux density, n is a unit normal to the surface, dA the element of area, ρ_0 is the space charge density in the volume V enclosed by the surface.

(Std100) 270-1966w

gaussmeter A magnetometer provided with a scale graduated in gauss or kilogauss. *See also:* magnetometer.

(EEC/PE) [119]

GB *See:* gigabyte.

GCA *See:* ground-controlled approach.

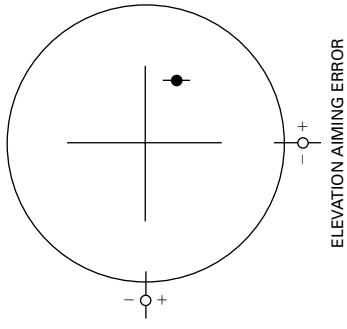
GCI *See:* ground-controlled intercept.

GCI radar *See:* ground-controlled intercept radar.

GCR *See:* constant-linear-velocity recording; group code recording.

GDG *See:* generation data group.

G-display A modified F-display in which wings appear to grow on the blip, the width of the wings being inversely proportional to target range.



G-display

(AES) 686-1997

GDOP *See:* geometric dilution of precision.

G drift (electronic navigation) A drift component in gyros (sometimes in accelerometers) proportional to the nongravitational acceleration and caused by torques resulting from mass unbalance. Jargon. *See also:* navigation.

(AES/RS) 686-1982s, [42]

geared-drive machine A direct-drive machine in which the energy is transmitted from the motor to the driving sheave, drum, or shaft through gearing. *See also:* driving machine.

(EEC/PE) [119]

geared traction machine (elevators) A geared-drive traction machine. *See also:* driving machine. (EEC/PE) [119]

gearless motor A traction motor in which the armature is mounted concentrically on the driving axle, or is carried by a sleeve or quill that surrounds the axle, and drives the axle directly without gearing. *See also:* traction motor.

(EEC/PE) [119]

gearless traction machine (elevators) A traction machine, without intermediate gearing, that has the traction sheave and the brake drum mounted directly on the motor shaft. *See also:* driving machine. (PE/EEC) [119]

gear pattern *See:* drive pattern.

gear ratio (watthour meter) The number of revolutions of the rotor of the first dial pointer, commonly denoted by the symbol R_g. (ELM) C12.1-1982s

Geiger-Mueller counter tube A radiation-counter tube designed to operate in the Geiger-Mueller region.

(NI/NPS) 309-1999

Geiger-Mueller region The range of applied voltage in which the charge collected per isolated count is independent of the charge liberated by the initial ionizing event.

(NI/NPS) 309-1999

Geiger-Mueller threshold The lowest applied voltage at which the charge collected per isolated tube count is substantially independent of the nature of the initial ionizing event.

(NI/NPS) 309-1999

Geissler tube A special form of gas-filled tube for showing the luminous effects of discharges through rarefied gases. *Note:* The density of the gas is roughly one-thousandth of that of the atmosphere. *See also:* gas tube. (ED) [45], [84]

gel cell *See:* gelled electrolyte cell.

gelled electrolyte cell A valve-regulated lead-acid (VRLA) cell whose electrolyte has been immobilized by the addition of a gelling agent. *Synonym:* gel cell. (IA/PSE) 446-1995

gelled electrolyte Electrolyte in a VRLA cell that has been immobilized by the addition of a gelling agent.

(SB) 1189-1996

general color rendering index (illuminating engineering) Measure of the average shift of eight standardized colors chosen to be of intermediate saturation and spread throughout the range of hues. If the color rendering index is not qualified as to the color samples used, R_a is assumed. (EEC/IE) [126]

general coordinated methods (general application to electric supply or communication systems) Those methods reasonably available that contribute to inductive coordination without specific consideration of the requirements for individual inductive exposures. *See also:* inductive coordination.

(EEC/PE) [119]

general diffuse lighting (illuminating engineering) Lighting involving luminaires that distribute 40 to 60 percent of the emitted light downward and the balance upward, sometimes with a strong component at 90 degrees (horizontal).

(EEC/IE) [126]

general insertion gain (waveguide) A gain resulting from placing two ports of a network between arbitrary generator and load impedances. It is the ratio of the power absorbed in the load when connected to the generator (reference power) to that when the network is inserted. *See also:* general insertion loss. (MTT) 146-1980w

general insertion loss (waveguide) A loss resulting from placing two ports of a network between arbitrary generator and load impedances. It is the ratio of the power absorbed in the load when connected to the generator (reference power) to that when the network is inserted. *See also:* general insertion gain. (MTT) 146-1980w

generality The degree to which a system or component performs a broad range of functions. *See also:* reusability.

(C) 610.12-1990

generalization (A) Saying that a subclass `S` generalizes to a superclass `C` means that every instance of class `S` is also an instance of class `C`. Generalization is fundamentally different from a *relationship*, which may associate distinct instances. **(B)** A taxonomy in which instances of both entities represent the same real or abstract thing. One entity (the generic entity) represents the complete set of things and the other (category entity) represents a subtype or sub-classification of those things. The category entity may have one or more attributes, or relationships with instances of another entity, not shared by all generic entity instances. Each instance of the category entity is simultaneously an instance of the generic entity.

(C/SE) 1320.2-1998

generalization hierarchy *See:* generalization taxonomy.

generalization network *See:* generalization taxonomy.

generalization structure A connection between a superclass and one of its more specific, immediate subclasses.

(C/SE) 1320.2-1998

generalization taxonomy A set of generalization structures with a common generic ancestor. In a generalization taxonomy every instance is fully described by one or more of the classes in the taxonomy. The structuring of classes as a generalization taxonomy determines the inheritance of responsibilities among classes. (C/SE) 1320.2-1998

generalized entity *See:* generalized property.

generalized impedance converter A two-port active network characterized by the conversion factor $f(s)$ of the complex frequency variable s and satisfying the following property: when port B is terminated with impedance $Z(s)$ the impedance at port A is given by $Z(s)f(s)$; when port A is terminated with impedance $Z(s)$ the impedance at port B is given by $Z(s)/f(s)$. (CAS) [13]

Generalized Information Retrieval Language A query language used by the United States Defense Nuclear Agency for information retrieval. (C) 610.13-1993w

Generalized Markup Language (GML) A page description language used to provide simplified tags in DCF for formatting documents. *See also:* Bookmaster. (C) 610.13-1993w

generalized property Any of the physical concepts in terms of examples of which observable physical systems and phenomena are described quantitatively. *Notes:* 1. Examples are the abstract concepts of length, electric current, energy, etc. 2. A generalized property is characterized by the qualitative attribute of physical nature, or dimensionality, but not by a quantitative magnitude. *Synonyms:* generalized quantity; generalized entity. (Std100) 270-1966w

generalized quantity *See:* generalized property.

general lighting (illuminating engineering) Lighting designed to provide a substantially uniform level of illuminance throughout an area, exclusive of any provision for special local requirements. (EEC/IE) [126]

general-purpose branch circuit A branch circuit that supplies a number of outlets for lighting and appliances. (NESC/NEC) [86]

general purpose circuit breaker A circuit breaker that has been designed, tested, and rated in accordance with general purpose circuit breaker requirements of applicable standards. (SWG/PE) C37.100-1992

general-purpose circuit breaker (alternating current high voltage circuit breakers) A circuit breaker that is not specifically designed for capacitance current switching. (SWG) 341-1972w

general-purpose computer A computer that is designed to solve a wide variety of problems. *Contrast:* special-purpose computer. (C) [20], [85], 610.10-1994w

general-purpose controller Any controller having ratings, characteristics, and mechanical construction for use under usual service conditions. *See also:* electric controller. (IA/C/ICTL/IAC) [60], [85]

general-purpose current-limiting fuse A fuse capable of interrupting all currents from the rated interrupting current down to the current that causes melting of the fusible element in no less than 1 h. (SWG/PE/SWG-OLD) C37.40-1993, C37.100-1992

general-purpose digital computer *See:* digital computer.

general-purpose enclosure (1) An enclosure used for usual service applications where special types of enclosures are not required. (SWG/PE) C37.100-1992

(2) An enclosure that primarily protects against accidental contact and slight indirect splashing but is neither dripproof nor splashproof. (IA/MT) 45-1998

general-purpose floodlight (illuminating engineering) A weatherproof unit so constructed that the housing forms the reflecting surface. The assembly is enclosed by a cover glass. (EEC/IE) [126]

general-purpose induction motor (rotating machinery) Any open motor having a continuous rating of 50 degrees Celsius rise by resistance for Class A insulation, or of 80 degrees Celsius rise for Class B, a service factor as listed in the following tabulation, and designed, listed, and offered in standard ratings with standard operating characteristics and mechanical construction, for use under usual service conditions without restrictions to a particular application or type of application.

Service Factor

	Synchronous Speed, revolutions per minute			
Horsepower	3600	1800	1200	900
1/20	1.4	1.4	1.4	1.4
1/12	1.4	1.4	1.4	1.4
1/8	1.4	1.4	1.4	1.4
1/6	1.35	1.35	1.35	1.35
1/4	1.35	1.35	1.35	1.35
1/3	1.35	1.35	1.35	1.35
1/2	1.25	1.25	1.25	
3/8	1.25	1.25		
1	1.25			

See also: asynchronous machine. (PE) [9]

general-purpose low-voltage dc power circuit breaker *See:* circuit breaker, general purpose low-voltage dc power.

general-purpose low-voltage power circuit breaker (low voltage dc power circuit breakers used in enclosures) A circuit breaker that during interruption does not usually prevent the fault current from rising to its sustained value. (SWG/PE) C37.14-1979s

general-purpose motor (rotating machinery) Any motor designed, listed and offered in standard ratings with operating characteristics and mechanical construction suitable for use under usual service conditions without restrictions to a particular application or type of application. (PE) [9]

general-purpose programming language A programming language that provides a set of processing capabilities applicable to most information processing problems and that can be used on many kinds of computers. For example, Ada, COBOL, FORTRAN, and PL/1. *See also:* CAL; JOSEF; SIMULA; common language; Pascal. (C) 610.13-1993w

general-purpose relay A relay that is adaptable to a variety of applications. *See also:* relay. (EEC/REE) [87]

general-purpose register A register, usually explicitly addressable, within a set of registers, that can be used for different purposes, for example, as an accumulator, as an index register, or as a special handler of data. *Synonym:* general register. (C) 610.10-1994w

General Purpose Systems Simulation (GPSS) A problem-oriented language used in performing discrete simulation problems, based on a block diagram approach, where each block represents a physical process and transactions move from one block to another. *See also:* CSS/II. (C) 610.13-1993w

general-purpose test equipment (test, measurement, and diagnostic equipment) Test equipment that is used for the measurement of a range of parameters common to two or more equipments or systems of basically different design. (MIL) [2]

general-purpose transformers (power and distribution transformers) Step-up or step-down transformers or autotransformers generally used in secondary distribution circuits of 600 V or less in connection with power and lighting service. (PE/TR) C57.12.80-1978r

general register *See:* general-purpose register.

general ROM format A format for the node-provided ROM. The general ROM format provides bus-dependent information and a root_directory; the root_directory directly provides additional ROM entries. (C/MM) 1212-1991s

General Space Planner A programming language based on FORTRAN that provides an interactive system for solving space planning problems. (C) 610.13-1993w

general statistical terms Terms applied to the procedures of data collection, classification, and presentation. (T&D/PE) 539-1990

general support maintenance *See:* depot maintenance.

general-use snap switch A form of general-use switch so constructed that it can be installed in flush device boxes or on

outlet box covers, or otherwise used in conjunction with wiring systems recognized by this Code. (NESC/NEC) [86]

general-use switch A switch intended for use in general distribution and branch circuits. It is rated in amperes and it is capable of interrupting its rated current at its rated voltage. (NESC/NEC) [86]

generate (computers) To produce a program by selection of subsets from a set of skeletal coding under the control of parameters. (C) [20], [85]

generated address An address that has been calculated during the execution of a computer program. *Synonym:* synthetic address. *See also:* indirect address; effective address; relative address; absolute address. (C) 610.12-1990

generated error The total error resulting from the combined effects of using imprecise arguments in an inexact formula. For example, using a rounded number in a truncated series. (C) 1084-1986w

generated voltage (rotating machinery) A voltage produced in a closed path or circuit by the relative motion of the circuit or its parts with respect to magnetic flux. *See also:* Faraday's law; asynchronous machine; induced voltage; synchronous machine. (PE) [9]

generating availability data system (GADS) Reliability information available from the North American Electric Reliability Council. (PE/NP) 933-1999

generating electric field meter (gradient meter) A device in which a flat conductor is alternately exposed to the electric field to be measured and then shielded from it. *Note:* The resulting current to the conductor is rectified and used as a measure of the potential gradient at the conductor surface. *See also:* instrument. (EEC/PE) [119]

generating magnetometer (earth inductor) A magnetometer that depends for its operation on the electromotive force generated in a coil that is rotated in the field to be measured. *See also:* magnetometer. (EEC/PE) [119]

generating station (1) (power operations) A plant wherein electric energy is produced from some other form of energy (for example, chemical, mechanical, or hydraulic) by means of suitable apparatus. (PE/PSE) 858-1987s

(2) A plant wherein electric energy is produced by conversion from some other form of energy (for example, chemical, nuclear, solar, mechanical, or hydraulic) by means of suitable apparatus. This includes all generating station auxiliaries and other associated equipment required for the operation of the plant. Not included are stations producing power exclusively for use with communications systems. (PE/NESC/EDPG) 665-1995, C2-1997

generating-station auxiliaries Accessory units of equipment necessary for the operation of the plant. Example: Pumps, stokers, fans, etc. *Note:* Auxiliaries may be classified as essential auxiliaries or those that must not sustain service interruptions of more than 15 s to 1 min, such as boiler feed pumps, forced draft fans, pulverized fuel feeders, etc., and nonessential auxiliaries that may, without serious effect, sustain service interruptions of one to three minutes or more, such as air pumps, clinker grinders, coal crushers, etc. *See also:* generating station. (T&D/PE) [10]

generating-station auxiliary power The power required for operation of the generating station auxiliaries. *See also:* generating station. (T&D/PE) [10]

generating-station efficiency *See:* efficiency.

generating-station reserve *See:* reserve equipment.

generating unit (unique identification in power plants) The generator, or generators, associated prime mover or movers, auxiliaries and energy supply or supplies that are normally operated together as a single source of electric power. (PE/EDPG) 803-1983r

generation The production or storage, or both, of electric energy with the intent of enabling practical use of commercial sale of the available energy. This includes photovoltaic, windfarm, hydro, etc., as well as normal commercial and industrial thermal sources. (SUB/PE) 1109-1990w

generation data group (GDG) A collection of data files that are kept in chronological order and referenced by its generation number. *Note:* Each file is called a generation data set. (C) 610.5-1990w

generation data set One data file within a generation data group. (C) 610.5-1990w

generation-frequency characteristic The change in area generation of a utility or of a control area through governor action that results from a change in system frequency without supplementary control action. (PE/PSE) 858-1993w, 94-1991w

generation rate (semiconductor) The time rate of creation of electron-hole pairs. *See also:* semiconductor device. (ED) 216-1960w

generator (1) (rotating machinery) A machine that converts mechanical power into electric power. *See also:* direct-current commutating machine; asynchronous machine. (PE/TR) [9], C57.116-1989r

(2) (computers) A controlling routine that performs a generate function, for example, report generator, input-output generator. *See also:* function generator; noise generator. (C) [20], [85]

(3) A module or device that initiates a bus request (such as an interrupt request) as the master to that request. (C/BA) 1014.1-1994w

generator, alternating-current *See:* alternating-current generator.

generator, arc welder *See:* arc welder generator.

generator efficiency (thermoelectric couple) The ratio of the electric power output of a thermoelectric couple to its thermal power input. *Note:* This is an idealized efficiency assuming perfect thermal insulation of the thermoelectric arms. *See also:* thermoelectric device. (ED) [46]

generator-field accelerating relay A relay that functions automatically to maintain the armature current within prescribed limits when a motor supplied by a generator is accelerated to any speed, up to base speed, by controlling the generator field current. *Note:* This definition applies to adjustable-voltage direct-current drives. *See also:* relay. (IA/ICTL/IAC/APP) [60], [75]

generator-field control A system of control that is accomplished by the use of an individual generator for each elevator or dumbwaiter wherein the voltage applied to the driving-machine motor is adjusted by varying the strength and direction of the generator field. *See also:* control.

