U

UART *See:* universal asynchronous receiver/transmitter.

UAT *See:* unit auxiliaries transformer.

UC *See:* utility controller.

UDF *See:* unit development folder; software development file.

UDT *See:* unidirectional transducer.

U_{50} A transient overvoltage level that produces a 50% probability of sparkover. (T&D/PE) 516-1995

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

UHF *See:* ultra-high frequency.

UHF radar *See:* ultra-high-frequency radar.

uhv *See:* ultra-high voltage.

UI *See:* unscheduled interrupt; unit interval; user interface.

UIB *See:* unit_initialization_block.

ULF *See:* ultra-low frequency.

ULSI *See:* ultra-large scale integration.

ultimate deformation or displacement (raceway systems for Class 1E circuits for nuclear power generating stations) The maximum deformation or displacement an element can undergo without failure. (PE/NP) 628-1987r

ultimate load (raceway systems for Class 1E circuits for nuclear power generating stations) The maximum load an element can carry without failure as obtained from failure load tests or manufacturer's recommendations, whichever is less. (PE/NP) 628-1987r

ultimately controlled variable (control) The variable the control of which is the end purpose of the automatic control system. *See also:* feedback control system. (IM/IA/ICTL/IAC) [120], [60]

ultimate mechanical strength (insulators) The load at which any part of the insulator fails to perform its function of providing a mechanical support without regard to electrical failure. *See also:* insulator. (EEC/IEPL) [89]

ultimate mechanical strength-static (UMS-static) The load at which any part of the surge arrester fails to perform its mechanical function. (SPD/PE) C62.11-1999

ultimate period *See:* undamped frequency.

ultimate strength (1) (power distribution) The tensile load at which any part of the insulator fails to perform its function of providing mechanical support based on a short term test. (T&D/PE) 1024-1988w

(2) (power distribution) The rated breaking strength of a material determined by the results of tests to destruction. (T&D/PE) 751-1990

ultimate strength rating The minimum tensile strength allowed on a test of five insulators. (T&D/PE) 1024-1988w

ultra-audible frequency *See:* ultrasonic frequency.

ultra-audion oscillator *See:* Colpitts oscillator.

ultrafiche In micrographics, microfiche with images reduced more than ninety times. (C) 610.2-1987

ultra-high frequency (UHF) 300 MHz to 3 GHz. *See also:* radio spectrum. (AP/PROP) 211-1997

ultra-high-frequency radar (UHF radar) A radar operating at frequencies between 300 MHz and 1000 MHz, usually in one of the International Telecommunication Union (ITU) bands allocated for radiolocation: 420–450 MHz or 890–942 MHz. *Note:* Radars between 1 GHz and 3 GHz, although within the UHF band as defined by the ITU, are described as L-band or S-band radars, as appropriate. (AES) 686-1997

ultra-high voltage (uhv) A term applied to voltage levels that are higher than 800 000 V. (T&D/PE) 516-1995

ultra-high-voltage system An electric system having a maximum rms ac (root-mean-square alternating current) voltage above 800 000 V to 2 000 000 V. (PE/TR) C57.12.80-1978r

ultra-large scale integration Pertaining to an integrated circuit containing more than 106 elements. *Contrast:* medium scale integration; large scale integration; very large scale integration; small scale integration. (C) 610.10-1994w

ultra-low frequency (ULF) Lower than 3 Hz. *See also:* radio spectrum. (AP/PROP) 211-1997

ultrasonic cross grating (grating) A space grating resulting from the crossing of beams of ultrasonic waves having different directions of propagation. *Note:* The grating may be two- or three-dimensional. (SP) [32]

ultrasonic delay line A transmission device, in which use is made of the propagation time of sound to obtain a time delay of a signal. (SP) [32]

ultrasonic depth finder (navigation aids) A direct reading instrument that determines the depth of water by measuring the time interval between the emission of an ultrasonic signal and the return echo from the bottom. (AES/GCS) 172-1983w

ultrasonic frequency (supersonic frequency) (ultra-audible frequency) A frequency lying above the audio-frequency range. The term is commonly applied to elastic waves propagated in gases, liquids, or solids. *Note:* The word ultrasonic may be used as a modifier to indicate a device or system employing or pertaining to ultrasonic frequencies. The term supersonic, while formerly applied to frequency, is now generally considered to pertain to velocities above those of sound waves. Its use as a synonym of ultrasonic is now deprecated. *See also:* signal wave. (SP) [32]

ultrasonic generator A device for the production of sound waves of ultrasonic frequency. (EEC/PE) [119]

ultrasonic grating constant The distance between diffracting centers of the sound wave that is producing particular light diffraction spectra. (SP) [32]

ultrasonic light diffraction Optical diffraction spectra or the process that forms them when a beam of light is passed through the field of a longitudinal wave. (SP) [32]

ultrasonic space grating (grating) A periodic spatial variation of the index of refraction caused by the presence of acoustic waves within the medium. (SP) [32]

ultrasonic stroboscope A light interrupter whose action is based on the modulation of a light beam by an ultrasonic field. (SP) [32]

ultraviolet (fiber optics) The region of the electromagnetic spectrum between the short wavelength extreme of the visible spectrum (about 0.4 μm) and 0.04 μm. *See also:* light; infrared. (Std100) 812-1984w

ultraviolet-erasable programmable read-only memory (UV-EPROM) *See:* erasable programmable read-only memory.

ultraviolet flame detector (fire protection devices) A device whose sensing element is responsive to radiant energy outside the range of human vision (below approximately 4000 Angstroms). (NFPA) [16]

ultraviolet radiation (1) (illuminating engineering) For practical purposes any radiant energy within the wavelength 10 to 380 nm (nanometers) is considered ultraviolet radiation. *Note:* On the basis of practical applications and the effect obtained, the ultraviolet region often is divided into the following bands:

a) ozone-producing: 180–220 nm
b) bactericidal (germicidal): 220–300 nm
c) erythemal: 280–320 nm
d) "black light": 320–400 nm