generator field decelerating relay A relay that functions automatically to maintain the armature current within prescribed limits when a motor, supplied by a generator, is decelerated from base speed, or less, by controlling the generator field-current. *Note:* This definition applies to adjustable-voltage direct-current drives. *See also:* relay. (IA/IAC/APP) [60], [75]

generator/motor A machine that may be used as either a generator or a motor, usually by changing rotational direction. *Notes:* 1. This type of machine has particular application in a pumped-storage operation, in which water is pumped into a reservoir during off-peak periods and released to provide generation for peaking loads. 2. This definition eliminates the confusion of terminology for this type of machine. A slant is used between the terms to indicate their equality, and also the machine serves one function or the other and not both at the same time. The word generator is placed first to provide a distinction in speech between this term and the commonly used term motor-generator, which has an entirely different meaning. *See also:* asynchronous machine. (PE) [9]

generator set A unit consisting of one or more generators driven by a prime mover. *See also:* direct-current commutating machine; asynchronous machine. (PE) [9]

generator-source short-circuit current The short-circuit current when the source is entirely from a generator through no transformation. (SWG/PE) C37.013-1997

generette (rotating machinery) A test jig designed on the principle of a motorette, for endurance tests on sample lengths of coils or bars for large generators. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

generic actuator group (valve actuators) An actuator or family of actuators within a range of sizes with similar design principles, materials, manufacturing processes, limiting stresses, operating principles, and design margins. (PE/NP) 382-1985

generic ancestor (of a class) A superclass that is either an immediate superclass of the class or a generic ancestor of one of the superclasses of the class. *Contrast:* ancestor. *See also:* reflexive ancestor. (C/SE) 1320.2-1998

generic connection assembly (Class 1E connection assemblies) A connection assembly that represents a family of connection assemblies having similar materials, manufacturing processes, assembly techniques, limiting stresses, design, and operating principles. (PE/NP) 572-1985r

generic data element A data element related to or drawn from a large class of like data elements. (C) 610.5-1990w

generic design (electric penetration assemblies) A family of equipment units having similar materials, manufacturing processes, limiting stresses, design, and operating principles, that can be represented for qualification purposes by a representative unit(s). (PE/NP) 317-1983r

generic entity An entity whose instances are classified into one or more subtypes or subclassifications (category entities). *Synonyms:* superclass; supertype. (C/SE) 1320.2-1998

generic environment A set of environmental conditions intended to envelop the range of expected environments. (SWG/PE/NP) C37.100-1992, 649-1980s

generic equipment (1) (nuclear power generating station) A family of equipment units having similar materials, manufacturing processes, limiting stresses, design, and operating principles that can be represented for qualification purposes by representative units. (PE/NP) 649-1980s

(2) A family of equipment units having similar materials, manufacturing processes, limiting stresses, and design and operating principles that can be represented for qualification purposes by a representative unit(s). (SWG/PE) C37.100-1992

generic interface (1) The interface, defined at a level that is independent of any particular programming language. (C/PA) 1328-1993w, 1327-1993w, 1224-1993w

(2) A version of an interface that is independent of any particular programming language. (C/PA/C/PA) 1224.1-1993w, 1326.1-1993w

generic program unit A software module that is defined in a general manner and that requires substitution of specific data, instructions, or both in order to be used in a computer program. *See also:* instantiation. (C) 610.12-1990

generic property domain An expression of a pairing of a property and a value domain, without regard to any entity type with which it may be associated. *Note:* An example of a generic property domain is "Stop_location". (SCC32) 1489-1999

generic qualification (Class 1E connection assemblies) Qualification to a set of requirements designed to envelop the service conditions plus margin of a number of specific applications. (PE/NP) 572-1985r

generic response spectra (GRS) The response spectra that define the seismic ratings of metal-enclosed power switchgear. (SWG/PE) C37.100-1992, C37.81-1989r

genetic effect An alteration in DNA material within the cell. If germ cells (sperm, egg) are involved, mutations in offspring can result. If somatic (all other) cells are involved, effects such as premature aging or cancer can result. (T&D/PE) 539-1990

geocentric latitude (navigation) The acute angle between A) a line joining a point with the earth's geometric center and B) the earth's equatorial plane. (AES/RS) 686-1982s, [42]

geocentric vertical *See:* geometric vertical.

geodesic The shortest line between two points measured on any mathematically derived surface that includes the points. *See also:* navigation. (AES/RS) 686-1982s, [42]

geodesic lens antenna A lens antenna having a two-dimensional lens, with uniform index of refraction, disposed on a surface such that the rays in the lens follow geodesic (minimal) paths of the surface. (AP/ANT) 145-1993

geodetic latitude (navigation) The angle between the normal to the spheroid and the earth's equatorial plane: the latitude generally used in maps and charts. Also called geographic latitude. *See also:* navigation. (AES/RS) 686-1982s, [42]

geographical address (1) A unique identifier assigned to each physical module slot on the bus and assumed by any module connected to that slot. (C/BA) 10857-1994, 896.3-1993w, 896.4-1993w

(2) A unique identifier statically assigned to each slot by the backplane. (C/BA) 896.2-1991w, 896.10-1997

(3) The primary address of a device based on the physical (geographical) location of the module, and determined by coded backplane pins, or (on a cable segment) by switches. For a crate segment geographical address zero is for the rightmost position when the crate is viewed from the front and the address increases by one for each module position moved to the left. (NID) 960-1993

geographical address control (GAC) (FASTBUS acquisition and control) Logic associated with each segment for supervising and generating signals for geographical addressing. (NID) 960-1993

geographical addressing A scheme wherein each slot in the backplane is assigned a unique address. This address can be read by the board that is installed in the slot. The VSB specification defines the use of the geographical address for two purposes: (A) It forms part of the interrupt ID used during an interrupt-acknowledge cycle and, (B) it forms part of the arbitration ID used during a parallel arbitration cycle. The geographical address can also be used to set global board variables such as the base address of a memory board. (C/MM) 1096-1988w

geographic latitude *See:* geodetic latitude.

geographic vertical The direction of a line normal to the surface of the geoid. *See also:* navigation. (AES/RS) 686-1982s, [42]

geoid The shape of the earth as defined by the hypothetical extension of mean sea level continuously through all land masses. *See also:* navigation. (AES/RS) 686-1982s, [42]

geomagnetically induced currents (GIC) *See:* solar induced currents.

geomagnetic induced currents (GIC) Spurious, quasidirect currents flowing in grounded systems due to a difference in the earth surface potential caused by geomagnetic storms resulting from the particle emission of solar flares erupting from the surface of the sun. (PE/PSC) 367-1996

geometrical adjectives (A) (pulse terminology) *Trapezoidal.* Having or approaching the shape of a trapezoid. **(B) (pulse terminology)** *Rectangular.* Having or approaching the shape of a rectangle. **(C) (pulse terminology)** *Triangular.* Having or approaching the shape of a triangle. **(D) (pulse terminology)** *Sawtooth.* Having or approaching the shape of a right angle. *See also:* composite waveform. **(E) (pulse terminology)** *Rounded.* Having a curved shape characterized by a relatively gradual change in slope. (IM/WM&A) 194-1977

geometrical factor (navigation) The ratio of the change in a navigational coordinate to the change in distance, taken in the direction of maximum navigational coordinate change: the magnitude of the gradient of the navigational coordinate. *See also:* navigation. (AES/RS) 686-1982s, [42]

geometric capacitive current (I_C) A reversible current of comparatively high magnitude and short duration, which decays exponentially with time of voltage application, and which depends on the internal resistance of the measuring instrument and the geometric capacitance of the winding. (PE/EM) 43-2000

geometric correction An image restoration technique in which a geometrical transformation is performed on an image to compensate for geometrical distortions. (C) 610.4-1990w

geometric dilution of position (GDOP) (radar) An expression which refers to increased measurement errors in certain regions of coverage of the measurement system. It applies to systems which combine several surface of position measurements such as range only, angle only, or hyperbolic (range difference) to locate the object of interest. When two lines of position cross at a small acute angle, the measurement accuracy is reduced along the axis of the acute angle. (AES/RS) 686-1982s

geometric dilution of precision (GDOP) An increase in measurement errors in certain regions of coverage of a measurement system that combines several surface-of-position measurements, such as range only, angle only, or range difference (hyperbolic) to locate the object of interest. *Note:* When two lines of position cross at a small acute angle, the measurement accuracy is reduced along the axis of the acute angle. (AES) 686-1997

geometric distortion (television) The displacement of elements in the reproduced picture from the correct relative positions in the perspective plane projection of the original scene. (BT/AV) 201-1979w

geometric factor (cable calculations) (power distribution, underground cables) A parameter used and determined solely by the relative dimensions and geometric configuration of the conductors and insulation of a cable. (PE) [4]

geometric inertial navigation equipment The class of inertial navigation equipment in which the geographic navigational quantities are obtained by computations (generally automatic) based upon the outputs of accelerometers whose vertical axes are maintained parallel to the local vertical, and whose azimuthal orientations are maintained in alignment with a predetermined geographic direction (for example, north). *See also:* navigation. (AES/RS) 686-1982s, [42]

geometric mean The numerical result obtained by taking the n th root of the product of n quantities, n being equal to or greater than two. *Note:* In radio noise measurements, geometric means have been used to determine the long-line frequency spectrum from the short-line frequency spectrum by taking the geometric mean of the maximum and minimum values in microvolts per meter across the spectrum (or the arithmetic mean of values in decibels). (T&D/PE) 539-1990

geometric optics (1) (fiber optics) The treatment of propagation of light as rays. *Note:* Rays are bent at the interface between two dissimilar media or may be curved in a medium in which refractive index is a function of position. *See also:* physical optics; optical axis; skew ray; paraxial ray; meridional ray; axial ray. (Std100) 812-1984w
(2) The infinitesimal-wavelength limit of processes involved in scattering or propagation, in which case ray-optics apply. (AP/PROP) 211-1997

geometric perturbation of the electric field in the interelectrode space A change in the electric field caused by the presence of either a conducting object or one with a dielectric constant different from that of the medium in the interelectrode space. It is assumed that the introduced object does not change the distribution of charges on the energized electrodes. *Note:* The amount of perturbation depends on the geometry of the object, its location and electric potential, and, when applicable, its electrical parameters (i.e., dielectric constant, conductivity). (T&D/PE) 539-1990

geometric rectification error (accelerometer) The error caused by an angular motion of a linear accelerometer input reference axis when this angular motion is coherent with a vibratory cross acceleration input. This error occurs in the application of a linear accelerometer and is not caused by imperfections in the accelerometer. The error is proportional to the square of the cross acceleration and varies with the frequency. (AES/GYAC) 528-1994

geometric theory of diffraction (GTD) The theory of geometric optics modified to allow for rays propagating into shadow regions. Also includes the development of ray constructs for scattering from edges and removal of "infinities" in optical focusing predictions in inhomogeneous media. (AP/PROP) 211-1997

geometric vertical (navigation) The direction of the radius vector drawn from the center of the earth through the location of the observer. *See also:* navigation. (AES) [42]

geometry (oscilloscopes) The degree to which a cathode-ray tube can accurately display a rectilinear pattern. *Note:* Generally associated with properties of a cathode-ray tube: the name may be given to a cathode-ray-tube electrode or its associated control. *See also:* oscillograph. (IM/HFIM) [40]

geometry, detector *See:* detector geometry.

geometry, detector element *See:* detector element geometry.

geometry engine A hardware accelerator in some workstations that performs scaling, clipping, and other graphical translations between the display list and the display bit map. (C) 610.10-1994w

Georgia Tech Language An extension to ALGOL that contains access to LISP and other facilities. (C) 610.13-1993w

geosynchronous earth orbit (GEO) Circular orbit in the equatorial plane of the Earth—6.62 Earth radii from the center of the Earth. (C/BA) 1156.4-1997

geotropism (radiation protection) A change in instrument response with a change in instrument orientation as a result of gravitational effects. (NI) N323-1978r

germanium gamma-ray detector A complete assembly, including the detector element, cryostat, integral preamplifier, and high-voltage filter. *See also:* detector element. (NPS) 325-1996

germ cells *See:* genetic effect.

germicidal effectiveness *See:* bactericidal effectiveness.

germicidal efficiency of radiant flux *See:* bactericidal efficiency of radiant flux.

germicidal exposure *See:* bactericidal exposure.

germicidal flux *See:* bactericidal flux.

germicidal flux density *See:* bactericidal flux density.

get (A) To retrieve an item from a set of items as in retrieving a record from a file, or in obtaining a numerical value from a series of decimal digits. *Contrast:* put. **(B)** To select and retrieve a group of specified records from a database. (C) 610.5-1990

get next To select and retrieve the next record from a database that meets some specified criteria. *Note:* Used in conjunction with a placeholder point. *Contrast:* get unique. (C) 610.5-1990w

getter (electron tube) A substance introduced into an electron tube to increase the degree of vacuum by chemical or physical action on the residual gases. *See also:* electrode. (ED) [45], [84]

get unique To select and retrieve the first record from a database that meets some selection criteria. *Contrast:* get next. (C) 610.5-1990w

GFD *See:* ground flash density.

G Filter A 20 kHz to 1100 kHz band pass filter used for measuring the power of an Asymmetric Digital Subscriber Line (ADSL) signal, noise, or impulse noise on an ADSL. (COM/TA) 743-1995

ghost (1) (television) A spurious image resulting from an echo. *See also:* television. (EEC/PE) [119]
(2) (computer graphics) The residue of an old image, displayed at the same time as a new image, that occurs when the persistence is longer than the refresh rate. (C) 610.6-1991w

ghost hyphen *See:* discretionary hyphen.

ghost pulse *See:* ghost signals.

ghost signals (A) (loran) Identification pulses that appear on the display at less than the desired loran station full pulse

repetition frequency. *See also:* navigation. **(B) (loran)** Signals appearing on the display that have a basic repetition frequency other than that desired. *See also:* navigation. (AES) [42]

ghost target An apparent target in a radar that does not correspond in position or frequency or both to any real target, but which results from distortion or misinterpretation by the radar circuitry of other real target signals that are present. *Note:* It may result from range-Doppler ambiguities in the radar waveform used, from intermodulation distortion due to circuit amplitude nonlinearities, or from combining data from two antenna systems or waveforms. (AES) 686-1997

GHz *See:* gigahertz.

Gibb's phenomenon Overshoot phenomenon obtained near a discontinuity point of a signal when the spectrum of that signal is truncated abruptly. (CAS) [13]

GIC *See:* generalized impedance converter; geomagnetically induced currents; geomagnetic induced currents.

gig Colloqual reference for gigabyte. (C) 610.10-1994w

giga (G) (mathematics of computing) A prefix indicating one billion (10^9). (C) 1084-1986w

Gigabit Media Independent Interface (GMII) The interface between the Reconciliation sublayer and the physical coding sublayer (PCS) for 1000 Mb/s operation. (C/LM) 802.3-1998

gigabyte Either 1 000 000 000 bytes or 2^{30} bytes. *Notes:* 1. The user of these terms shall specify the applicable usage. If the usage is 2^{10} or 1024 bytes, or multiples thereof, then note 2 below shall also be included with the definition. 2. As used in IEEE Std 610.10-1994, the terms kilobyte (kB) means 2^{10} or 1024 bytes, megabyte (MB) means 1024 kilobytes, and gigabyte (GB) means 1024 megabytes. *See also:* megabyte; kilobyte. (C) 610.10-1994w

gigahertz A unit of frequency equal to 1 000 000 000 Hz, that is, 10^9 Hz. (C) 610.7-1995

gigahertz transverse electromagnetic (GTEM) cell A tapered transverse electromagnetic (TEM) cell with an absorber-lined end wall terminated with an absorber load. (EMC) 1128-1998

gilbert (centimeter-gram-second electromagnetic-unit system) The unit of magnetomotive force. The gilbert is one oersted-centimeter. (Std100) 270-1966w

Gill-Morrell oscillator An oscillator of the retarding-field type in which the frequency of oscillation is dependent not only on electron transit time within the tube, but also on associated circuit parameters. *See also:* oscillatory circuit. (AP/ANT) 145-1983s

gimbal (gyros) A device that permits the spin axis to have one or two angular degrees of freedom. (AES/GYAC) 528-1994

gimbal error (gyros) The error resulting from angular displacements of gimbals from their reference positions such that gimbal pickoffs do not measure the true angular motion of the case about the input reference axis. (AES/GYAC) 528-1994

gimbal freedom (gyros) The maximum angular displacement of a gimbal about its axis. (AES/GYAC) 528-1994

gimbal lock (gyros) A condition of a two-degree-of-freedom gyro wherein the alignment of the spin axis with an axis-of-freedom deprives the gyro of a degree-of-freedom and, therefore, of its useful properties. (AES/GYAC) 528-1994

gimbal retardation (gyros) A measure of output axis friction torque when the gimbal is rotated about the output axis. It is expressed as an equivalent input. (AES/GYAC) 528-1994

gimbal-unbalance torque (dynamically tuned gyro) The acceleration-sensitive torque caused by gimbal unbalance along the spin axis due to non-intersection of the flexure axes. Under constant acceleration, it appears as a second harmonic of the rotor spin frequency because of the single-degree-of-freedom of the gimbal relative to the support shaft. When the gyro is subjected to vibratory acceleration, applied normal to the spin axis at twice the rotor spin frequency, this torque results in a rectified unbalance drift rate. *See also:* two-N (2N) translational sensitivity. (AES/GYAC) 528-1994

gin An assembly, which when attached to a support or assembled on a structure, provides a rigging point for rope blocks, blocks, etc., so as to manipulate various pieces of apparatus. The gin, unlike the davit, is not rigid since its boom swivels, affording greater maneuverability. (T&D/PE) 516-1995

GIRL *See:* Graphical Information Retrieval Language.

GIS *See:* compartment; gas-insulated substation; assembly.

GIS conductor end The end of the GIS high-voltage conductor inside the cable connection enclosure. (PE/IC) 1300-1996

GKS *See:* Graphical Kernel System.

gland seal (rotating machinery) A seal used to prevent leakage between a moveable and a fixed part. (PE) [9]

glare (1) (illuminating engineering) The sensation produced by luminances within the visual field that are sufficiently greater than the luminance to which the eyes are adapted to cause annoyance, discomfort, or loss in visual performance, or visibility. *Note:* The magnitude of the sensation of glare depends upon such factors as the size, position, and luminance of a source, the number of sources and the luminance to which the eyes are adapted. (EEC/IE) [126]
(2) (electric power systems in commercial buildings) The undesirable sensation produced by luminance within the visual field. (IA/PSE) 241-1990r

glass box (A) A system or component whose internal contents or implementation are known. *Synonym:* white box. *Contrast:* black box. **(B)** Pertaining to an approach that treats a system or component as in definition (A). (C) 610.12-1990

glass box model A model whose internal implementation is known and fully visible; for example, a model of a computerized change-return mechanism in a vending machine, in the form of a diagram of the circuits and gears that make the change. *Synonym:* white-box model. *Contrast:* black box model. (C) 610.3-1989w

glass-box testing *See:* structural testing.

glass half cell (glass electrode) A half cell in which the potential measurements are made through a glass membrane. *See also:* electrolytic cell. (EEC/PE) [119]

GLC circuit *See:* simple parallel circuit.

glide path (electronic navigation) The path used by an aircraft in approach procedures as defined by an instrument landing facility. *See also:* navigation. (AES/RS) 686-1982s, [42]

glide-path receiver An airborne radio receiver used to detect the transmissions of a ground-installed glide-path transmitter. *Note:* It furnishes a visual, audible, or electric signal for the purpose of vertically guiding an aircraft using an instrument landing system. (EEC/PE) [119]

glide slope (electronic navigation) An inclined surface generated by the radiation of electromagnetic waves and used with a localizer in an instrument landing system to create a glide path. *See also:* navigation. (AES/RS) 686-1982s, [41]

glide-slope angle (electronic navigation) The angle in the vertical plane between the glide slope and the horizontal. *See also:* navigation. (AES/RS) 686-1982s, [41]

glide-slope deviation (electronic navigation) The vertical location of an aircraft relative to a glide slope, expressed in terms of the angle measured at the intersection of the glide slope with the runway: or the linear distance above or below the glide slope. *See also:* navigation. (AES/RS) 686-1982s, [41]

glide-slope facility (navigation) The ground station of an ILS (instrument landing system) which generates the glide slope. (AES/RS) 686-1982s

glide-slope sector (instrument landing systems) A vertical sector containing the glide slope and within which the pilot's indicator gives a quantitative measure of the deviation above and below the glide slope: the sector is bounded above and below by a specified difference in depth of modulation, usually that which gives full-scale deflection of the glide-slope

deviation indicator. *See also:* navigation. (AES/RS) 686-1982s, [41]

glint The inherent component of error in measurement of position and/or Doppler frequency of a complex target due to interference of the reflections from different elements of the target. *Notes:* 1. Glint may have peak values beyond the target extent in the measured coordinate. 2. Not to be confused with scintillation error. (AES) 686-1997

glitch A perturbation of the pulse waveform of relatively short duration and of uncertain origin. *See also:* pulse distortion. (IM/HFIM) [40]

glitch filter Filters out a fundamental transmission line effect found in bused backplane implementations. The effect is commonly called the *wire-OR glitch.* (C/BA) 896.4-1993w, 896.2-1991w, 896.10-1997

global Relating to the whole of an ATLAS test requirement. (SCC20) 771-1998

global broadcast A broadcast to slaves on all segments of a multi-segment system that can be reached from the originating segment. (NID) 960-1993

global compaction In microprogramming, compaction in which microoperations may be moved beyond the boundaries of the single entry, single exit sequential blocks in which they occur. *Contrast:* local compaction. (C) 610.12-1990

global data Data that can be accessed by two or more non-nested modules of computer program without being explicitly passed as parameters between the modules. *Synonym:* common data. *Contrast:* local data. (C) 610.12-1990

global (broadcast) DSAP address The predefined LLC DSAP address (all ones) used as a broadcast (all parties) address. It can never be the address of a single LLC on the data link. (C/LM/CC) 8802-2-1998

global identification A unique identifier assigned to each physical module slot in a system. This identifier would typically be both a bus identifier and a slot identifier. IEEE Std 1212-1991 specifies the format for such a global identifier. (C/BA) 10857-1994, 896.3-1993w, 896.4-1993w

global replace In text editing, an operation that substitutes a given textual pattern for all, or a given number of, occurrences of some other textual pattern found in the text. *See also:* global search. (C) 610.2-1987

global route, route In Physical Design Exchange Format (PDEF), the physical description of interconnect routing between logical and physical pins of cell, spare_cell, and/or cluster instances. (C/DA) 1481-1999

global search In text editing, an operation that identifies all, or a given number of, appearances of a given textual pattern in the text. *See also:* global replace. (C) 610.2-1987

global stability (solution $\phi(x(t_0);t)$ Stable for all initial perturbations, no matter how large they may be. *See also:* control system. (CS/IM) [120]

global system time SCI nodes may maintain time-of-day clocks as described in the CSR Architecture. Software may adjust each of these clocks in order to make them consistent to high accuracy. If this is done, the system is said to implement global system time. Otherwise each clock runs independently, which is sufficient for local timeout purposes but is not sufficient to implement the optional packet "time of death" feature. (C/MM) 1596-1992

global variable A variable that can be accessed by two or more non-nested modules of a computer program without being explicitly passed as a parameter between the modules. *Contrast:* local variable. (C) 610.12-1990

globe (illuminating engineering) A transparent or diffusing enclosure intended to protect a lamp, to diffuse and redirect its light, or to change the color of the light. (EEC/IE) [126]

glossary (1) The collection of the names and narrative descriptions of all terms that may be used for defined concepts (views, classes, subject domains, relationships, responsibilities, properties, and constraints) within an environment. (C/SE) 1320.2-1998

(2) A set of definitions that includes arrow labels and box names used in an IDEF0 model. (C/SE) 1320.1-1998

glossary page A model page that contains definitions for the arrow labels and box names in a specific diagram. (C/SE) 1320.1-1998

glossmeter (illuminating engineering) An instrument for measuring gloss as a function of the directionally selective reflecting properties of a material in angles near to and including the direction giving specular reflection. (EEC/IE) [126]

gloving A method of performing live-line maintenance on energized electrical conductors and equipment whereby a worker or workers, wearing specially-made and tested insulating gloves, with or without sleeves, and using cover-up equipment while supported by the structure or insulated aerial lift equipment, work(s) directly on the energized electrical conductor or equipment. (T&D/PE) 516-1995

glow corona (overhead-power-line corona and radio noise) Glow corona is a stable, essentially steady discharge of constant luminosity occurring at either positive or negative electrodes. (T&D/PE) 539-1979s

glow (mode) current (gas tube surge arresters) The current that flows after breakdown when circuit impedance limits the follow current to a value less than the glow-to-arc transition current. (PE) [8]

glow current (gas-tube surge protective devices) The current that flows after breakdown when circuit impedance limits the follow current to a value less than the glow-to-arc transition current. It is sometimes called the glow mode current. (PE/SPD) C62.31-1987r

glow discharge (1) (electron tube) A discharge of electricity through gas characterized by: A change of space potential, in the immediate vicinity of the cathode, that is much higher than the ionization potential of the gas; a low, approximately constant, current density at the cathode, and a low cathode temperature; the presence of a cathode glow. *See also:* gas tube; lamp. (ED) 161-1971w

(2) (illuminating engineering) An electric discharge characterized by a low, approximately constant, current density at the cathode, low cathode temperature, and a high, approximately constant, voltage drop. (EEC/IE) [126]

glow-discharge tube A gas tube that depends for its operation on the properties of a glow discharge. (ED) 161-1971w

glow factor (illuminating engineering) A measure of the visible light response of a fluorescent material to "black light." It is equal to ν times the luminance in candelas per square meter produced on the material divided by the incident "black light" flux density in milliwatts per square meter. ν is omitted when luminance is in footlamberts and the area is in square feet. It may be measured in lumens per milliwatt. *See also:* filter factor. (EEC/IE) [126]

glow lamp (illuminating engineering) An electric-discharge lamp whose mode of operation is that of a glow discharge, and in which light is generated in the space close to the electrodes. (EEC/IE) [126]

glow mode A stable, essentially steady discharge of constant luminosity occurring at either positive or negative electrodes. (T&D/PE) 539-1990

glow-mode current *See:* glow current.

glow, negative *See:* negative glow.

glow-switch An electron tube containing contacts operated thermally by means of a glow discharge. (ED) [45]

glow-to-arc transition current (gas-tube surge protective devices) The current required for the arrester to pass from the glow mode into the arc mode. (PE/SPD) C62.31-1987r

glow-tube *See:* glow-discharge tube.

glow voltage (gas-tube surge protective devices) The voltage drop across the arrester during glow-current flow. It is sometimes called the glow mode voltage. (SPD/PE) C62.31-1987r

glue-line heating (dielectric heating) An arrangement of electrodes designed to give preferential heating to a thin film of material of relatively high loss factor between alternate layers of relatively low loss factor material. (IA) 54-1955w, 169-1955w

glue logic A family of circuit logic consisting of various gates and simple logic elements, each of which serve as an interface between various parts of a computer such as processors, memory units and input-output devices. (C) 610.10-1994w

glyph A picture, logo, or symbol; used instead of text. (C/BA) 896.2-1991w

GLYPNIR A programming language with syntax similar to that of ALGOL, but with facilities to allow the programmer to specify the parallelism of an algorithm. (C) 610.13-1993w

GML *See:* Generalized Markup Language.

GO Availability analysis method similar to reliability block diagram with operators and event actions included. (PE/NP) 933-1999

go *See:* go/no-go.

Go-Back-N A transmission scheme where the transmitter may send multiple PDUs without waiting for an acknowledgment. If the receiver indicates that an error occurred in a given PDU, the sender will retransmit the errored PDU and all subsequently transmitted PDUs. *Note:* In this scheme, the receiver will only accept PDUs in sequential order. *Contrast:* selective retransmission. (C) 610.7-1995

go list In automatic indexing, a list of terms, words, or roots of words that are considered significant for purposes of information retrieval, and are to be used as keywords in an index. *Synonym:* inclusion list. *Contrast:* stop list. (C) 610.2-1987

goniometer (electronic navigation) A combining device used with a plurality of antennas so that the direction of maximum radiation or of greatest response may be rotated in azimuth without physically moving the antenna array. (AES/RS) 686-1982s, [42]

goniophotometer (illuminating engineering) A photometer for measuring the directional light distribution characteristics of sources, luminaires, media, and surfaces. (EEC/IE) [126]

go/no-go A set of terms (in colloquial usage) referring to the condition or state of operability of a unit that can only have two parameters: go, functioning properly, or no-go, not functioning properly. (PE/MIL/NP) 338-1987r, [2]

go/no-go test *See:* end-to-end test.

good neighbor A term used to describe "well-behaved" devices operating on a broadband medium that do not cause interference to any other service operating on the cable plant. (LM/C) 802.7-1989r

gooey Colloquial pronunciation for GUI, graphical user interface. (C) 610.10-1994w

go symbol An idle symbol that has been marked with the pertinent go bit (*idle.lg = 1* or *idle.hg = 1*) to give permission to a waiting node to transmit. (C/MM) 1596-1992

go to A computer program statement that causes a jump. *Contrast:* call; case; if-then-else. *See also:* branch. (C) 610.12-1990

Gouraud shading A technique for shading a three-dimensional solid object by interpolating the light intensities at the vertices of each polygon face, resulting in smooth shading. *See also:* Phong shading. (C) 610.6-1991w

governing system (hydraulic turbines) The combination of devices and mechanisms that detects speed deviation and converts it into a change in servomotor position. It includes the speed sensing elements, the governor control actuator, the hydraulic pressure supply system, and the turbine control servomotor. The terms "governor" and "governor equipment" are commonly used in the industry to describe the governing system and will be used interchangeably with the term "governing system." (PE/EDPG) [5], 125-1988r

governor (1) (power system device function numbers) The assembly of fluid, electrical, or mechanical control equipment used for regulating the flow of water, steam, or other medium to the prime mover for such purposes as starting, holding speed or load, or stopping. (SUB/PE) C37.2-1979s

(2) (hydroelectric power plants) A system that controls speed and power output of a turbine. (PE/EDPG) 1020-1988r

governor actuator rating (speed governing systems, hydraulic turbines) The governor actuator rating is the flow rate in volume per unit time which the governor actuator can deliver at a specified pressure drop. The pressure drop shall be measured across the terminating pipe connections to the turbine control servomotors at the actuator. This pressure drop is measured with the specified minimum normal working pressure of the pressure supply system delivered to the supply port of the actuator distributing valve. (PE/EDPG) [5]

governor control actuator (hydraulic turbines) The combination of devices and mechanisms that detects a speed error and develops a corresponding hydraulic control output to the turbine control servomotors, but does not include the turbine control servomotors. Includes gate, blade, deflector, or needle control, or all equipment as appropriate. (PE/EDPG) 125-1988r

governor control actuator rating (hydraulic turbines) The flow rate in volume per unit time that the governor actuator can deliver at a specified pressure drop. The pressure drop shall be measured across the terminating pipe connections to the turbine control servomotors at the actuator. This pressure drop is measured with the specified minimum normal working pressure of the hydraulic pressure supply system delivered to the supply port of the actuator distributing valve. (PE/EDPG) 125-1988r

governor-controlled gates (on a hydro turbine) Gates that control the power input to the turbine and that are actuated by the speed governor directly or through the medium of the speed-control mechanism. (PE/PSE) 94-1991w

governor-controlled valves (on a steam turbine) Valves that control the power input to the turbine and that are actuated by the speed governor directly or through the medium of the speed-control mechanism. (PE/PSE) 94-1991w

governor dead band (automatic generation control) The magnitude of the total change in steady-rate speed within which there is no resulting measurable change in the position of the governor-controlled valves. *Note:* Dead band is the measure of the insensitivity of the speed-governing system and is expressed in percent of rated speed. (PE/PSE) 94-1970w

governor dead time (hydraulic turbines) Dead time is the time interval between the initiation of a specified change in steady-state speed and the first detectable movement of the turbine control servomotor. (PE/EDPG) 125-1977s

governor pin *See:* centrifugal-mechanism pin.

governor speed changer A device that adjusts the speed or power output of the turbine during operation. (PE/PSE) 94-1991w

governor speed-changer position The position of the speed changer indicated by the fraction of its travel from the position corresponding to minimum turbine speed to the position corresponding to maximum speed and energy input. It is usually expressed in percent. *See also:* speed-governing system. (PE/PSE) 94-1970w

governor spring *See:* centrifugal-mechanism spring.

governor weights *See:* centrifugal-mechanism weights.

GP *See:* group address.

GPR *See:* ground potential rise.