There are no sharp demarcations between these bands, the indicated effects usually being produced to a lesser extent by longer and shorter wavelengths. For engineering purposes, the "black light" region extends slightly into the visible portion of the spectrum. *See also:* regions of electromagnetic spectrum. (EEC/IE) [126]

(2) (laser maser) Electromagnetic radiation with wavelengths smaller than those for visible radiation; for the purposes of IEEE Std 586-1980, 0.2 to 0.4 μm. (LEO) 586-1980w

umbrella antenna A type of top-loaded short vertical antenna in which the top-loading structure consists of elements sloping down toward the ground but not connected to it. (AP/ANT) 145-1993

umbrella reflector antenna An antenna constructed in a form similar to an umbrella that can be folded for storage or transport and unfolded to form a large reflector antenna for use. (AP/ANT) 145-1993

UNA *See:* upstream neighbor's address.

unaligned A term that refers to the constraints placed on the address of the data; the address is unconstrained and may be any integer value. (C/MM) 1596.5-1993

unaligned address An unaligned address is a noninteger multiple of the data block size. The maximum data block size that can be transferred by an IUT Master is the product of data width and data length. (C/BA) 896.4-1993w

unannounced unavailability *See:* unavailability.

unary operation *See:* monadic operation.

unary operator *See:* monadic operator.

unary relation A relation with one attribute. (C) 610.5-1990w

unasserted The state of a signal line. Since all signal lines are active low, this state is the high state for all bus lines. (C/MM) 1196-1987w

unassigned Describes a value (for example, an **address space identifier [ASI]** number), the semantics of which are not architecturally mandated and may be determined independently by each implementation (preferably within any guidelines given). (C/MM) 1754-1994

unattainable limit A limit that is undefined for a target system or that has a magnitude exceeding the POSIX.1 {3} specified minimum and that would require an unreasonable amount of time or system resources to test. (C/PA) 2003.1-1992

unattended automatic exchange A normally unattended telephone exchange, wherein the subscribers, by means of calling devices, set up in the central office the connections to other subscribers or to a distant central office. (EEC/PE) [119]

unauthorized data modification Alteration of data not consistent with the defined security policy. (C/LM) 802.10-1998

unauthorized disclosure The process of making information available to unauthorized individuals, entities, or processes. (C/LM) 8802-11-1999

unauthorized resource use Use of a resource not consistent with the defined security policy. (C/LM) 8802-11-1999

unavailability (1) (nuclear power generating station) The probability that an item or system will not be operational at a future instant in time. Unavailability may be a result of the item being repaired (repair unavailability) or it may occur as a result of malfunctions. Unavailability is the complement of availability. (PE/NP) 352-1987r

(2) (the numerical complement of availability) Unavailability may occur as a result of the item being repaired (repair unavailability), tested (testing unavailability), or it may occur as a result of undetected malfunctions (unannounced unavailability). (PE/NP) 577-1976r

(3) (nuclear power plants) The numerical complement of availability. Unavailability may occur as a result of the item being repaired or a detected malfunction (repair unavailability), tested (testing unavailability), or it may occur as a result of undetected malfunctions (unannounced unavailability). (PE/NP) 338-1987r

(4) (power outages) Unavailability = outage time/reporting period time. *Note:* Some examples are:

1) Forced unavailability = forced outage time/reporting period time.
2) Scheduled unavailability = scheduled outage time/reporting period time.

(PE/PSE) 859-1987w

(5) (telecommunications) A state of nonservice that occurs when one or more of the following is true:

a) A bit-error ratio worse than one in ten to the *n* power for a specific number of consecutive observation periods of fixed duration has occurred;
b) A block-error ratio worse than one in ten to the *n* power, for a specific number of consecutive observation periods of fixed duration, has occurred;
c) More than a specific number of consecutive severely errored units of time has occurred;
d) An LOS event is detected.

(COM/TA) 1007-1991r

(6) The long-term average fraction of time that a component or system is out of service due to failures or scheduled outages. An alternative definition is the steady-state probability that a component or system is out of service due to failures or scheduled outages. Mathematically, unavailability = (1– availability). (IA/PSE) 493-1997, 399-1997

(7) The numerical complement of availability. Unavailability may occur as a result of the item being repaired (that is, repair unavailable) or as a result of undetected malfunctions (that is, unannounced unavailability). (PE/NP) 933-1999

unavailability margin (nuclear power generating station) The favorable difference between the desired goal and the calculated or observed unavailability. (PE/NP) 577-1976r

unavailable (electric generating unit reliability, availability, and productivity) The state in which a unit is not capable of operation because of operational or equipment failures, external restrictions, testing, work being performed, or some adverse condition. The unavailable state persists until the unit is made available for operation, either by being synchronized to the system (in-service state) or by being placed in the reserve shut-down state. (PE/PSE) 762-1987w

unavailable generation (electric generating unit reliability, availability, and productivity) The difference between the energy that would have been generated if operating continuously at 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.

$$UG = (\text{planned outage hours} + \text{unplanned outage hours} + \text{equivalent unit deratedhours}) \cdot \text{maximum capacity}$$
$$= (POH + UOH + EUNDH) \cdot MC$$

(PE/PSE) 762-1987w

unavailable hours (electric generating unit reliability, availability, and productivity) The number of hours a unit was in the unavailable state. *Note:* Unavailable hours are the sum of planned outage hours and unplanned outage hours, or the sum of planned outage hours, forced outage hours, and maintenance outage hours. (PE/PSE) 762-1987w

unavailable seconds The time interval in seconds, starting with the first of ten or more consecutive SES and ending at the beginning of ten consecutive non-SES. *See also:* unavailability. (COM/TA) 1007-1991r

unavailable time The time during which a device cannot be accessed or used. *Contrast:* available time. (C) 610.10-1994w

unbalance (data transmission) A differential mutual impedance or mutual admittance between two circuits that ideally would have no coupling. (PE) 599-1985w

unbalanced (1) (to ground) The state of impedance on a two-wire circuit when the impedance-to-ground of one wire is different from the impedance-to-ground of the other wire. *Contrast:* balanced. (C) 610.7-1995

(2) Pertaining to a relationship between two or more objects that are not alike or unsymmetrical in some respect. *Contrast:* balanced. (C) 610.10-1994w

unbalanced circuit A circuit, the two sides of which are inherently electrically unlike with respect to a common reference point, usually ground. *Note:* Frequently, unbalanced signifies a circuit, one side of which is grounded. (IE) [43]

unbalanced error (A) A set of error values in which the maximum and minimum are not necessarily opposite in sign and equal in magnitude. **(B)** A set of error values whose average is not zero. *Contrast:* balanced error. (C) 1084-1986

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

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

unbalanced modulator *See:* signal.

unbalanced load regulation A specification that defines the maximum voltage difference between the three output phases that will occur when the loads on the three are of different levels. (IA/PSE) 1100-1999

unbalanced phase components (thyristor) In multiphase systems unbalance of the phases can be expressed in terms of negative, positive, and zero sequence components. *Note:* Defined for the load only under conditions of balanced lines and balanced loads. (IA/IPC) 428-1981w

unbalanced strip line *See:* strip-type transmission line.

unbalanced three-phase system (self-commutated converters) (converters having ac output) A three-phase system in which the rms (root-mean-square) value of at least one phase voltage (or current) or line-to-line voltage is significantly different from the others, or in which the phase angle displacement between any pair of phases significantly differs from 120 degrees. *Note:* In an unbalanced three-phase system, negative or zero-sequence components exist. (IA/SPC) 936-1987w

unbalanced wire circuit (data transmission) One whose two sides are inherently electrically unlike. (PE) 599-1985w

unbalance factor (self-commutated converters) (converters having ac output) The ratio of the negative sequence component to the positive sequence component. (IA/SPC) 936-1987w

unbalance ratio (converters having ac output) (self-commutated converters) The difference between the highest and the lowest fundamental rms (root-mean-square) values in a three-phase system, referred to the average of the three fundamental rms values of current or voltages, respectively. (IA/SPC) 936-1987w

unbiased A measurement of a random variable is called unbiased if the expected value of the measurement is equal to the stated value of the property being measured. (NI) N42.23-1995

unbiased rounding A rounding process in which the rules for adjusting the retained numeral ensure that the average rounding error is zero. (C) 1084-1986w

unbiased telephone ringer A telephone ringer whose clapper-driving element is not normally held toward one side or the other, so that the ringer will operate on alternating current. Such a ringer does not operate reliably on pulsating current. *Note:* A ringer that is weakly biased so as to avoid tingling when dial pulses pass over the lines may be referred to as an unbiased ringer. *See also:* telephone station. (EEC/PE) [119]

unbind To remove the association between a network address and an endpoint. (C) 1003.5-1999

unblanking Turning on of the cathode-ray-tube beam. *See also:* oscillograph. (IM/HFIM) [40]

unblock* *See:* deblock.

* Deprecated.

unblocked mode A function that behaves like a blocked function, except that when it returns, the function may be incomplete and the application process may have to invoke the interface again. (C) 1003.5-1999

unblocked record A record that is contained in exactly one entire block. *See also:* blocked record; spanned record. (C) 610.5-1990w

unblocking Logic that will allow a permissive pilot scheme to trip for an internal fault within a time window, even though the pilot TRIP signal is not present when the signal is lost due to the fault. (PE/PSR) C37.113-1999

unbound mode (fiber optics) Any mode that is not a bound mode; a leaky or radiation mode of the waveguide. *See also:* bound mode; cladding mode; leaky mode. (Std100) 812-1984w

unbundle The separation of arrow meanings, expressed by branching arrow segments, i.e., the separation of object types from an object type set. (C/SE) 1320.1-1998

uncached data-access operation A data-access operation, when used to access data that is not cached. (C/MM) 1596.5-1993

uncertainty (1) (radiation protection) The estimated bounds of the deviation from the mean value, generally expressed as a percent of the mean value. Ordinarily taken as the sum of the random errors at the 95% confidence level and the estimated upper limit of the systematic error. (NI) N323-1978r

(2) (general) The estimated amount by which the observed or calculated value of a quantity may depart from the true value. *Note:* The uncertainty is often expressed as the average deviation, the probable error, or the standard deviation. *See also:* measurement system; measurement uncertainty. (MIL/IM/HFIM) [2], [40]

(3) (electrothermic power meters) The assigned allowance for the systematic error, together with the random error attributed to the imprecision of the measurement process. (IM) 470-1972w, 544-1975w

(4) (germanium spectrometers) The likely inaccuracy of a reported value, expressed in terms of estimated standard deviations. *See also:* combined uncertainty. (NI) N42.14-1991

(5) (mathematics of computing) The upper bound on an absolute error or relative error. (C) 1084-1986w

(6) An estimated limit based on an evaluation of the various sources of error. (PE/PSIM) 4-1995

unconditional branch* *See:* unconditional jump.

* Deprecated.

unconditional jump (1) An instruction that interrupts the normal process of obtaining instructions in an ordered sequence and specifies the address from which the next instruction must be taken. *See also:* jump. (C) 162-1963w

(2) A jump that takes place regardless of execution conditions. *Contrast:* conditional jump. (C) 610.12-1990

unconditional jump instruction A computer instruction that specifies an unconditional jump. *Contrast:* conditional jump instruction. (C) 610.10-1994w

unconditionally invalid date-component value A date-component value that is improperly produced or improperly accepted by a system element independent of other date-component values. *Note:* In the Julian and Gregorian calendars, the following are the unconditionally invalid date-component values:

— Values of the day-of-the-month less than 1 or greater than 31.
— Values of numeric-month less than 1 or greater than 12.
— Values of a non-numeric month (text string) outside its normal list of culturally-accepted values.
— Values of a day-of-the-year less than 1 or greater than 366.