GPSS *See:* General Purpose Systems Simulation.

graded index optical waveguide (fiber optics) A waveguide having a graded index profile in the core. *See also:* graded index profile; step index optical waveguide. (Std100) 812-1984w

graded index profile (fiber optics) Any refractive index profile that varies with radius in the core. Distinguished from a step index profile. *See also:* profile dispersion; refractive index;

parabolic profile; multimode optical waveguide; normalized frequency; dispersion; mode volume; optical waveguide; step index profile; power-law index profile; profile parameter. (Std100) 812-1984w

graded insulation (electronic power transformer) The selective arrangement of the insulation components of a composite insulation system to more nearly equalize the voltage stresses throughout the insulation system. (PEL/ET) 295-1969r

graded junction (nonlinear, active, and nonreciprocal waveguide components) (semiconductor) A specially designed p-n junction with a p+ -type of region and an n-type of region whose doping levels increase linearly with distance from the junction. (MTT) 457-1982w

graded-time step-voltage test (rotating machinery) A controlled overvoltage test in which calculated voltage increments are applied at calculated time intervals. *Note:* Usually, a direct-voltage test with the increments and intervals so calculated that dielectric absorption appears as a constant shunt-conductance: to simplify interpretation. *See also:* asynchronous machine; direct-current commutating machine. (PE) [9]

grade-of-service (telephone switching systems) The proportion of total calls, usually during the busy hour, that cannot be completed immediately or served within a prescribed time. (COM) 312-1977w

gradient (1) (scalar field) At a point, a vector (denoted by ∇u) equal to, and in the direction of, the maximum space rate of change of the field. It is obtained as a vector field by applying the operator nabl to a scalar function. Thus, if $u = f(x, y, z)$

$$\nabla u = \text{grad } u = \mathbf{i}\frac{\partial u}{\partial x} + \mathbf{j}\frac{\partial u}{\partial y} + \mathbf{k}\frac{\partial u}{\partial z}$$

(Std100) 270-1966w

(2) (overhead power lines) *See also:* voltage gradient. (T&D/PE) 539-1990

gradient meter *See:* generating electric field meter.

gradient microphone A microphone the output of which corresponds to a gradient of the sound pressure. *Note:* Gradient microphones may be of any order as, for example, zero, first, second, etc. A pressure microphone is a gradient microphone of zero order. A velocity microphone is a gradient microphone of order one. Mathematically, from a directivity standpoint for plane waves, the root-mean-square response is proportional to $\cos^n q$, where θ is the angle of incidence and n is the order of the microphone. *See also:* microphone. (EEC/PE) [119]

grading (telephone switching systems) Partial commoning or multipling of the outlets of connecting networks where there is limited availability to the outgoing group or subgroup of outlets. (COM) 312-1977w

grading device (composite insulators) A device for controlling the potential gradient at the end fittings, such as a grading ring or various semiconductive polymeric devices. (T&D/PE) 987-1985w

grading group (telephone switching systems) That part of a grading in which all inlets have access to the same outlets. (COM) 312-1977w

grading ring (surge arresters) (metal-oxide surge arresters for ac power circuits) A metal part, usually circular or oval in shape, mounted to modify electrostatically the voltage gradient or distribution. *Synonym:* control ring. (PE/SPD) 28-1974, C62.1-1981s, [8], C62.11-1999

gradual failure *See:* failure.

graduated (control) Marked to indicate a number of operating positions. (IA/ICTL/IAC) [60]

grain (photographic material) A small particle of metallic silver remaining in a photographic emulsion after development and fixing. *Note:* In the agglomerate, these grains form the dark area of a photographic image. (SP) [32]

graininess (photographic material) The visible coarseness under specified conditions due to silver grains in a developed photographic film. (SP) [32]

grandfather file A file that contains data that have since been updated in another file, called the father file, and further updated in a third file, called the son file. *See also:* son file; father file. (C) 610.5-1990w

grant A link control signal or link condition indicating that the receiving entity has been given permission to send a packet.local area networks. (C) 8802-12-1998

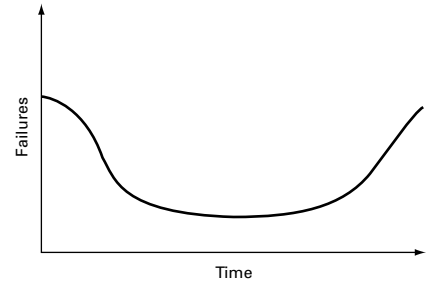
granular-filled fuse unit A fuse unit in which the arc is drawn through powdered, granular, or fibrous material. (SWG/PE) C37.40-1993, C37.100-1992

granularity (1) The depth or level of detail at which data is collected. (C/SE) 1045-1992

(2) Pertaining to the size of the standard meaningful unit with respect to a particular mode of operation; for example, in reference to computer processes, this term could be used to describe screen resolution, levels of manipulation of data, or the amount of time given to a background printing process. (C) 610.10-1994w

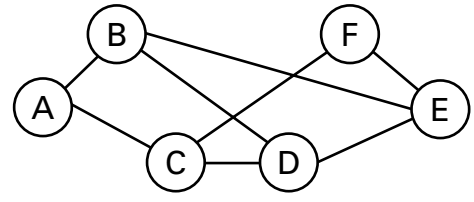
granularity period As defined in ISO/IECDIS 10164-11, the time between observations. For this standard, it is the time between two successive scans and is denoted by the symbol "GP." (LM/C) 802.1F-1993r

graph (A) (software) (data management) A diagram that represents the variation of a variable in comparison with that of one or more other variables; for example, a graph showing a bathtub curve. **(B) (data management) (software)** A diagram or other representation consisting of a finite set of nodes and internode connections called edges or arcs. *See also:* block diagram; input-process-output chart; box diagram; bubble chart; directed graph; undirected graph; structure chart.



Variation of a variable in comparison with one or more other variables

graph A



finite set of nodes and internode connections

graph B

(C) 610.12-1990, 610.5-1990

graph determinant (network analysis) One plus the sum of the loop set transmittances of all nontouching loop sets contained in the graph. *Notes:* 1. The graph determinant is conveniently expressed in the form

$$\Delta = (1 - \Sigma L_i + \Sigma L_i L_j - \Sigma L_i L_j L_k + \ldots)$$

where L_i is the loop transmittance of the i th loop of the graph, the second is over all of the different pairs of nontouching loops, and the third is over all the different triplets of nontouching loops, etc. 2. The graph determinant may be written alternatively as

$$\Delta = [(1 - L_i)(1 - L_2) \ldots (1 - L_n)]$$

where L_1, L_2 . . ., L_n, are the loop transmittances of the n different loops in the graph, and where the dagger indicates

that, after carrying out the multiplications within the brackets, a term will be dropped if it contains the transmittance product of two touching loops. 3. The graph determinant reduces to the return difference for a graph having only one loop. 4. The graph determinant is equal to the determinant of the coefficient equations. (CAS) 155-1960w

graphic A symbol produced by a process such as handwriting, drawing, or printing. *Synonym:* graphic symbol. (C) 610.2-1987, 610.10-1994w

graphical Pertaining to the pictorial representation of data. (C) 610.6-1991w

graphical display device A display device that can display graphical output. *Note:* Graphical display devices can display characters but they are in the form of graphical images. *See also:* display space; display surface. (C) 610.6-1991w

Graphical Information Retrieval Language (GIRL) A programming language used to manipulate information in arbitrary directed-graph structures, including facilities for insertion, retrieval, deletion, and comparison. (C) 610.13-1993w

graphical input device (A) An input device employed in the interactive process of identifying a location on a display surface; for example, a joystick, a data tablet, a control ball, a mouse, or a thumbwheel. **(B)** An input device employed in the entry of graphical images. (C) 610.6-1991

Graphical Kernel System (GKS) A computer graphics standard that provides a set of basic functions for producing computer generated pictures. It was developed by the International Standards Organization (ISO) and adopted by the American National Standards Institute (ANSI). (C) 610.6-1991w

graphical model A symbolic model whose properties are expressed in diagrams; for example, a decision tree used to express a complex procedure. *Contrast:* mathematical model; software model; narrative model. (C) 610.3-1989w

graphical user interface (GUI) (1) A user interface that is graphical in nature; that is, the user can enter commands by using a mouse, icons and windows. *Note:* Sometimes pronounced "gooey." *Contrast:* character-based user interface. (C) 610.10-1994w

(2) A means of presenting function to a user through the use of graphics. All such interfaces are outside the scope of this standard. (C/PA) 1387.2-1995

graphical user interface font *See:* screen font.

graphic character (1) A character, other than a control character, that is normally represented by a graphic. *Synonym:* optical character. (C) 610.2-1987

(2) A sequence of one or more *POSIX.POSIX_Characters* representing a single graphic symbol. (C) 1003.5-1999

graphic display (supervisory control, data acquisition, and automatic control) (station control and data acquisition) A hardware device [e.g., CRT, VDT, liquid crystal display (LCD), mapboard, plasma panel, arrays of lamps, or light emitting diodes] used to present pictorial information. (PE/SUB) C37.1-1994

graphic display device A display device that can display graphical output. *Note:* Graphic display devices can display characters but they are in the form of graphic images. *Contrast:* character display device. (C) 610.10-1994w

graphic printer A printer that can display both text and graphical output. *Contrast:* character printer. (C) 610.10-1994w

graphic input device An input device employed in the entry of graphic images. Examples include a joystick, a mouse, or a track ball. *See also:* digitizer. (C) 610.10-1994w

graphics adapter An expansion board that enhances the computer's ability to control the display device; for example, a graphics adapter that allows color output, or non-interlacing. *Synonym:* video board. (C) 610.10-1994w

graphics data *See:* display data.

graphics field* *See:* viewport.

* Deprecated.

graphics input The interactive process of entering data on a graphics system. (C) 610.6-1991w

graphics language A programming language that produces display data. (C) 610.6-1991w

graphics processor *See:* display processor.

GraphicString A value of the ASN.1 GraphicString restricted character string type. (C/PA) 1238.1-1994w

graphic symbol (1) (abbreviation) A geometric representation used to depict graphically the generic function of an item as it normally is used in a circuit. *See also:* abbreviation. (GSD) 267-1966

(2) A shorthand used to show graphically the functioning or interconnections of a circuit. A graphic symbol represents the functions of a part in the circuit. For example, when a lamp is employed as a nonlinear resistor, the nonlinear resistor symbol is used. Graphic symbols are used on single-line (one-line) diagrams, on schematic or elementary diagrams, or, as applicable, on connection or wiring diagrams. Graphic symbols are correlated with parts lists, descriptions, or instructions by means of designations. (GSD) 315-1975r

graphics system A collection of hardware or software allowing the use of graphical input or output in computer programs. (C) 610.6-1991w

graphic tablet A data tablet or digitizer that can be used with a stylus to trace existing graphic images, or for entering new images. (C) 610.10-1994w

graphic user terminal A terminal used to display and manipulate both alphanumeric symbols as well as graphic images. (C) 610.10-1994w

graphite brush A brush composed principally of graphite. *Note:* This type of brush is soft. Grades of brushes of this type differ greatly in current-carrying capacity and in operating speed from low to high. *See also:* brush. (PE/EEC/LB) [9], [101]

graph transmittance (network analysis) The ratio of signal at some specified dependent node, to the signal applied at some specified source node. *Note:* The graph transmittance is the weighted sum of the path transmittances of the different open paths from the designated source node to the designated dependent node, where the weight for each path is the path factor divided bt the graph determinant. (CAS) 155-1960w

grass A descriptive colloquialism referring to the appearance of noise on certain displays, such as an A-display. (AES) 686-1997

graticule (oscilloscopes) A scale for measurement of quantities displayed on the cathode-ray tube of an oscilloscope. *See also:* oscilloscope. (IM/HFIM) [40]

graticule area (oscilloscopes) The area enclosed by the continuous outer graticule lines. *Note:* Unless otherwise stated the graticule area shall be equal to or less than the viewing area. *See also:* quality area; oscillograph; viewing area. (IM/HFIM) [40]

graticule, internal *See:* internal graticule.

grating *See:* ultrasonic space grating.

grating lobe A lobe, other than the main lobe, produced by an array antenna when the interelement spacing is sufficiently large to permit the in-phase addition of radiated fields in more than one direction. (AP/ANT) 145-1993

gravitational acceleration unit (g, *g*) (1) A unit of acceleration that is approximately 32.2 ft/s^2 [9.8 m/s^2]. (C/BA) 1101.4-1993, 1101.3-1993

(2) The symbol *g* denotes a unit of acceleration equal in magnitude to the local value of gravity, unless otherwise specified. *Notes:* 1. In some applications, a standard value of *g* may be specified. 2. For an earthbound accelerometer, the attractive force of gravity acting on the proof mass must be treated as an applied upward acceleration of 1 *g*. (AES/GYAC) 528-1994

gravity gradient stabilization (communication satellite) The use of the gravity gradient along a satellite structure for

controlling its attitude. This method usually requires long booms to create the necessary mass distribution. (COM) [19]

gravity vertical *See:* mass-attraction vertical.

gravity wave *See:* acoustic-gravity wave.

gray (metric practice) The absorbed dose when the energy per unit mass imparted to matter by ionizing radiation is one joule per kilogram. *Note:* The gray is also used for the ionizing radiation quantities: specific energy imparted, kerma, and absorbed dose index, which have the SI unit joule per kilogram. (QUL) 268-1982s

graybody (illuminating engineering) A temperature radiator whose spectral emissivity is less than unity and the same at all wavelengths. (EEC/IE) [126]

Gray code (mathematics of computing) A binary code in which sequential numbers are represented by binary expressions, each of which differs from the preceding expression in one place only.

Gray Code

DECIMAL DIGIT:	0	1	2	3	4	5
GRAY CODE:	000	001	011	010	110	111

Synonyms: reflected code; cyclic binary code; cyclic code; reflected binary unit-distance code; reflected binary code. (C) 1084-1986w

gray level A value associated with a pixel in a digital image, representing the brightness of the original scene in the vicinity of the point represented by the pixel. *Synonyms:* gray shade; gray tone. (C) 610.4-1990w

gray scale (1) (television) An optical pattern in discrete steps between light and dark. *Note:* A gray scale with ten steps is usually included in resolution test charts. (BT/AV) 201-1979w

(2) (image processing and pattern recognition) The range of gray levels that occur in an image. (C) 610.4-1990w

gray scale display device A monochrome display device that can display multiple shades of a single color in addition to the background color. (C) 610.10-1994w

gray scale manipulation An image enhancement technique in which the appearance of a digital image is improved by applying a point operator to each pixel in the image, adjusting its gray level. (C) 610.4-1990w

gray shade *See:* gray level.

grays in silicon A unit of absorbed dose as measured by its ionizing effect in silicon; 1 gray = 1 joule of energy deposited in a kilogram of irradiated silicon. *Notes:* 1. This number can be translated into the density of electron-hole pairs in silicon by the equation $n_{eh}\, 4 \times 10^{-5} \times \propto$ grays. 2. One gray in silicon = 100 rd in silicon. However, the unit rads is not an SI unit and therefore is deprecated. 1 rd = 0.01 Gy. (ED) 641-1987w

gray tone *See:* gray level.

grazing angle The complement of the angle of incidence for large angles of incidence. *See also:* elevation angle. (AP/PROP) 211-1997

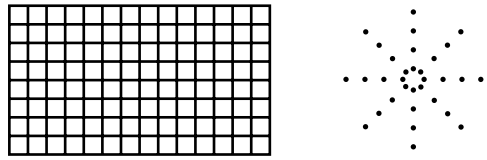
Green's function The response of a medium to an incident impulse function. (AP/PROP) 211-1997

Gregorian reflector antenna A paraboloidal reflector antenna with a concave subreflector, usually ellipsoidal in shape, located at a distance from the vertex of the main reflector that is greater than the prime focal length of the main reflector. *Note:* To improve the aperture efficiency of the antenna, the shapes of the main reflector and subreflector are sometimes modified. (AP/ANT) 145-1993

grid (1) In optical character recognition, two perpendicular sets of parallel lines used for specifying or measuring character images. (C) 610.2-1987

(2) (hydroelectric power plants) Network, usually of a power company, for transmitting and distributing electric power. (PE/EDPG) 1020-1988r

(3) (computer graphics) A two-dimensional array of points or lines used to determine a position in a graphics image space. For example, rectangular, radial.



grid

(C) 610.6-1991w

grid constraint A process by which a point entered into a display image is automatically moved to the nearest grid point to achieve a neat appearance. *Synonyms:* modular constraint; constrained painting. (C) 610.6-1991w

grid control Control of anode current of an electron tube by means of proper variation (control) of the control-grid potential with respect to the cathode of the tube. *See also:* electronic controller. (IA/ICTL/IAC) [60]

grid-controlled mercury-arc rectifier A mercury-arc rectifier in which one or more electrodes are employed exclusively to control the starting of the discharge. *See also:* rectifier. (AP/ANT) 145-1983s

grid course (navigation) Course relative to grid north. *See also:* navigation. (AES/RS) 686-1982s, [42]

grid current (analog computer) The current flowing between the summing junction and the grid of the first amplifying stage of an operational amplifier. *Note:* Grid current results in an error voltage at the amplifier output. *See also:* electronic analog computer; electronic controller. (C) 165-1977w

grid-drive characteristic (electron tube) A relation, usually shown by a graph, between electric or light output and control-electrode voltage measured from cutoff. (ED) 161-1971w

grid driving power (electron tube) The average of the product of the instantaneous values of the alternating components of the grid current and the grid voltage over a complete cycle. *Note:* This power comprises the power supplied to the biasing device and to the grid. *See also:* electrode dissipation. (ED) 161-1971w

grid emission Electron or ion emission from a grid. *See also:* electron emission. (ED) 161-1971w

grid emission, primary *See:* primary grid emission.

grid emission, secondary *See:* secondary grid emission.

grid-glow tube A glow-discharge cold-cathode tube in which one or more control electrodes initiate but do not limit the anode current, except under certain operating conditions. *Note:* This term is used chiefly in the industrial field. (ED) [45]

grid, ground *See:* ground grid.