Normalization of invalid date-component values to valid date-component values does not constitute improper acceptance of a date-component. (C/PA) 2000.1-1999

unconditional transfer of control *See:* unconditional jump.

uncontrolled ESD environment One in which no attempt is made to maintain charge levels on humans and objects below a certain level. (EMC) C63.16-1993

uncontrolled environment Locations where there is the exposure of individuals who have no knowledge or control of their exposure. (NIR) C95.1-1999

uncontrolled slip The loss or gain of one or more digit positions or a set of consecutive digit positions in a digital signal that is not a controlled slip of the timing processes associated with transmission or switching of the digital signal, and in which either the magnitude or the instant of that loss or gain is not controlled. (COM/TA) 1007-1991r

uncontrolled variable A factor affecting the outcome of an experiment that is designed to assess other factors and which is unknown to, or unaccounted for, by the experimenter. *Synonym:* confounding variable. (T&D/PE) 539-1990

uncorrelated jitter The portion of the total jitter that is independent of the data pattern. This jitter is generally caused by noise that is uncorrelated among stations and therefore grows in a nonsystematic way along the ring. *Synonyms:* noise jitter; nonsystematic jitter. (C/LM) 8802-5-1998

undamped frequency (A) (frequency, natural) Of a second-order linear system without damping, the frequency of free oscillation in radians per unit time or in hertz. **(B) (frequency, natural)** Of any system whose transfer function contains the quadratic factor $s^2 + 2\zeta\omega_n s + \omega_n{}^2$ in the denominator, the value ω_n $(0 < \zeta < 1)$. **(C) (frequency, natural)** Of a closed loop control system or controlled system, a frequency at which continuous oscillation (hunting) can occur without periodic stimuli. *Note:* In linear systems, the undamped frequency is the phase crossover frequency. With proportional control action only, the undamped frequency of a linear system may be obtained by raising (in most cases) the proportional gain until hunting occurs. This value of gain has been called the "ultimate gain" and the undamped period the "ultimate period." *Synonym:* natural frequency. (IM/PE/EDPG) [120], [3]

undefined (1) A value or behavior is undefined if the standard imposes no portability requirements on applications for erroneous program construct, erroneous data, or use of an indeterminate value. Implementations (or other standards) may specify the result of using that value or causing that behavior. An application using such behaviors is using extension. (C/PA) 1003.1-1988s

(2) Describes an aspect of the architecture that has deliberately been left unspecified. Software should have no expectation of, nor make any assumptions about, such an architectural feature or behavior. Use of such a feature may deliver random results, may or may not cause a trap, may vary among implementations, and may vary with time on a given implementation. Notwithstanding any of the above, undefined aspects of the architecture shall not cause security holes, such as allowing user software to access supervisor state, put the processor into supervisor state, or put the processor into an unrecoverable state. (C/MM) 1754-1994

underbilling error Occurs when a call is billed less that it should be due to shortened time interval or wrong class of service or time zone given by the switch. (COM/TA) 973-1990w

underbuilt shield wires Shield wires arranged among or below the average height of the protected phase conductors for the purposes of lowering the OHGW system impedance and improving coupling. Underbuilt shield wires may be bonded to the structure directly or indirectly through short gaps. Insulated earth return conductors on HVDC transmission lines and/or faulted phases both function as underbuilt shield wires. (PE/T&D) 1243-1997

underbunching A condition representing less than optimum bunching. (ED) 161-1971w

undercounter dumbwaiter A dumbwaiter that has its top terminal landing located underneath a counter and that serves only this landing and the bottom terminal landing. (EEC/PE) [119]

undercurrent or underpower relay (power system device function numbers) A relay that functions when the current or power flow decreases below a predetermined value. (SUB/PE) C37.2-1979s

undercurrent relay (1) A relay that operates when the current through the relay is equal to or less than its setting. *See also:* relay. (PE/PSR) [6]

(2) A relay that operates when the current is less than a predetermined value. (SWG/PE) C37.100-1992

undercurrent release A release that operates when the current in the main circuit is equal to or less than the release setting. *Synonym:* undercurrent trip. (SWG/PE) C37.100-1992

undercurrent trip *See:* undercurrent release.

undercurrent tripping *See:* undercurrent release.

underdamped Damped insufficiently to prevent oscillation of the output following an abrupt input stimulus. *Note:* In an underdamped linear second-order system, the roots of the characteristic equation have complex values. *See also:* damped harmonic system. (IA/IAC) [60]

underdamped period (instrument) (periodic time) The time between two consecutive transits of the pointer or indicating means in the same direction through the rest position, following an abrupt change in the measurand. (PE/EEC) [119]

underdamping (periodic damping) The special case of damping in which the free oscillation changes sign at least once. A damped harmonic system is underdamped if F^2 less MS. *See also:* damped harmonic system. (Std100) 270-1966w

underdome bell A bell whose mechanism is mostly concealed within its gong. *See also:* protective signaling. (EEC/PE) [119]

underfilm corrosion Corrosion that occurs under films in the form of randomly distributed hairlines (filiform corrosion). (IA) [59]

undefined behavior Behavior for which the standard imposes no requirements (e.g., use of an erroneous program construct). Permissible undefined behavior ranges from:

— Ignoring a situation completely with unpredictable results.
— Behaving during translation or program execution in a documented manner characteristic of the environment (with or without the issuance of a diagnostic message).
— Terminating a translation or execution (with the issuance of a diagnostic message).

Note: Many erroneous program constructs do not engender undefined behavior; they are required to be diagnosed. (C/DA) 1481-1999

underfloor raceway A raceway suitable for use in the floor. *See also:* raceway. (EEC/PE) [119]

underflow (mathematics of computing) The condition that arises when the result of a floating-point arithmetic operation is smaller than the smallest non-zero number that can be represented in a digital computer. *Synonym:* arithmetic underflow. (C) 1084-1986w

underflow error (mathematics of computing) The error caused by an underflow condition in computer arithmetic. (C) 1084-1986w

underflow exception (software) An exception that occurs when the result of an arithmetic operation is too small a fraction to be represented by the storage location designated to receive it. *See also:* operation exception; protection exception; data exception; addressing exception; overflow exception. (C) 610.12-1990

underground cable (1) A cable for installation below the surface of the earth in ducts or conduits so it can readily be removed without disturbing the surrounding earth, and that is designed to withstand submersion in ground waters. (PE/PSC) 789-1988w

(2) A cable installed below the surface of the ground. *Note:* This term is usually applied to cables installed in ducts or conduits or under other conditions such that they can readily be removed without disturbing the surrounding ground. *See also:* cable; tower. (T&D/PE) [10]

underground collector or plow A current collector, the function of which is to make contact with an underground contact rail. *See also:* contact conductor. (VT/LT) 16-1955w

underground duct system (raceway systems for Class 1E circuits for nuclear power generating stations) Metallic or nonmetallic conduit enclosed in reinforced concrete or directly buried, including access points. (PE/NP) 628-1987r

underground system service-entrance conductors The service conductors between the terminals of the service equipment and the point of connection to the service lateral. Where service equipment is located outside the building walls, there may be no service-entrance conductors, or they may be entirely outside the building. (NESC/NEC) [86]

under-jacket type A moisture barrier applied under the jacket and over the metallic shield or concentric neutral of a cable. Also, a combination moisture barrier and shield. (PE/IC) 1142-1995

underlap, *X* (facsimile) The amount by which the center-to-center spacing of the recorded spots exceeds the recorded spot *X* dimension. *Note:* This effect arises in that type of equipment which responds to a constant density in the subject copy by a succession of discrete recorded spots. *See also:* recording. (COM) 168-1956w

underlap, *Y* (facsimile) The amount by which the nominal line width exceeds the recorded spot *Y* dimension. *See also:* recording. (COM) 168-1956w

underreaching protection A form of protection in which the relays at a given terminal do not operate for faults at remote locations on the protected equipment, the given terminal being cleared either by other relays with different performance characteristics or by a transferred trip signal from a remote terminal similarly equipped with underreaching relays. (SWG/PE) C37.100-1992

undershoot (1) (television) (rounding) That part of the distorted wave front characterized by a decaying approach to the final value. *Note:* Generally, undershoots are produced in transfer devices having insufficient transient response. (BT/AV) 201-1979w

(2) (oscilloscopes) In the display of a step function (usually of time), that portion of the waveform that, following any overshoot or rounding that may be present, falls below its nominal or final value. (IM) 311-1970w

(3) The peak value of an impulse voltage or current that passes through zero in the opposite polarity of the initial peak. (PE/PSIM) 4-1995

under-sized packet *See:* short packet.

underslung car frame A car frame to which the hoisting-rope fastenings or hoisting rope sheaves are attached at or below the car platform. *See also:* hoistway. (EEC/PE) [119]

underspeed (hydraulic turbines) Any speed below rated speed expressed as a percent of rated speed. (PE/EDPG) 125-1977s

underspeed device (power system device function numbers) A device that functions when the speed of a machine falls below a predetermined value. (SUB/PE) C37.2-1979s

undervoltage (1) When used to describe a specific type of long duration variation, refers to a measured voltage having a value less than the nominal voltage for a period of time greater than 1 min. Typical values are 0.8–0.9 pu. (SCC22) 1346-1998

(2) When used to describe a specific type of long duration variation, refers to an RMS decrease in the ac voltage, at the power frequency, for a period of time greater than 1 min. Typical values are 0.8-0.9 pu. (IA/PSE) 1100-1999

undervoltage protection (1) The effect of a device, operative on the reduction or failure of voltage, to cause and maintain the interruption of power in the main circuit. (IA/MT/PKG) 45-1998, 333-1980w

(2) A form of protection that operates when voltage is less than a predetermined value. *Synonym:* low-voltage protection. (SWG/PE) C37.100-1992

undervoltage relay A relay that operates when its voltage is less than a predetermined value. (SWG/PE/SUB) C37.100-1992, C37.2-1979s

undervoltage release (1) (trip) A release that operates when the voltage of the main circuit is equal to less than the release setting. (SWG/PE) C37.100-1992

(2) The effect of a device, operative on the reduction or failure of voltage, to cause the interruption of power to the main circuit, but not to prevent the re-establishment of the main circuit on return of voltage. (IA/MT) 45-1998

undervoltage tripping *See:* undervoltage release.

underwater log A device that indicates a ship's speed based on the pressure differential, resulting from the motion of the ship relative to the water, as developed in a Pitot tube system carried by a retractable support extending through the ship's hull. Continuous integration provides indication of total distance travelled. The ship's draft is indicated, based on static pressure. (EEC/PE) [119]

underwater sound projector A transducer used to produce sound in water. *Notes:* 1. There are many types of underwater sound projectors whose definitions are analogous to those of corresponding loudspeakers, for example, crystal projector, magnetic projector, etc. 2. Where no confusion will result, the term underwater sound projector may be shortened to projector. *See also:* microphone. (SP) [32]

undesirable response rate The percentage of undesirable ESD responses exhibited by the EUT when subjected to a specific number of ESD events. (EMC) C63.16-1993

undesired conducted power (frequency-modulated mobile communications receivers) Radio-frequency power that is present at the antenna, power terminals, or any other interfacing terminals. (VT) 184-1969w

undesired radiated power (frequency-modulated mobile communications receivers) Radio-frequency power radiated from the receiver that can be measured outside a specified area. (VT) 184-1969w