grid heading (navigation) Heading relative to grid north. *See also:* navigation. (AES/RS) 686-1982s, [42]

grid-leak detector A triode or multielectrode tube in which rectification occurs because of electron current to the grid. *Note:* The voltage associated with this flow through a high resistance in the grid circuit appears in amplified form in the plate circuit. (EEC/PE) [119]

grid mesh Any one of the open spaces enclosed by the grounding grid conductors. (PE/EDPG) 665-1995

grid modulation (electron tube) Modulation produced by the application of the modulating voltage to the control grid of any tube in which the carrier is present. *Note:* Modulation in which the grid voltage contains externally generated pulses is called grid pulse modulation. (AP/ANT) 145-1983s

grid neutralization (electron tube) The method of neutralizing an amplifier in which a portion of the grid-cathode alternating-current voltage is shifted 180 degrees and applied to the plate-cathode circuit through a neutralizing capacitor. *See also:* feedback; amplifier. (AP/ANT) 145-1983s

grid north (navigation) An arbitrary reference direction used in connection with a system of rectangular coordinates superimposed over a chart. *See also:* navigation. (AES/RS) 686-1982s, [42]

grid number *n* (electron tube) A grid occupying the *n* th position counting from the cathode. *See also:* electron tube. (ED) [45], [84]

grid pitch (electron tube) The pitch of the helix of a helical grid. *See also:* electron tube. (ED) [45], [84]

grid pulse modulation Modulation produced in an amplifier or oscillator by application of one or more pulses to a grid circuit. (AP/ANT) 145-1983s

grid (circuit) resistor A resistor used to limit grid current. *See also:* electronic controller. (IA/ICTL/IAC) [60]

grids (high-power rectifier) Electrodes that are placed in the arc stream and to which a control voltage may be applied. *See also:* rectification. (EEC/PE) [119]

grid system (substation grounding) A system consisting of interconnected bare conductors buried in the earth or in concrete to provide a common ground for electrical devices and metallic structures. (SUB/PE) 837-1989r

grid transformer Supplies an alternating voltage to a grid circuit or circuits. (IA/ICTL/IAC) [60]

grid voltage *See:* electrode voltage; electronic controller.

grid voltage supply (electron tube) The means for supplying to the grid of the tube a potential that is usually negative with respect to the cathode. *See also:* power pack. (EEC/PE) [119]

grip *See:* conductor grip.

grip, Chicago *See:* conductor grip.

grip, conductor *See:* conductor grip.

grip, vise *See:* strand restraining clamp.

grip, wire mesh *See:* woven wire grip.

grip, woven wire *See:* woven wire grip.

groove (mechanical recording) The track inscribed in the record by the cutting or embossing stylus. *See also:* phonograph pickup. (SP) [32]

groove angle (disk recording) The angle between the two walls of an unmodulated groove in a radial plane perpendicular to the surface of the recording medium. *See also:* phonograph pickup. (SP) [32]

groove diameter *See:* tape-wound core.

groove shape (disk recording) The contour of the groove in a radial plane perpendicular to the surface of the recording medium. *See also:* phonograph pickup. (SP) [32]

groove speed (disk recording) The linear speed of the groove with respect to the stylus. *See also:* phonograph pickup. (SP) [32]

groove width *See:* tape-wound core.

Grosch's law A guideline formulated by H. R. J. Grosch, stating that the computing power of a computer increases proportionally to the square of the cost of the computer. *See also:* computer performance evaluation. (C) 610.12-1990

gross actual generation (power system measurement) The energy that was generated by a unit in a given period. (PE/PSE) 762-1980s

gross available capacity (power system measurement) The gross dependable capacity, modified for equipment limitation at any time. (PE/PSE) 762-1980s

gross available generation (power system measurement) The gross energy that could have been generated in a given period if operated continuously at its gross available capacity. (PE/PSE) 762-1980s

gross demand load The summation of the demands for each of the several group loads. (IA/PSE) 241-1990r

gross demonstrated capacity The gross steady output that a generating unit or station has produced while demonstrating its maximum performance under stipulated conditions. *See also:* generating station. (PE/T&D) [10]

gross dependable capacity (power system measurement) The gross maximum capacity, modified for ambient limitations for a specified period of time, such as a month or a season. (PE/PSE) 762-1980s

gross generation (electric power system) The generated output power at the terminals of the generator. (PE/PSE) 858-1993w, 94-1991w

gross head (power operations) The difference of elevations between water surfaces of the forebay and tailrace under specified conditions. (PE/PSE) 858-1987s

gross heat rate (power operations) A measure of generating station thermal efficiency, generally expressed as British thermal unit per kilowatt-hour (Btu/kWh). *Note:* It is computed by dividing the total Btu content of the fuel burned (or of heat released from a nuclear reactor) by the resulting kilowatt-hours (kWh) generated. (PE/PSE) 858-1987s

gross information content A measure of the total information, redundant or otherwise, contained in a message. *Note:* It is expressed as the number of bits or hartleys required to transmit the message with specified accuracy over a noiseless medium without coding. *See also:* bit. (EEC/PE) [119]

gross maximum capacity (power system measurement) The maximum capacity that a unit can sustain over a specified period of time. To establish this capacity, formal demonstration is required. The test should be repeated periodically. This demonstrated capacity level shall be corrected to generating conditions for which there would be minimum ambient restriction. When a demonstration test has not been conducted, the estimated maximum capacity of the unit shall be used. (PE/PSE) 762-1980s

gross maximum generation (power system measurement) The energy that could have been produced by a unit in a given period of time if operated continuously at gross maximum capacity. (PE/PSE) 762-1980s

gross rated capacity The gross steady output that a generating unit or station can produce for at least two hours under specified operating conditions. *See also:* generating station. (T&D/PE) [10]

gross reserve generation (power system measurement) The energy that a unit could have produced in a given period but did not, because it was not required by the system. This is the difference between gross available generation and gross actual generation:

$$GRG = GAG + GAAG$$

(PE/PSE) 762-1980s

gross seasonal unavailable generation (power system measurement) The difference between the energy that would have been generated if operating continuously at gross maximum capacity and the energy that would have been generated if operating continuously at gross dependable capacity, calculated only during the time the unit was in the available state. (PE/PSE) 762-1980s

gross unit unavailable generation (power system measurement) The difference between the energy that would have been generated if operating continuously at gross dependable capacity and the energy that would have been generated if operating continuously at available capacity. This is the energy that could not be generated by a unit due to planned and unplanned outages and unit deratings. (PE/PSE) 762-1980s

ground (1) (A) (transmission path) A direct conducting connection to the earth or body of water that is a part thereof. **(B) (transmission path)** A conducting connection to a structure that serves a function similar to that of an earth ground (that is, a structure such as a frame of an air, space, or land vehicle that is not conductively connected to earth). (GSD) 315-1975

(2) (hydroelectric power plants) Connection to earth or to a common conducting body that serves in place of the earth. (PE/EDPG) 1020-1988r

(3) (A) A conducting connection, whether intentional or accidental, by which an electric circuit or equipment is connected to the earth, or to some conducting body of relatively large extent that serves in place of the earth. **(B)** High-frequency reference. *Note:* Grounds are used for establishing and maintaining the potential of the earth (or of the conducting body), or approximately that potential, on conductors connected to it and for conducting ground currents to and from earth (or the conducting body). *See also:* signal reference structure. (IA/PSE) 1100-1999

(4) A conducting connection, whether intentional or accidental, by which an electric circuit or equipment is connected to the earth or to some conducting body of relatively large extent that serves in place of the earth. (PE/SUB) 80-2000

groundable parts Those parts that may be connected to ground without affecting operation of the device. (SWG/PE) C37.40-1993, C37.100-1992

ground absorption (data transmission) The loss of energy in transmission of radio waves, due to dissipation in the ground. (PE) 599-1985w

ground acceleration (1) The acceleration of the ground resulting from a given earthquake's motion. The maximum ground acceleration can be obtained from the ground response spectrum as the acceleration at high frequencies (in excess of 33 Hz). (SWG/PE) C37.100-1992, C37.81-1989r

(2) The acceleration of the ground resulting from the motion of a given earthquake. The maximum or peak ground acceleration is the zero period acceleration (ZPA) of the ground response spectrum. (PE/SUB/NP) 693-1997, 344-1987r

ground and test device A term applied to a switchgear assembly accessory device that can be inserted in place of a drawout circuit breaker for the purpose of grounding the main bus and/or external circuits connected to the switchgear assembly and/or primary circuit testing. (SWG/PE) C37.20.6-1997, C37.100-1992, C37.20.2-1993

ground-area open floodlight (illuminating engineering) A unit providing a weatherproof enclosure for the lamp socket and housing. No cover glass is required. (EEC/IE) [126]

ground-area open floodlight with reflector insert (illuminating engineering) A weatherproof unit so constructed that the housing forms only part of the reflecting surface. An auxiliary reflector is used to modify the distribution of light. No cover glass is required. (EEC/IE) [126]

ground bar (lightning) A conductor forming a common junction for a number of ground conductors. (PE) [8], [84]

ground-based navigation aid An aid that requires facilities located upon land or sea. *See also:* navigation. (AES/RS) 686-1982s, [42]

ground, block *See:* traveler ground.

ground bus A bus to which the grounds from individual pieces of equipment are connected, and that, in turn, is connected to ground at one or more points. (SWG/PE) C37.100-1992

ground bushing (separable insulated connectors) An accessory device designed to electrically ground and mechanically seal a de-energized power cable terminated with an elbow. (T&D/PE) 386-1995

ground, butt *See:* structure base ground.

ground cable bond A cable bond used for grounding the armor or sheaths of cables or both. *See also:* ground. (T&D/PE) [10]

ground chain *See:* structure base ground.

ground clamp A clamp used in connecting a grounding conductor to a grounding electrode or to a thing grounded. *Synonym:* grounding clamp. *See also:* ground. (T&D/PE) [10]

ground clutter Clutter resulting from the ground or objects on the ground. *Synonym:* ground return. (AES) 686-1997

ground conductivity A property of the ground, expressed as the ratio of electric current density to electric field strength. (T&D/PE) 1260-1996

ground conductor (lightning) A conductor providing an electric connection between part of a system, or the frame of a machine or piece of apparatus, and a ground electrode or a ground bar. *See also:* grounded conductor. (PE) [8], [84]

ground conduit A conduit used solely to contain one or more grounding conductors. *See also:* ground. (T&D/PE) [10]

ground connection *See:* grounding connection.

ground contact (of a switchgear assembly) A self-coupling separable contact provided to connect and disconnect the ground connection between the removable element and the ground bus of the housing and so constructed that it remains in contact at all times except when the primary disconnecting devices are separated by a safe distance. *Note:* Safe distance, as used here, is a distance at which the equipment will meet its withstand-voltage ratings, both low-frequency and impulse, between line and load terminals with the switching device in the closed position. (SWG/PE) C37.100-1992

ground contact indicator *See:* line isolation monitor.

ground-controlled approach (GCA) A ground radar system providing information by which aircraft approaches to landing may be directed via radio communications; the system consists of a precision-approach radar (PAR) and an airport-surveillance radar (ASR). (AES/RS) 686-1990

ground-controlled approach radar A ground radar system providing information by which aircraft approaches to landing may be directed via radio communications. The system consists of a precision-approach radar (PAR) and an airport-surveillance radar (ASR). (AES) 686-1997

ground-controlled intercept (GCI) A radar system by means of which a controller on the ground may direct an aircraft to make an interception of another aircraft. (AES/RS) 686-1990

ground-controlled intercept radar A military radar system by which a controller on the ground may direct an aircraft to make an interception of another aircraft. (AES) 686-1997

ground current (1) (ground systems) Current flowing in the earth or in a grounding connection. (PE/PSIM) 81-1983

(2) A current flowing into or out of the earth or its equivalent serving as a ground. (PE/SUB) 80-2000

ground-derived navigation data (air navigation) Data obtained from measurements made on land or sea at locations external to the vehicle. *See also:* navigation. (AES/RS) 686-1982s, [42]

ground detection rings (rotating machinery) Collector rings connected to a winding and its core to facilitate the measurement of insulation resistance on a rotor winding. *See also:* rotor. (PE) [9]

ground detector An instrument or an equipment used for indicating the presence of a ground on an ungrounded system. *See also:* ground. (T&D/PE) [10]

ground detector relay (power system device function numbers) A relay that operates on failure of machine or other apparatus insulation to ground. *Note:* This function is not applied to a device connected in the secondary circuit of current transformers in a normally grounded power system, where other device numbers with a suffix G or N should be used, that is, 51N for an ac time overcurrent relay connected in the secondary neutral of the current transformers. (SUB/PE) C37.2-1979s

ground distance relay A distance relay designed to detect phase-to-ground faults. (PE/PSR) C37.113-1999

grounded (1) (ground systems) A system, circuit, or apparatus referred to is provided with a ground. (PE/PSIM) 81-1983

(2) (conductor stringing equipment) (power line maintenance) (electric systems) Connected to earth or to some extended conducting body that serves instead of the earth, whether the connection is intentional or accidental. (SPD/PE/T&D/TR) 32-1972r, C2.2-1960, 524a-1993r, 516-1995, C57.12.80-1978r, 524-1992r

(3) (safety in ac substation grounding) A system, circuit, or apparatus referred to is provided with ground for the purposes of establishing a ground return circuit and for maintaining its potential at approximately the potential of earth.

(4) (effectively grounded communication system) Permanently connected to earth through a ground connection of sufficiently low impedance and having sufficient ampacity to prevent the building up of voltages that may result in undue hazard to connected equipment or to persons. [86]

(5) Connected to or in contact with earth or connected to some extended conductive body that serves instead of the earth. (NESC) C2-1997

(6) A system, circuit, or apparatus provided with a ground(s) for the purposes of establishing a ground return circuit and for maintaining its potential at approximately the potential of earth. (PE/SUB) 80-2000

grounded capacitance *See:* ground.

grounded-cathode amplifier An electron-tube amplifier with the cathode at ground potential at the operating frequency, with input applied between the control grid and ground, and the output load connected between plate and ground. *Note:* This is the conventional amplifier circuit. *See also:* amplifier. (AP/ANT) 145-1983s

grounded circuit A circuit in which one conductor or point (usually the neutral conductor or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a noninterrupting current limiting grounding device. *See also:* grounded system; grounded conductor; ground. (SPD/PE/T&D) 32-1972r, [10]

grounded concentric wiring system A grounded system in which the external (outer) conductor is solidly grounded and completely surrounds the internal (inner) conductor through its length. The external conductor is usually uninsulated. *See also:* ground. (SPD/PE/T&D) 32-1972r, [10]

grounded conductor (1) (electric systems) A conductor that is intentionally grounded, either solidly or through a current limiting device. *See also:* ground. (SPD/PE/T&D) 32-1972r, C2.2-1960

(2) A system or circuit conductor that is intentionally grounded. (NESC/NEC) [86]

(3) A conductor that is intentionally grounded, either solidly or through a noninterrupting current-limiting device. (NESC) C2-1997

grounded, directly *See:* grounded solidly.

grounded, effectively *See:* effectively grounded.

grounded effectively *See:* effectively grounded.

grounded-grid amplifier An electron-tube amplifier circuit in which the control grid is at ground potential at the operating frequency, with input applied between cathode and ground, and output load connected between plate and ground. *Note:* The grid-to-plate impedance of the tube is in parallel with the load instead of acting as a feedback path. *See also:* amplifier. (AP/ANT) 145-1983s

grounded, impedance *See:* impedance grounded.

grounded impedance Grounded through impedance. *Note:* The components of the impedance need not be at the same location. (SPD/PE) 32-1972r

grounded member Any part in a substation that is normally connected to or in contact with earth. (SUB/PE) 1264-1993

grounded neutral system (surge arresters) A system in which the neutral is connected to ground, either solidly or through a resistance or reactance of low value. (PE) [8], [84]

grounded-neutral terminal type voltage transformer (1) One that has the neutral end of the high-voltage winding connected to the case or mounting base. (PE/TR) [57]

(2) One that has the neutral end of the primary winding connected to the case or mounting base in a manner not intended to facilitate disconnection. (PE/TR) C57.13-1993

grounded parts Parts that are intentionally connected to ground. (SWG/PE) C37.40-1993, C37.100-1992

grounded-plate amplifier (cathode-follower) An electron-tube amplifier circuit in which the plate is at ground potential at the operating frequency, with input applied between control grid and ground, and the output load connected between cathode and ground. *See also:* amplifier. (AP/ANT) 145-1983s

grounded potentiometer (analog computer) A potentiometer with one end terminal attached directly to ground. *See also:* electronic analog computer. (C) 165-1977w, 166-1977w

grounded solidly (system grounding) Connected directly through an adequate ground connection in which no impedance has been intentionally inserted. *Note:* This term, though commonly used, is somewhat confusing since a transformer may have its neutral solidly connected to ground, and yet the connection may be so small in capacity as to furnish only a very-high-impedance ground to the system to which it is connected. In order to define grounding positively and logically as to degree, the term effective grounding has come into use. The term solidly grounded will therefore be used in this standard only in referring to a solid metallic connection from system neutral to ground; that is, with no impedance intentionally added in the grounding circuit. (IA/PSE) 142-1982s

grounded system (1) A system of conductors in which at least one conductor or point is intentionally grounded, either solidly or through a noninterrupting current-limiting device. (NESC/T&D) C2-1997, C2.2-1960

(2) (system grounding) A system of conductors in which at least one conductor or point (usually the middle wire or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through an impedance. *Note:* Various degrees of groundings are used, from solid or effective grounding to the high-impedance grounding obtained from a small grounding transformer used only to secure enough ground current for relaying, to the high-resistance grounding which secures control of transient overvoltage but may not furnish sufficient current for ground-fault relaying. In the figure on the next page, parts b and c show two points at which a system may be grounded and the corresponding voltage relationships. Note that according to NEMA SG 4-1975, there are system voltage limitations for corner grounding.

(3) (power and distribution transformers) A system of conductors in which at least one conductor or point (usually the middle wire or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device. (PE/TR) C57.12.80-1978r

(4) (surge arresters) An electric system in which at least one conductor or point (usually the neutral conductor or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a grounding device. (PE/SPD) C62.1-1981s, C62.62-2000

ground electrode (1) A conductor or group of conductors in intimate contact with the earth for the purpose of providing a connection with the ground. (IA/PSE) 1100-1999

(2) A conductor imbedded in the earth and used for collecting ground current from or dissipating ground current into the earth. (PE/SUB) 80-2000

(3) *See also:* ground rod. (T&D/PE) 524-1992r

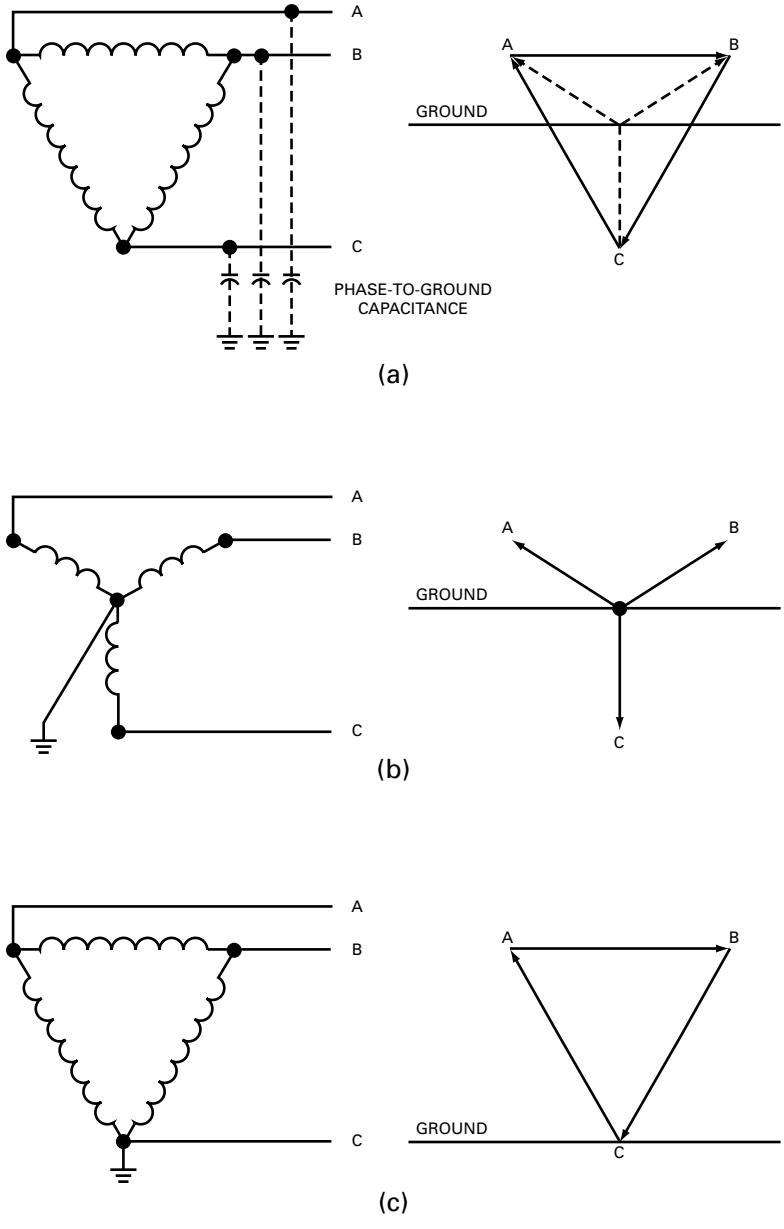
ground electrode, concrete-encased *See:* concrete-encased ground electrode.

ground end (grounding device) The end or terminal of the device that is grounded directly or through another device. *See also:* grounding device. (PE/SPD) 32-1972r

ground equalizer inductors Coils of relatively low inductance, placed in the circuit connected to one or more of the grounding points of an antenna to distribute the current to the various points in any desired manner. *Note:* Broadcast usage only and now in disuse. *See also:* antenna. (AP/ANT) 145-1983s

ground fault (surge arresters) An insulation fault between a conductor and ground or frame. (PE) [8], [84]

ground-fault circuit-interrupter (1) (health care facilities) A device whose function is to interrupt the electric circuit to the load when a fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. (EMB) [47]



Voltages to ground under steady-state conditions: a) ungrounded system; b) grounded Wye-connected system; c) corner grounded Delta-connected system

grounded system

(2) A device intended for the protection of personnel that functions to interrupt the electric current to the load within an established period of time when a fault current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit. (NESC/NEC) [86]

ground fault factor The ratio of the highest power frequency voltage on an unfaulted phase during a line-to-ground fault to the phase-to-ground power-frequency voltage without the fault. *Notes:* 1. The ground-fault factor generally will be less than 1.3, if the zero-sequence reactance is less than three times the positive-sequence reactance, and the zero-sequence resistance does not exceed the positive-sequence reactance. 2. IEEE Std C62.1-1989 defines a "coefficient of grounding." This coefficient can be obtained by dividing the ground-fault factor by $\sqrt{3}$. (PE/C) 1313.1-1996

ground-fault neutralizer (neutral grounding devices) A grounding device that provides an inductive component of current in a ground fault that is substantially equal to and therefore neutralizes the rated-frequency capacitive component of the ground-fault current, thus rendering the system resonant grounded. (SPD/PE) 32-1972r

ground-fault neutralizer grounded (power and distribution transformers) (resonant grounded) Reactance grounded through such values of reactance that, during a fault between one of the conductors and earth, the rated-frequency current flowing in the grounding reactances and the rated-frequency capacitance current flowing between the unfaulted conductors and earth shall be substantially equal. *Notes:* 1. In the fault these two components of current will be substantially 180 degrees out of phase. 2. When a system is ground-fault neutralizer grounded, it is expected that the quadrature compo-

nent of the rated-frequency single-phase-to-ground fault current will be so small that an arc fault in air will be self-extinguishing. (PE/TR) C57.12.80-1978r

ground-fault protection of equipment A system intended to provide protection of equipment from damaging line-to-ground arcing fault currents by operating to cause a disconnecting means to open all ungrounded conductors of the faulted circuit. This protection is provided at current levels less than that required to protect conductors from damage through the operation of a supply circuit overcurrent device. (NESC/NEC) [86]

ground flash density (GFD) (Ng) (1) The average number of lightning strokes per unit area per unit time at a particular location. (SUB/PE/T&D) 998-1996, 1410-1997

(2) The average number of lightning strokes to ground per unit area per unit time at a particular location. (PE/T&D) 1243-1997

ground gradient mat *See:* ground grid.

ground grid (1) (ground resistance) (ground systems) A system of grounding electrodes consisting of interconnected bare cables buried in the earth to provide a common ground for electrical devices and metallic structures. *Note:* It may be connected to auxiliary grounding electrodes to lower its resistance. *See also:* grounding device. (PE/PSIM) 81-1983

(2) (conductor string equipment) (temporary) A system of interconnected bare conductors arranged in a pattern over a specified area and on or buried below the surface of the earth. Normally, it is bonded to ground rods driven around and within its perimeter to increase its grounding capabilities and provide convenient connection points for grounding devices. The primary purpose of the grid is to provide safety for workers by limiting potential differences within its perimeter to safe levels in case of high currents that could flow if the circuit being worked became energized for any reason, or if an adjacent energized circuit faulted. Metallic surface mats and gratings are sometimes utilized for this same purpose. When used, these grids are employed at pull, tension, and midspan splice sites. *Synonyms:* ground mat; counterpoise; ground gradient mat. (T&D/PE/IA/PSE) 524a-1993r, 524-1992r, 1048-1990, 1100-1999

(3) A system of horizontal ground electrodes that consists of a number of interconnected bare conductors buried in the earth, providing a common ground for electrical devices or metallic structures, usually in one specific location. *Note:* Grids buried horizontally near the surface of the earth are also effective in controlling the surface potential gradients. A typical grid usually is supplemented by a number of ground rods and may be further connected to auxiliary ground electrodes to lower its resistance with respect to remote earth. (PE/EDPG) 665-1995

ground, high-frequency reference *See:* signal reference structure.

ground impedance tester A multifunctional instrument designed to detect certain types of wiring and grounding problems in low-voltage power distribution systems. (IA/PSE) 1100-1999

ground indication An indication of the presence of a ground on one or more of the normally ungrounded conductors of a system. *See also:* ground. (T&D/PE) [10]

grounding cable A cable used to make a connection to ground. *See also:* grounding conductor. (PE) [9]

grounding-cable connector The terminal mounted on the end of a grounding cable. (PE) [9]

grounding clamp A device used in making a connection between the electrical apparatus or conductors, and the ground bus, or grounding electrode. (T&D/PE) 1048-1990

grounding, coefficient of *See:* coefficient of grounding.

grounding conductor (1) The conductor that is used to establish a ground and that connects an equipment, device, wiring system, or another conductor (usually the neutral conductor) with the grounding electrode or electrodes. *Synonym:* ground system. (NESC/PE/PSIM) 81-1983, [86]

(2) A metallic conductor used to connect the metal frame or enclosure of an equipment, device, or wiring system with a mine track or other effective grounding medium. *See also:* mine feeder circuit. (PE/EEC/MIN) [119]

(3) A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode or electrodes. (NESC/NEC) [86]

(4) A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode or electrodes (i.e., ground grid). (PE/EDPG) 665-1995

(5) A conductor that is used to connect the equipment or the wiring system with a grounding electrode or electrodes. (T&D/NESC) C2.2-1960, C2-1997

grounding conductor, direct current equipment *See:* direct-current equipment grounding conductor.

grounding connection (ground systems) A connection used in establishing a ground and consists of a grounding conductor, a grounding electrode and the earth (soil) that surrounds the electrode or some conductive body which serves instead of the earth. (PE/PSIM) 81-1983

grounding device (electric power) An impedance device used to connect conductors of an electric system to ground for the purpose of controlling the ground current or voltages to ground or a nonimpedance device used to temporarily ground conductors for the purpose of the safety of workmen. *Note:* The grounding device may consist of a grounding transformer or a neutral grounding device, or a combination of these. Protective devices, such as surge arresters, may also be included as an integral part of the device. (SPD/PE) 32-1972r

grounding elbow An accessory device designed to electrically ground and mechanically seal a bushing insert or an integral bushing. (T&D/PE) 386-1995

grounding electrode A conductor used to establish a ground. *Synonyms:* ground system; ground electrode. (T&D/PE/PSIM) [10], 81-1983

grounding electrode conductor The conductor used to connect the grounding electrode to the equipment grounding conductor and/or to the grounded conductor of the circuit at the service equipment or at the source of a separately derived system. (NESC/NEC) [86]

grounding grid A system of horizontal ground electrodes that consists of a number of interconnected, bare conductors buried in the earth, providing a com-mon ground for electrical devices or metallic structures, usually in one specific location. *Note:* Grids buried horizontally near the earth's surface are also effective in controlling the surface potential gradients. A typical grid usually is supplemented by a number of ground rods and may be further connected to auxiliary ground electrodes to lower its resistance with respect to remote earth. (PE/SUB) 80-2000

grounding jumper (electric appliances) A strap or wire to connect the frame of the range to the neutral conductor of the supply circuit. *See also:* appliance outlet. (IA/APP) [90]

grounding outlet An outlet equipped with a receptacle of the polarity type having, in addition to the current-carrying contacts, one grounded contact that can be used for the connection of an equipment grounding conductor. *Note:* This type of outlet is used for connection of portable appliances. *Synonym:* safety outlet. *See also:* ground. (T&D/PE) [10]

grounding pad (rotating machinery) A contact area, usually on the stator frame, provided to permit the connection of a grounding terminal. *See also:* stator. (PE) [9]

grounding relays *See:* short-circuiting relays.

grounding switch A mechanical switching device by means of which a circuit or piece of apparatus may be electrically connected to ground. (SWG/PE) C37.100-1992, C37.30-1971s

grounding system (1) (health care facilities) A system of conductors which provides a low impedance return path for leakage and fault currents. It coordinates with, but may be locally more extensive than, the grounding system described in Article 250 of NFPA 70, National Electrical Code. (EMB) [47]

(2) (surge arresters) A complete installation comprising one or more ground electrodes, ground conductors, and ground bars as required. (PE) [8], [84]

(3) Comprises all interconnected grounding facilities in a specific area. (PE/SUB/T&D/PSIM) 80-2000, 524a-1993r, 81-1983

grounding terminal (rotating machinery) A terminal used to make a connection to a ground. *See also:* stator. (PE) [9]

grounding transformer (1) (power and distribution transformers) A transformer intended primarily to provide a neutral point for grounding purposes. *Note:* It may be provided with a d winding in which resistors or reactors are connected. *See also:* stabilizing winding; rated kilovolt-ampere; voltage rating. (PE/TR) C57.12.80-1978r

(2) A transformer(s), delta-wye or zig-zag connected, installed to establish a system ground and thus provide a source of zero-sequence current for ground fault detection. (PE/PSR) C37.113-1999

ground insulation (rotating machinery) Insulation used to insure the electric isolation of a winding from the core and mechanical parts of a machine. *See also:* asynchronous machine; coil insulation. (PE) [9]

ground isolation (sequential events recording systems) The disconnection of selected field contact circuits from the contact voltage supply to allow identification of the grounded field contact wires. *See also:* field contacts. (PE/EDPG) [1]

ground level (mobile communication) The elevation of the ground above mean sea level at the antenna site or other point of interest. *See also:* mobile communication system. (VT) [37]

ground light (illuminating engineering) Visible radiation from the sun and sky reflected by surfaces below the plane of the horizon. (EEC/IE) [126]

ground loop (1) A circuit in an analog computer when two or more points in the electrical system, that are nominally at ground potential, are connected by a conducting path such that either or both points are not at the same ground potential. (C) 610.10-1994w

(2) A potentially detrimental loop formed when two or more points in an electrical system that are nominally at ground potential are connected by a conducting path such that either or both points are not at the same ground potential. (IA/PSE) 1100-1999

ground, master *See:* master ground.

ground mat (1) (ground systems) A system of bare connectors, on or below the surface of the earth, connected to a ground or a ground grid to provide protection from dangerous touch voltages. *Note:* Plates and gratings of suitable area are common forms of ground mats. (PE/PSIM) 81-1983

(2) A solid metallic plate or a system of closely spaced bare conductors that are connected to and often placed in shallow depths above a ground grid or elsewhere at the earth's surface, in order to obtain an extra protective measure minimizing the danger of the exposure to high step or touch voltages in a critical operating area or places that are frequently used by people. Grounded metal gratings, placed on or above the soil surface, or wire mesh placed directly under the surface material, are common forms of a ground mat. (PE/SUB) 80-2000

(3) *See also:* ground grid. (T&D/PE) 524-1992r

ground, moving *See:* running ground.

ground overcurrent (1) A conducting or reflecting plane functioning to image a radiating structure. *Synonyms:* imaging plane; imaging plane. (AP/ANT) 145-1993, 145-1983s

(2) (adio-noise emission) A conducting surface or plate used as a common reference point for circuit returns and electric or signal potentials. (EMC) C63.4-1981, [53]

(3) An assumed plane of true ground or zero potential. *See also:* direct-stroke protection. (T&D/PE) [10]

(4) The net (phasor sum) current flowing in the phase and neutral conductors or the total current flowing in the normal neutral-to-ground connection that exceeds a predetermined value. (SWG/PE) C37.100-1992

ground, personal *See:* personal ground.

ground plane (1) A conducting surface or plate used as a common reference point for circuit returns and electric or signal potentials. (EMC/MTT) C63.5-1988, 1004-1987w, C63.4-1988s

(2) A conducting or reflecting plane functioning to image a radiating structure. *Synonyms:* imaging plane; imaging plane. (AP/ANT) 145-1983s, 145-1993

ground plane, effective *See:* effective ground plane.

ground plane field The electromagnetic field in near proximity to a conducting surface, with the boundary conditions that the tangential electric field approach zero and the normal magnetic remain continuous. The total normal electric field is related to the surface charge density by Gauss' law and the total tangential magnetic field to the surface current density by Ampere's law. (EMC) 1309-1996

ground plate (grounding plate) A plate of conducting material buried in the earth to serve as a grounding electrode. *See also:* ground. (T&D/PE) [10]

ground-position indicator (electronic navigation) A dead-reckoning tracer or computer similar to an air position indicator (API) with provision for taking account of drift. *See also:* radio navigation; navigation. (AES/RS) 686-1982s, [42]

ground potential difference voltage The voltage that results from current flow through the finite resistance and inductance between the receiver and driver circuit ground voltages. (C/MM) 1596.3-1996

ground potential rise (GPR) (1) The voltage that a station grounding grid may attain relative to a distant grounding point assumed to be at the potential of remote earth. (SPD/PE) C62.23-1995