undetected error rate (data transmission) The ratio of the number of bits, unit elements, characters, blocks incorrectly received but undetected or uncorrected by the error-control equipment, to the total number of bits, unit elements, characters, blocks sent. (COM) [49]

undeveloped stage The time prior to the installation of permanent structures, site preparation, preliminary surveying, surface stripping, fence erection, road building, equipment and material staging, furnishing construction power, etc. (PE/SUB) 1402-2000

undirected graph A graph in which no direction is implied in the internode connections. *Contrast:* directed graph. (C) 610.5-1990w, 610.12-1990

undisturbed-ONE output (magnetic cell) A ONE output to which no partial-read pulses have been applied since that cell was last selected for writing. *See also:* coincident-current selection. (Std100) 163-1959w

undisturbed-ZERO output (magnetic cell) A ZERO output to which no partial-write pulses have been applied since that cell was last selected for reading. *See also:* coincident-current selection. (Std100) 163-1959w

undressed timber Rough unsurfaced lumber. (T&D/PE) 751-1990

undulating current (rotating electric machinery) Current that remains unidirectional, but the ripple of which exceeds that defined for smooth current. (PE/EM) 11-1980r

unexposed side (cable penetration fire stop qualification test) The side of a fire-rated wall, floor-ceiling assembly, or floor that is opposite to the fire side. *Synonym:* cold side. (PE) 634-1978w

unfired tube (microwave gas tubes) The condition of the tube during which there is no radio-frequency glow discharge at

either the resonant gap or resonant window. *See also:* gas tube. (ED) 161-1971w

Unformatted Page (UP) A Next Page encoding that contains an unformatted 12-bit message field. Use of this field is defined through Message Codes and information contained in the UP. (C/LM) 802.3-1998

unfused capacitor A capacitor without any internal fuses.power systems relaying. (PE) C37.99-2000

unfused capacitor bank Any capacitor bank without fuses, internal or external.power systems relaying. (PE) C37.99-2000

unfused switch A switch which has no fuses directly attached or in close proximity to the switch. (SWG/PE) C37.20.4-1996

ungrounded (electric power) A system, circuit, or apparatus without an intentional connection to ground except through potential-indicating or measuring devices or other very-high-impedance devices. *Note:* Though called ungrounded, this type of system is in reality coupled to ground through the distributed capacitance of its phase windings and conductors. In the absence of a ground fault, the neutral of an ungrounded system under reasonably balanced load conditions will usually be close to ground potential, being held there by the balanced electrostatic capacitance between each phase conductor and ground. (IA/PE/PSE/TR) 142-1982s, C57.12.80-1978r

ungrounded potentiometer (analog computer) A potentiometer with neither end terminal attached directly to ground. *See also:* electronic analog computer. (C) 165-1977w, 166-1977w

ungrounded system (systems grounding) A system, circuit, or apparatus without an intentional connection to ground, except through potential-indicating or measuring devices or other very-high-impedance devices. (PE/C/IA/PSE) 1313.1-1996, 142-1982s

unguarded release (telephone switching systems) A condition during the restoration of a circuit to its idle state when it can be prematurely seized. (COM) 312-1977w

uniconductor waveguide A waveguide consisting of a cylindrical metallic surface surrounding a uniform dielectric medium. *Note:* Common cross-sectional shapes are rectangular and circular. *See also:* waveguide. (MTT) 148-1959w, 146-1980w

unicast A transmission mode in which a single message is sent to a single network destination, (i.e., one-to-one). (DIS/C) 1278.1-1995, 1278.2-1995

unicast address (local area networks) An individual address identifying an individual end node. (C) 8802-12-1998

unicast frame A frame that is addressed to a single recipient, not a broadcast or multicast frame. *Synonym:* directed address. (C/LM) 8802-11-1999

unidirectional A connection between telegraph sets, one of which is a transmitter and the other a receiver. (COM) [49]

unidirectional antenna An antenna that has a single well-defined direction of maximum gain. *See also:* antenna. (AP/ANT) 145-1983s

unidirectional bus (1) (programmable instrumentation) A bus used by any individual device for one-way transmission of messages only; that is, either input only or output only. (IM/AIN) 488.1-1987r

(2) (696 interface devices) (signals and paths) A bus used by a device for one-way transmission of messages, that is, either input only or output only. (MM/C) 696-1983w

unidirectional current A current that has either all positive or all negative values. (Std100) 270-1966w

unidirectional microphone A microphone that is responsive predominantly to sound incident from a single solid angle of one hemisphere or less. *See also:* microphone. (SP) [32]

unidirectional operation When the peripheral and host communicate data in one direction only. Compatibility Mode is unidirectional in the forward direction; Byte and Nibble Modes are unidirectional in the reverse direction. (C/MM) 1284-1994

unidirectional pulse train (signal-transmission system) Pulses in which pertinent departures from the normally constant value occur in one direction only. *See also:* pulse. (IM/WM&A) 194-1977w

unidirectional transducer (UDT) (1) (unilateral transducer) A transducer that cannot be actuated at its output by waves in such a manner as to supply related waves at its input. *See also:* transducer. (Std100) 270-1966w

(2) A transducer capable of radiating and receiving surface acoustic waves in or from a single direction. (UFFC) 1037-1992w

unified atomic mass unit The unit equal to the fraction 1/12 of the mass of an atom of the nuclide ^{12}C: 1 u = 1.660 53 × 10^{-27} kg approximately. (QUL) 268-1982s

unified s-band system (communication satellite) A communication system using an s-band carrier (2000−2300 megahertz) combining all links into one spectrum. The functions of spacecraft command, data transmission, tracking, ranging, etc., are transmitted on separate carrier frequencies for earth-space and space-earth links. (COM) [19]

unified transaction (1) A transaction in which the request and response subactions are completed in an indivisible sequence; i.e., no other subactions may be performed on the bus until this response subaction is complete. Most buses use unified transactions, but SCI uses only split transactions. The concept of a unified transaction is only relevant to SCI in the context of bridges to other buses. (C/MM) 1596-1992

(2) A transaction in which the request and response subactions are completed as an indivisible sequence. Between the initiation of the request and the completion of the response, other subactions are blocked. The Futurebus+ standard also calls this a connected transaction. A transaction that is not unified is called a split transaction. (C/MM) 1212-1991s

(3) A transaction that is completed in a single subaction. (C/MM) 1394-1995

uniform-asymptotic stability Asymptotic stability where the rate of convergence to zero of the perturbed-state solution is independent of the initial time t_0. *Note:* An example of a solution that is asymptotically stable but not uniformly asymptotically stable is the solution

$\varphi(x(t_0);t) = x(t_0)t_0/t$

of the system $\dot{x} = -x/t, t_0$. Note that the initial rate of decay,

$\dot{x}t_0)/x(t_0) = -1/t_0$

is clearly a function of t_0. Compare with the time-invariant system $\dot{x} = ax$ where $\dot{x}(t_0)/x(t_0) = a$ is independent of t_0. The concept of uniformity with respect to the initial time t_0 applies only to time-varying systems. All stable time-invariant systems are uniformly stable. *See also:* control system. (CS/IM) [120]

uniform current density A current density that does not change (either in magnitude or direction) with position within a specified region. (A uniform current density may be a function of time.) (Std100) 270-1966w

uniform field A field whose magnitude and direction are uniform at each instant in time at all points within a defined region. (T&D/PE) 644-1994, 539-1990

uniform line A line that has substantially identical electrical properties throughout its length. *See also:* transmission line. (EEC/PE) [119]

uniform linear array A linear array of identically oriented and equally spaced radiating elements having equal current amplitudes and equal phase increments between excitation currents. *See also:* antenna. (AP/ANT) [35], 145-1993

uniform luminance area The area in which a display on a cathode-ray tube retains 70% or more of its luminance at the center of the viewing area. *Note:* The corners of the rectangle formed by the vertical and horizontal boundaries of this area may be below the 70% luminance level. *See also:* oscillograph. (IM/HFIM) [40]

uniform plane wave *See:* homogeneous plane wave.

uniform probing Open-address hashing in which collision resolution is handled by selecting positions at uniform distances from the original position in the hash table until an available position is found. *Contrast:* random probing; linear probing. (C) 610.5-1990w

uniform random number Any member of a random number sequence that has a uniform statistical distribution. (C) 1084-1986w

uniform waveguide A waveguide in which the physical and electrical characteristics do not change with distance along the axis of the guide. (MTT) 147-1979w, 146-1980w

unilateral area track A sound track in which one edge only of the opaque area is modulated in accordance with the recorded signal. There may, however, be a second edge modulated by a noise-reduction device. *See also:* phonograph pickup. (SP) [32]

unilateral connection (control system feedback) A connection through which information is transmitted in one direction only. *See also:* feedback control system. (IM) [120]

unilateral network A network in which any driving force applied at one pair of terminals produces a nonzero response at a second pair but yields zero response at the first pair when the same driving force is applied at the second pair. *See also:* network analysis. (Std100) 270-1966w

unilateral transducer *See:* unidirectional transducer.

unimpaired observation Conditions that enable an unobstructed view to ensure direct visual or closed-circuit television (CCTV) surveillance of individuals or vehicles. (PE/NP) 692-1997

uninhibited oil (power and distribution transformers) Mineral transformer oil to which no synthetic oxidation inhibitor has been added. *See also:* oil-immersed transformer. (PE/TR) C57.12.80-1978r, [57]

unintentional disconnect Any disconnection from the network, at either end, that is not preceded by an intentional disconnect primitive, within the specified time period. (EMB/MIB) 1073.3.1-1994

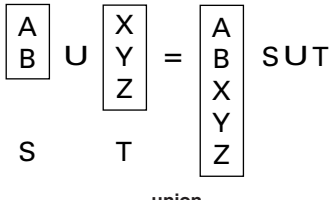
unintentional radiator A device that generates radio-frequency energy for use within the device, or sends radio-frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit radio-frequency energy by radiation or induction. (EMC) C63.4-1991

uninterruptible power supply (UPS) (1) (electric power systems in commercial buildings) A device or system that provides quality and continuity of an ac power source. (IA/PSE) 241-1990r

(2) A system designed to provide power automatically, without delay or transients, during any period when the normal power supply is incapable of performing acceptably. (IA/PSE) 446-1995

uninterruptible power supply module (electric power systems in commercial buildings) The power conversion portion of the uninterruptible power system. *Synonym:* UPS module. (IA/PSE) 241-1990r

union (data management) A relational operator that combines two relations of the same degree and results in a relation containing all of the tuples that are in either of the original relations. (See corresponding figure.) *See also:* intersection; projection; selection; product; join; difference.



union

(C) 610.5-1990w

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

unipolar (power supplies) Having but one pole, polarity, or direction. Applied to amplifiers or power supplies, it means that the output can vary in only one polarity from zero and, therefore, must always contain a direct-current component. (AES) [41]

unipolar electrode system (monopolar electrode system) (electribiology) Either a pickup or a stimulating system, consisting of one active and one dispersive electrode. *See also:* electrobiology. (EMB) [47]

unipolar pulse A signal pulse having a single lobe above (or below) the baseline. (NPS) 325-1996

unipolar transistor A transistor that utilizes charge carriers of only one polarity. *See also:* transistor; semiconductor. (ED) 216-1960w

unipole *See:* antenna.

uniprocessor (A) A computer that can execute only one program at a time. *Contrast:* multiprocessor. **(B)** A computer system with one central processing unit. (C) 610.10-1994

unique identification code (unique identification in power plants) A code applied at the component function level to uniquely distinguish a specific function within a specific system from all other similar or different functions occurring within the system or facility. The basic code format described in IEEE 803-1983 may also be applied, with appropriate field identifiers, for project software and project control elements (schedule and budget items). (PE/EDPG) 803-1983r

uniquely addressed Said of an MTM-Bus S-module participating in a singlecast. (TT/C) 1149.5-1995

uniqueness constraint A kind of constraint stating that no two distinct instances of a class may agree on the values of all the properties that are named in the uniqueness constraint. (C/SE) 1320.2-1998