(2) The product of a ground electrode impedance, referenced to remote earth, and the current that flows through that electrode impedance. (PE/PSC) 367-1996

(3) The difference in ground potential between a location in proximity to a point of large current injection into the ground and any remote ground point. GPR is usually caused by a short circuit of an energized power conductor to ground and is the result of the injected current flowing through the impedance of the ground circuit. (SWG/PE) C37.100-1992

(4) The maximum electrical potential that a substation grounding grid may attain relative to a distant grounding point assumed to be at the potential of remote earth. (PE/SUB) 1268-1997

(5) The maximum electrical potential that a substation grounding grid may attain relative to a distant grounding point assumed to be at the potential of remote earth. This voltage, GPR, is equal to the maximum grid current times the grid resistance. *Note:* Under normal conditions, the grounded electrical equipment operates at near zero ground potential. That is, the potential of a grounded neutral conductor is nearly identical to the potential of remote earth. During a ground fault the portion of fault current that is conducted by a substation grounding grid into the earth causes the rise of the grid potential with respect to remote earth. (PE/SUB) 80-2000

ground potential shift The difference in voltage between grounding or grounded (earthed) structures such as the opposite corners of a metal building. Generally, ground potential shift increases with distance of separation of ground locations and with the frequency or wave front rise time of the resulting current flow. Ground potential shift problems are generally exacerbated by surge events from lighting and utility power sources. (IA/PSE) 1100-1999

ground protection (1) (ground-fault protection) A method of protection in which faults to ground within the protected equipment are detected irrespective of system phase conditions. (SWG/PE/PSR) C37.90-1978s, [6], [56]
(2) A method of protection in which faults to ground within the protected equipment are detected. (SWG/PE) C37.100-1992

ground, radial *See:* radial ground.

ground range Distance along the ground between the points directly beneath the radar and the target. (AES) 686-1997

ground-referenced navigation data Data in terms of a coordinate system referenced to the earth or to some specified portion thereof. *See also:* navigation. (AES/RS) 686-1982s, [42]

ground reference meter A meter that measures the electric field at or close to the surface of the ground. Frequently implemented by measuring induced current or charge oscillating between an isolated electrode and ground. The isolated electrode is usually a plate located level with or slightly above the ground surface. *Note:* Ground reference meters measuring the induced current often contain an integrator circuit to compensate for the derivative relationship between the induced current and the electric field. (PE/T&D) 539-1990, 1308-1994

ground reference plane (GRP) A flat conductive surface whose potential is used as a common reference. Where applicable, the operating voltage of the EUT and the operator ground should also be referenced to the ground plane. (EMC) C63.16-1993

ground-reflected wave (data transmission) The component of the ground wave that is reflected from the ground. (PE) 599-1985w

ground relay A relay that by its design or application is intended to respond primarily to system ground faults. (SWG/PE) C37.100-1992

ground resistance (grounding electrode) The ohmic resistance between the grounding electrode and a remote grounding electrode of zero resistance. *Note:* By "remote" is meant "at a distance such that the mutual resistance of the two electrodes is essentially zero." (PE/PSIM) 81-1983

ground return *See:* ground clutter.

ground-return circuit (1) (ground systems) A circuit in which the earth is utilized to complete the circuit. (PE/PSIM) 81-1983
(2) (safety in ac substation grounding) A circuit in which the earth or an equivalent conducting body is utilized to complete the circuit and allow current circulation from or to its current source. (T&D/PE/SUB) 563-1978r, 80-2000
(3) (data transmission) A circuit which has a conductor (or two or more in parallel) between two points and which is completed through the ground or earth. (PE) 599-1985w
(4) A circuit in which the earth is utilized to complete the circuit. *See also:* transmission line; ground; telegraphy. (T&D/PE) [10]

ground-return current (line residual current) (electric supply line) The vector sum of the currents in all conductors on the electric supply line. *Note:* Actually the ground-return current in this sense may include components returning to the source in wires on other pole lines, but from the inductive coordination standpoint these components are substantially equivalent to components in the ground. *See also:* inductive coordination. (EEC/PE) [119]

ground-return system A system in which one of the conductors is replaced by ground. (PE) [8], [84]

ground rod (1) (protective grounding of power lines) (conductor stringing equipment) A rod that is driven into the ground to serve as a ground terminal, such as a copper-clad rod, solid copper rod, galvanized iron rod, or galvanized iron pipe. Copper-clad steel rods are commonly used during conductor stringing operations to provide a means of obtaining an electrical ground using portable grounding devices. *Synonym:* ground electrode. (T&D/PE) 524a-1993r, 1048-1990, 524-1992r
(2) A conducting rod serving as an electrical connection with the ground. (AP/ANT) 145-1993

ground roller *See:* running ground.

ground, rolling *See:* running ground; traveler ground.

ground, running *See:* running ground.

ground set *See:* master ground.

ground, sheave *See:* traveler ground.

ground source *See:* ground.

ground speed (navigation) The speed of a vehicle along its track. *See also:* navigation. (AES/RS) 686-1982s, [42]

ground-start signaling (telephone switching systems) A method of signaling using direct current in a ground return path to indicate a service request. (COM) 312-1977w

ground-state maser (laser maser) A maser in which the terminal level of the amplifying transition is appreciably populated at thermal equilibrium for the ambient temperature. (LEO) 586-1980w

ground stick *See:* master ground; personal ground.

ground stick, insulated *See:* insulated ground stick.

ground, structure *See:* structure base ground.

ground, structure base *See:* structure base ground.

ground support equipment (test, measurement, and diagnostic equipment) All equipment (implements, tools, test equipment devices--mobile or fixed--and so forth) required on the ground to make an aerospace system (aircraft, missile, and so forth) operational in its intended environment. (MIL) [2]

ground surveillance radar A radar set operated at a fixed point for observation and control of the position of aircraft or other vehicles in the vicinity. *See also:* navigation. (AES) [42]

ground system (1) That portion of an antenna consisting of a system of conductors or a conducting surface in or on the ground. (AP/ANT) 145-1993
(2) (ground systems) (general) Consists of all interconnected grounding connections in a specific area. *Synonym:* grounding system. (PE/T&D/PSIM) 81-1983, 524a-1993r
(3) That portion of an antenna closely associated with and including and extensive conducting surface, which may be the earth itself. *See also:* antenna. (AP/ANT) [35]

ground terminal (1) (lightning protection system) The portion extending into the ground, such as a ground rod, ground plate, or the conductor itself, serving to bring the lightning protection system into electric contact with the ground. (PE) [8], [84]
(2) The conducting part provided for connecting the arrester to ground. (SPD/PE) C62.11-1999

ground, tower *See:* structure base ground.

ground transformer *See:* grounding transformer.

ground, traveler *See:* traveler ground.

ground, traveling *See:* running ground.

groundwall insulation The main high voltage electrical insulation that separates the copper conductors from the grounded stator core in motor and generator stator windings. (DEI) 1043-1996

ground wave (1) (data transmission) A radio wave that is propagated over the earth and is ordinarily affected by the presence of the ground and troposphere. *Notes:* 1. The ground wave includes all components of a radio wave over the earth except ionospheric and tropospheric waves. 2. The ground wave is refracted because of variations in the dielectric constant of the troposphere including the condition known as a surface duct. *See also:* radiation; radio-wave propagation. (AP/PE/ANT) 149-1979r, 599-1985w
(2) From a source in the vicinity of the surface of the Earth, a wave that would exist in the vicinity of the surface in the absence of an ionosphere. *Note:* The ground wave can be decomposed into the Norton surface wave and a space wave consisting of the vector sum of a direct wave and a ground-reflected wave. (AP/PROP) 211-1997

ground well A hole with a diameter greater than an inserted ground rod, drilled to a specified depth, and backfilled with a highly conductive material. The backfill will be in intimate contact with the earth. (PE/EDPG) 665-1995

ground window The area through which all grounding conductors, including metallic raceways, enter a specific area. It is often used in communications systems through which the building grounding system is connected to an area that would otherwise have no grounding connection. (IA/PSE) 1100-1999

ground wire (1) (data transmission) (telecommunications) A conductor leading to an electric connection with the ground. (PE) 599-1985w

(2) (overhead power lines) A conductor having grounding connections at intervals, that is suspended usually above but not necessarily over the line conductor to provide a degree of protection against lightning discharges. *See also:* ground. (T&D/PE) [10]

ground, working *See:* personal ground.

group (1) (storage cell) An assembly of plates of the same polarity burned to a connecting strap. *See also:* battery. (PE/EEC) [119]

(2) (electric and electronics parts and equipment) A collection of units, assemblies, or subassemblies which is a subdivision of a set or system, but which is not capable of performing a complete operational function. Typical examples: antenna group, indicator group. (GSD) 200-1975w

(3) (data management) A set of items that are related to each other in some way; for example, a set of records that have the same value for a particular field, or a set of files in a generation data group. (C) 610.5-1990w

(4) A repeater port or a collection of repeater ports that can be related to the logical arrangement of ports within a repeater. (C/LM) 802.3-1998

(5) A Group associates

a) A group MAC address; and
b) A set of properties that define membership characteristics; and
c) A set of properties that define the forwarding/filtering behavior of a Bridge with respect to frames destined for members of that group MAC address;

with a set of end stations that all wish to receive information destined for that group MAC address. Members of such a set of end stations are said to be *Group members*. A Group is said to *exist* if the properties associated with that Group are visible in an entry in the Filtering Database of a Bridge, or in the GARP state machines that characterize the state of the Group; a Group is said to *have members* if the properties of the Group indicate that members of the Group can be reached through specific Ports of the Bridge. *Note:* An example of the information that Group members might wish to receive is a multicast video data stream. (C/LM) 802.1D-1998

(6) *See also:* channel group; Remote Bridge Group. (COM/C/LM) 802.1G-1996

group address (GP) (1) A predefined destination address that denotes a set of selected service access points (SAPs) from the medium access control (MAC) sublayer service offered by the DQDB layer to the logical link control (LLC) sublayer. (LM/C) 8802-6-1994

(2) The high order (left justified) bits assigned in the device address field of a FASTBUS address which are used to identify the segment on which a device is located; more than one group address may be assigned to a given segment. See base group address. (NID) 960-1993

group alerting (telephone switching systems) A central office feature for simultaneously signaling a group of customers from a control station providing an oral or recorded announcement. (COM) 312-1977w

group ambient temperature (cable or duct) (power distribution, underground cables) The no-load temperature in a group with all other cables or ducts in the group loaded. (PE) [4]

group-busy tone (telephone switching systems) A tone that indicates to operators that all trunks in a group are busy. (COM) 312-1977w

group code recording *See:* constant-linear-velocity recording.

group, commutating *See:* commutating group.

group delay (1) (network analyzers) In practice, $\Delta\omega$ must be sufficiently greater than zero to permit adequate measurement resolution. If $\Delta\omega$ is too large, however, the limit in the defining equation for group delay will not be reached, and the measured group delay will depend upon $\Delta\omega$. Therefore, the value of $\Delta\omega$ used in a measurement should be specified. (IM/HFIM) 378-1986w

(2) The derivative of radian phase with respect to radian frequency $\partial\phi/\partial\omega$. Group delay is equal to the phase delay for an ideal nondispersive delay device, but may differ greatly in actual devices where there is ripple in the phase vs. frequency characteristic (dispersive and nondispersive delay line). (UFFC) 1037-1992w

(3) In 10BROAD36, the rate of change of total phase shift, with respect to frequency, through a component or system. Group delay variation is the maximum difference in delay as a function of frequency over a band of frequencies. (C/LM) 802.3-1998

(4) *See also:* envelope delay. (AP/PROP) 211-1997

(5) (broadband local area networks) *See also:* time distortion. (LM/C) 802.7-1989r

group delay time The rate of change, with angular frequency, of the total phase shift through a network. *Notes:* 1. Group delay time is the time interval required for the crest of a group of interfering waves to travel through a 2-port network, where the component wave trains have slightly different individual frequencies. 2. Group delay time is usually very close in value to envelope delay and transmission time delay, and in the case of vanishing spectrum bandwidth of the signal these quantities become identical. *See also:* measurement system. (IM) 285-1968w

group (multicast) DSAP address A destination address assigned to a collection of LLCs to facilitate their being addressed collectively. The least significant bit shall be set equal to "1." (C/LM/CC) 8802-2-1998

group (multicast) destination service access point address (logical link control) A destination address assigned to a collection of LLCs to facilitate their being addressed collectively. The least significant bit shall be set equal to "1." (PE/TR) 799-1987w

group flashing light (illuminating engineering) A flashing light in which the flashes are combined in groups, each including the same number of flashes, and in which the groups are repeated at regular intervals. The duration of each flash is clearly less than the duration of the dark periods between flashes, and the duration of the dark periods between flashes is clearly less than the duration of the dark periods between groups. (EEC/IE) [126]

group ID (1) A nonnegative integer, which can be contained in an object of type *gid_t*, that is used to identify a group of system users. Each system user is a member of at least one group. When the identity of a group is associated with a process, a group ID value is referred to as a real group ID, an effective group ID, one of the (optional) supplementary group IDs, or an (optional) saved set-group-ID. (C/PA) 9945-1-1996, 9945-2-1993

(2) A value identifying a group of system users. Each system user is a member of at least one group. A group ID is defined in the package *POSIX_Process_Identification*. When the identity of a group is associated with a process, a group ID value is referred to as a real group ID, an effective group ID, one of the (optional) supplementary group IDs, or an (optional) saved set-group-ID. (C) 1003.5-1999

group index (fiber optics) (denoted N) For a given mode propagating in a medium of refractive index n, the velocity of light in vacuum, c, divided by the group velocity of the mode. For a plane wave of wavelength λ, it is related thus to the refractive index:

$$N = n - \lambda(dn/d\lambda)$$

See also: material dispersion parameter; group velocity. (Std100) 812-1984w

grouping (1) (facsimile) Periodic error in the spacing of recorded lines. *See also:* facsimile signal. (COM) 168-1956w

(2) (electroacoustics) Nonuniform spacing between the grooves of a disk recording. (SP) [32]

group item *See:* data aggregate.

group loop (analog computer) A potentially detrimental loop formed when two or more points in an electrical system that are nominally at group potential are connected by a conducting path such that either or both points are not at the same ground potential. (C) 165-1977w

group mark A mark that identifies the beginning or the end of a set of data; for example, a mark at the beginning of a block. (C) 610.10-1994w

group operation The operation of all poles of a multipole switch device by one operating mechanism. (SWG/PE) C37.100-1992

group path *See:* group path length.

group path length For a pulsed signal traveling between two points in a medium, the product of the speed of light in vacuum and the travel time of the pulse between the two points, provided the shape of the pulse is not significantly changed. (AP/PROP) 211-1997

groups, commutating, set of (thyristor converter) Two or more commutating groups that have simultaneous commutations. (IA/IPC) 444-1973w

group-series loop insulating transformer (power and distribution transformers) An insulating transformer whose secondary is arranged to operate a group of series lamps and/or a series group of individual-lamp transformers. *See also:* specialty transformer. (PE/TR) C57.12.80-1978r, [57]

group velocity (1) (A) (fiber optics) For a particular mode, the reciprocal of the rate of change of the phase constant with respect to angular frequency. *Note:* The group velocity equals the phase velocity if the phase constant is a linear function of the angular frequency. *See also:* group index; differential mode delay; phase velocity. **(B) (fiber optics)** Velocity of the signal modulating a propagating electromagnetic wave. *See also:* group index; phase velocity; differential mode delay. (Std100) 812-1984

(2) (waveguide) Of a traveling wave at a single frequency, and for a given mode, the velocity at which the energy is transported in the direction of propagation. (MTT) 146-1980w

(3) (of a traveling wave) The velocity of propagation of the envelope, provided that the envelope moves without significant change of shape. The magnitude of the group velocity is equal to the reciprocal of the rate of change of phase constant with angular frequency. (AP/PROP) 211-1997

grout (rotating machinery) A very rich concrete used to bond the feet, sole plates, bedplate, or rail of a machine to its foundation. (PE) [9]

grown junction (semiconductor) A junction produced during growth of a crystal from a melt. *See also:* semiconductor device. (ED) 216-1960w

GRP *See:* ground reference plane.

GRS *See:* generic response spectra.

G-scope A cathode-ray oscilloscope arranged to present a G-display. (AES/RS) 686-1990

G/T ratio (of an antenna) The ratio of the gain to the noise temperature of an antenna. *Notes:* 1. Usually the antenna-receiver system figure of merit is specified. For this case the figure of merit is the gain of the antenna divided by the system noise temperature referred to the antenna terminals. 2. The system figure of merit at any reference plane in the RF system is the same as that taken at the antenna terminals since both the gain and system noise temperature are referred to the same reference plane at the antenna terminals. *Synonym:* figure of merit. (AP/ANT) 145-1983s

G^2 drift (electronic navigation) A drift component in gyros (sometimes in accelerometers) proportional to the square of the nongravitational acceleration and caused by anisoelasticity of the rotor supports. Jargon. *See also:* navigation. (AES/RS) 686-1982s, [42]

guarantee *See:* work permit.

guard (1) (interference terminology) A conductor situated between a source of interference and a signal path in such a way that interference currents are conducted to the return terminal of the interference source without entering the signal path. *See also:* interference. (PE/PSR) [6]

(2) One or more conducting elements arranged and connected on an electrical instrument or measuring circuit so as to divert unwanted currents from the measuring means. (PE/TR) C57.12.90-1999

guardband (1) (data transmission) A frequency band between two channels which gives a margin of safety against mutual interference. (PE) 599-1985w

(2) (broadband local area networks) (channel) A designated unoccupied portion of the frequency spectrum that exists between two occupied portions of the spectrum. (LM/C) 802.7-1989r

guard channel One or more auxiliary parallel processing channels to control the main processing channel in order to reject interference that is partly in, but not centered on, the main channel. *Note:* Guard channels may be displaced in time (range), Doppler frequency, carrier frequency, or angle. Sometimes called "guard gates," "guard bands," or "sidelobe blanking" (not cancellation). Guard channel is used against range gate stealers, velocity gate stealers, sidelobe jamming, and to enhance apparent angle resolution in identification, friend or foe (IFF). May use auxiliary displays. *See also:* sidelobe blanker. (AES) 686-1997

guard circle (disk recording) An inner concentric groove inscribed, on disk records, to prevent the pickup from being damaged by being thrown to the center of the record. (SP) [32]

guarded (1) Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers or casings, barrier rails or screens, mats, or platforms to remove the likelihood of the dangerous contact or approach by persons or objects to a point of danger. (NESC/IA/T&D/PC) 463-1993w, [86], C2.2-1960

(2) Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats or platforms, designed to limit the likelihood under normal conditions, of dangerous approach or accidental contact by persons or objects. *Note:* Wires that are insulated but not otherwise protected are not normally considered to be guarded. (NESC) C2-1997

guarded enclosure An enclosure in which all openings giving direct access to live or rotating parts (except smooth rotating surfaces) are limited in size by the structural parts or by screens, baffles, grilles, expanded metal, or other means to prevent accidental contact with hazardous parts. The openings in the enclosure shall be such that they will not permit the passage of a rod larger than 12 mm (1/2 in) in diameter, except where the distance of exposed live parts from the guard is more than 102 mm (4 in); then the openings may be of such shape as not to permit the passage of a rod larger than 19 mm (3/4 in) in diameter. (IA/MT) 45-1998

guarded input (oscilloscopes) A shielded input where the shield is driven by a signal in phase with and equal in amplitude to the input signal. (IM) 311-1970w

guarded machine (rotating machinery) An open machine in which all openings giving direct access to live or rotating parts (except smooth shafts) are limited in size by the design of the structural parts, or by screens, grilles, expanded metal, etc., to prevent accidental contact with such parts. Such openings are of such size as not to permit the passage of a cylindrical rod 1/2 inch in diameter, except where the distance from the guard to the live or rotating parts is more than 4 inches: they are of such size as not to permit the passage of a cylindrical rod 3/4 inch in diameter. *See also:* asynchronous machine. (PE) [9]

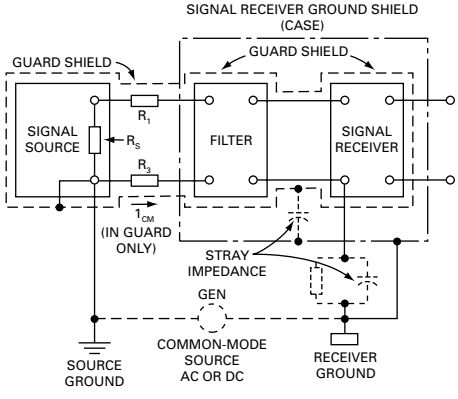
guarded release (telephone switching systems) A technique for retaining a busy condition during the restoration of a circuit to its idle state. (COM) 312-1977w

guard electrode (testing of electric power system components) One or more electrically conducting elements, arranged and connected in an electric instrument or measuring circuit so as to divert unwanted conduction or displacement currents from, or confine wanted currents to, the measurement device. (PE/PSIM) [55]

guard frequency A reserved area within a range of frequencies that separates two channels in a carrier system or frequency-derived channel. (C) 610.10-1994w

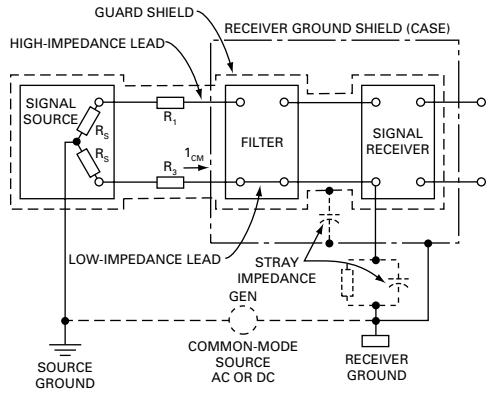
guard-ground system (interference terminology) A combination of guard shields and ground connections that protects all or part of a signal transmission system from common-mode interference by eliminating ground loops in the protected part. *Note:* Ideally, the guard shield is connected to the source ground. The source is usually grounded also to the source ground by bonding of the transducer to the test body. The filter, signal receiver, etc., are floating with respect to their own grounded cases. This necessitates physically isolating the signal receiver and filter chassis from the cases and using isolation transformers in power supplies, or isolating input circuits from cases and using isolating input transformers. This arrangement in effect places the signal receiver and filter electrically at the source. By means of a similar guard, the load can be placed effectively at the source. See the figures below. *See also:* interference.

guard shield (interference terminology) A guard that is in the form of a shielding enclosure surrounding all or part of the signal path. *Note:* A guard shield is effective against both capacitively coupled and conductively coupled interference whereas a simple guard conductor is usually effective only against conductively coupled interference. *See also:* guard-ground system; interference



[The guard shield consists of the signal source shield (if present), the signal shield, the filter shield, and the signal receiver shield.]

ideal guard shield



[Guard shield connections when connection at source is not convenient. When $(R_3 + R_S') \ll (R_1 + R_S)$, this arrangement causes common-mode current in the low-impedance lead, but protects the more critical high-impedance lead from current flow.]

guard shield (PE/PSR) [6]

guard signal A signal sent over a communication channel to make the system secure against false information by preventing or guarding against the relay operation of a circuit breaker or other relay action until the signal is removed and replaced by a tripping or permissive signal. (SWG/PE) C37.100-1992

guard structure *See:* crossing structure.

guard wire A grounded wire erected near a lower-voltage circuit or public crossing in such a position that a high (or higher) voltage overhead conductor cannot come into accidental contact with the lower-voltage circuit, or with persons or objects on the crossing without first becoming grounded by contact with the guard wire. *See also:* ground. (T&D/PE) [10]

GUI *See:* graphical user interface.

guidance (missile) The process of controlling the flight path through space through the agency of a mechanism within the missile. *See also:* guided missile. (EEC/PE) [119]

guide (1) (high-voltage switchgear) An attachment used to secure proper alignment when operating a fuse or switch. (SWG/PE) C37.40-1993

(2) Document in which alternative approaches to good practice are suggested but no clear-cut recommendations are made. (C/SE) 730.1-1995

guide bearing (rotating machinery) A bearing arranged to limit the transverse movement of a vertical shaft. *See also:* bearing. (PE) [9]

guided missile An unmanned device whose flight path through space may be controlled by a self-contained mechanism. *See also:* beam rider guidance; preset guidance; homing guidance; command guidance; guidance. (EEC/PE) [119]

guided mode *See:* bound mode.

guided ray (fiber optics) In an optical waveguide, a ray that is completely confined to the core. Specifically, a ray at radial position r having direction such that

$$\sin \theta(r) = [n^2(r) - n^2(a)]^{1/2}$$

where $\theta(r)$ is the angle the ray makes with the waveguide axis, $n(r)$ is the refractive index, and $n(a)$ is the refractive index at the core radius. Guided rays correspond to bound (or guided) modes in the terminology of mode descriptors. *Synonyms:* bound ray; trapped ray. *See also:* bound mode; leaky ray. (Std100) 812-1984w

guided wave A propagating wave whose energy is concentrated within or near boundaries between media having different electromagnetic properties. (AP/PROP) 211-1997

guide flux *See:* shield; form factor.

guideline (nuclear power quality assurance) A suggested practice that is not mandatory in programs intended to comply with a standard. The word "should" denotes a guideline; the word "shall" denotes a requirement. (PE/NP) [124]

guide pin A pin used for guidance of the connector during module insertion and extraction. (C/BA) 1101.3-1993

guide rib (1) A rib provided for initial module alignment at the time of installation into the chassis module slot. For conduction-cooled modules only, guide ribs form the heat transfer paths to the chassis and the mounting for the module retainers at the alpha and beta ends of the module heatsink. (C/BA) 1101.3-1993

(2) The alpha and beta ends of the module. These form the heat transfer paths and the mounting for the module retainers and provide for module alignment. (C/BA) 1101.4-1993, 1101.7-1995

guide wavelength (1) The wavelength in a waveguide, measured in the longitudinal direction. *See also:* waveguide. (AP/ANT) [35]

(2) (planar transmission lines) For a travelling wave in a uniform transmission line at a given frequency and for a given mode, the distance along the axis of propagation between corresponding points at which a field component (or the voltage or current) differs in phase by 2π rad. (MTT) 1004-1987w

guise A function that provides the capability for an entity to be viewed with one appearance by one group of participants, and with another appearance by another group. (DIS/C) 1278.1-1995

gulp Slang for a group of bytes. (C) 610.10-1994w

gun-control switch A switch that closes an electric circuit, thereby actuating the gun-trigger-operating mechanism of an aircraft, usually by means of a solenoid. (EEC/PE) [119]

Gunn oscillator (nonlinear, active, and nonreciprocal waveguide components) A direct dc-to-rf (direct current to radio frequency) conversion device in which the active element of the oscillator is a bulk III-V semiconductor device having a negative dc resistance characteristic. Conduction can occur in either direction, although the substrate contact is considered to be the cathode. The Gunn diode is a transferred electron device with practical output frequencies ranging from approximately 4 GHz (gigahertz) to more than 60 GHz. (MTT) 457-1982w

guy A tension member having one end secured to a fixed object and the other end attached to a pole, crossarm, or other structural part that it supports. *See also:* guy wire; tower. (T&D/PE) [10]

guy anchor The buried element of a guy assembly that provides holding strength or resistance to guy wire pull. *Note:* The anchor may consist of a plate, a screw or expanding device, a log of timber, or a mass of concrete installed at sufficient depth and of such size as to develop strength proportionate to weight of earth or rock it tends to move. The anchor is designed to provide attachment for the anchor rod which extends above surface of ground for convenient guy connection. *See also:* tower; guy. (T&D/PE) [10]

guy insulator An insulating element, generally of elongated form with transverse holes or slots for the purpose of insulating two sections of a guy or provide insulation between structure and anchor and also to provide protection in case of broken wires. Porcelain guy insulators are generally designed to stress the porcelain in compression, but wooden insulators equipped with suitable hardware are generally used in tension. *See also:* tower. (PE/T&D) 1410-1997, [10]

guy wire A stranded cable used for a semiflexible tension support between a pole or structure and the anchor rod, or between structures. *See also:* tower; guy. (T&D/PE) [10], 1410-1997

GW BAsic A dialect of BASIC, designed for use with microprocessors and microcomputers. (C) 610.13-1993w

Gypsy A specification language used primarily for computer security applications; one of the two specification languages accepted for use by the US National Computer Security Center. (C) 610.13-1993w

gyration impedance A characteristic of a gyrator that may be expressed in terms of the impedance matrix elements as

$$\sqrt{z \times z_{21}}$$

See also: gyrator. (CAS) [13]

gyrator (nonlinear, active, and nonreciprocal waveguide components) A two-port nonreciprocal device that provides insertion phases differing by 180 degrees for the two opposite directions of propagation. (MTT) 457-1982w

(2) (A) A directional phase changer in which the phase changes in opposite directions differ by π radians or 180 degrees. *See also:* waveguide. **(B)** Any nonreciprocal passive element employing gyromagnetic properties. *See also:* waveguide. (AP/ANT) [35], [84]

gyro (gyroscope) A device using angular momentum (usually of a spinning rotor) to sense angular motion of its case with respect to inertial space about one or two axes orthogonal to the spin axis. *Notes:* 1. This definition does not include more complex systems, such as stable platforms, using gyros as components. 2. Certain devices, such as laser gyros, that perform similar functions but do not use angular momentum may also be classified as gyros. (AES/GYAC) 528-1994

gyrocompass A compass consisting of a continuously driven Foucault gyroscope whose supporting ring normally confines the spinning axis to a horizontal plane, so that the earth's rotation causes the spinning axis to assume a position in a plane passing through the earth's axis, and thus to point to true north. (EEC/PE) [119]

gyrocompass alignment (inertial systems) A process of self-alignment in azimuth based upon measurements of misalignment drift about the nominal east-west axis of the system. *See also:* navigation. (AES) [42]

gyrocompassing *See:* gyrocompass alignment.

gyro flux-gate compass A device that uses saturable reactors in conjunction with a vertical gyroscope, to sense the direction of the magnetic north with respect to the aircraft heading. *Synonym:* gyro flux-valve compass. (EEC/PE/GYAC) [119]

gyro flux-valve compass *See:* gyro flux-gate compass.

gyro-frequency (f_H) The lowest natural frequency at which charged particles spiral in a fixed magnetic field. It is given by:

$$f_H = q \frac{|\vec{B}|}{2\pi m}$$

where

q = the charge of the particles
$|\vec{B}|$ = the magnitude of magnetic flux density
m = the mass of the particles.

For a linear medium, the gyro frequency is the same as cyclotron frequency. (AP/PROP) 211-1997

gyro gain The ratio of the output angle of the gimbal to the input angle of a rate-integrating gyro at zero frequency. It is numerically equal to the ratio of the rotor angular momentum to the damping coefficient. (AES/GYAC) 528-1994

gyro horizon electric indicator An electrically driven device for use in aircraft to provide the pilot with a fixed artificial horizon. *Note:* It indicates deviation from level flight. (EEC/PE) [119]

gyromagnetic effect (nonlinear, active, and nonreciprocal waveguide components) The phenomenon by which the magnetization of a material or medium, subjected to a magnetostatic field, upon disturbance relaxes back to equilibrium by damped precessional motion about the direction of that field. (MTT) 457-1982w

gyromagnetic filter (nonlinear, active, and nonreciprocal waveguide components) (garnet, YIG) A filter whose operation depends on the gyromagnetic effect. (MTT) 457-1982w

gyromagnetic limiter (nonlinear, active, and nonreciprocal waveguide components) (ferrite, garnet, YIG) A power limiter whose operation depends on saturation effects in a gyromagnetic material. (MTT) 457-1982w

gyromagnetic material (nonlinear, active, and nonreciprocal waveguide components) (medium) A material (medium), such as ferrite or garnet, capable of exhibiting the gyromagnetic effect. (MTT) 457-1982w

gyromagnetic permeability tensor (nonlinear, active, and nonreciprocal waveguide components) A tensor used to describe the permeability properties exhibited by a gyromagnetic material, appropriate to electromagnetic wave propagation. (MTT) 457-1982w

gyromagnetic resonance absorption (nonlinear, active, and nonreciprocal waveguide components) That amount of power continuously absorbed in a gyromagnetic material subjected to a magnetostatic field when a disturbance causes a steady precession of the magnetization of that material at a rate near the gyromagnetic resonance frequency. (MTT) 457-1982w

gyromagnetic resonance field (nonlinear, active, and nonreciprocal waveguide components) The magnetostatic field that, when applied to a gyromagnetic material, causes gyromagnetic resonance to occur at a particular frequency. (MTT) 457-1982w

gyromagnetic resonance frequency (nonlinear, active, and nonreciprocal waveguide components) The damped natural frequency for precession of the magnetization of a gyromagnetic material subjected to a particular magnetostatic field. (MTT) 457-1982w

gyromagnetic resonance linewidth (nonlinear, active, and nonreciprocal waveguide components) The difference between magnetostatic field levels slightly above and slightly below gyromagnetic resonance for which the gyromagnetic resonance absorption falls to half the peak value. This resonance occurs in a gyromagnetic material with uniformly precessing magnetization at a fixed frequency. (MTT) 457-1982w

gyro operating null (dynamically tuned gyro) The condition where minimum change in drift rate occurs due to changes in wheel speed. (AES/GYAC) 528-1994