UNIRAM A modeling methodology and software for the performance of reliability, availability, and maintainability (RAM) analysis of power production systems. (PE/NP) 933-1999

unit (1) (nuclear power generating station) One independent portion of a motor control center vertical section. It is normally a plug-in module which connects to the motor control center vertical bus. (PE/NP) 649-1980s

(2) That portion of the switch−gear assembly which contains one switching device such as a circuit breaker, interrupter switch, power fuse interrupter switch combination, etc. and the associated primary conductors. *See also:* relay unit. (SWG/PE) C37.20-1968w

(3) (electric and electronics parts and equipment) A major building block for a set or system, consisting of a combination of basic parts, subassemblies, and assemblies packaged together as a physically independent entity. The application, size, and construction of an item may be factors in determining whether an item is regarded as a unit, an assembly, a subassembly, or a basic part. A small electric motor might be considered as a part if it is not normally subject to disassembly. Typical examples are: radio receiver, radio transmitter, electronic power supply, antenna. (GSD) 200-1975w

(4) 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/TR/EDPG) C57.116-1989r, 505-1977r

(5) (power outages) A group of components that are functionally related and are regarded as an entity for purposes of recording and analyzing data on outage occurrences. *Notes:* 1. A unit can be defined in a number of ways. For example, it may be:

a) A group of components which constitute an operating entity bounded by automatic fault interrupting devices which isolate it from other such entities for faults on any component within the group.

b) A group of components protected by and within the sensing zone of a particular system of protective relays. Examples include a transformer or an overhead line and associated terminal facilities switched with it.

c) A group of components including a transmission line, one or more transformers supplied by the line, and a subtransmission or distribution network radially supplied from the transformer. These components are so configured that the subtransmission network is in the outage state during outage occurrences of the transmission line.

2. A unit may be single-terminal, two-terminal or multi-terminal. A multi-terminal unit is connected to three or more terminals. 3. It is recognized that certain components (for example, circuit breakers) may be part of more than one unit. 4. Different types of units include transmission unit (overhead or cable), transformer unit, bus unit, and special units that consist of any equipment protected by separate breakers, such as shunt capacitors. (PE/PSE) 859-1987w

(6) (A) (software) A separately testable element specified in the design of a computer software component. **(B) (software)** A logically separable part of a computer program. **(C) (software)** A software component that is not subdivided into other components. *Note:* The terms "module," "component," and "unit" are often used interchangeably or defined to be subelements of one another in different ways depending upon the context. The relationship of these terms is not yet standardized. *See also:* test unit. (C/Std100) 610.12-1990

(7) A logically separable part of a program. (C/SE) 1074-1995s

(8) A portion of a computer that constitutes the means of accomplishing some inclusive operation or function as; for example, an arithmetic unit. *See also:* execution unit; processing unit; logic unit; arithmetic unit; control unit; functional unit. (C) 610.10-1994w

(9) A unit is a logical component of a node that is accessed by I/O driver software. After the node is initialized and configured, the units normally operate independently. Note that one node could have multiple units (for example, processor, memory, and SCSI controller). (C/BA) 896.4-1993w

(10) Multiple cells in a single jar. (SB) 1188-1996

(11) A nuclear steam supply system, its associated turbine-generator, auxiliaries, and engineered safety features. (PE/NP) 308-1991

(12) (A) An aggregation of entities. **(B)** A basis of measurement. (DIS/C) 1278.3-1996

(13) *See also:* relay unit. (SWG/PE) C37.100-1992

(14) *See also:* basic operating unit. (VT/RT) 1473-1999, 1475-1999, 1474.1-1999

(15) A subcomponent of a node that provides a processing, memory, or I/O functionality. After the node has been initialized (typically by generic software), the unit provides the register interface that is accessed by I/O driver software. The units normally operate independently of each other, and do not affect the operation of the node upon which they reside. *Note:* One node could have multiple units (for example, processor, memory, and SCSI controller). (C/MM/BA) 1212-1991s, 14536-1995, 896.2-1991w, 896.10-1997

unit address The component of a node name that indicates the device node's position within the address space defined by its parent node. (C/BA) 1275-1994

unit architecture (1) The specification document describing the format and function of the unit's software-visible registers. (C/MM) 1212-1991s

(2) The specification document describing the format and function of the software-visible resources of the unit. (C/MM) 1394-1995

unit-area capacitance (electrolytic capacitor) The capacitance of a unit area of the anode surface at a specified frequency after formation at a specified voltage. (PE/EEC) [119]

unitary code A code having only one digit; the number of times it is repeated determines the quantity it represents. (C) 1084-1986w

unit auxiliaries transformer (UAT) (generating stations electric power system) A transformer intended primarily to supply all or a portion of the unit auxiliaries. (PE/TR/EDPG) C57.116-1989r, 505-1977r

unit auxiliary (generating stations electric power system) An auxilary intended for a specific generating unit. (PE/EDPG) 505-1977r

unit cable construction That method of cable manufacture in which the pairs of the cable are stranded into groups (units) containing a certain number of pairs and these groups are then stranded together to form the core of the cable. *See also:* cable. (EEC/PE) [119]

unit-control error (electric power system) The unit generation minus assigned unit generation. (PE/PSE) 94-1991w

unit data *See:* datagram.

unit-dependent A term used to describe parameters that may vary between different unit architectures. Although the CSR Architecture may specify the size and location of these fields, their format and most of their definition is provided by the appropriate unit architecture specification. (C/MM) 1212-1991s

unit derated generation (power system measurement) The unavailable generation resulting from unit derating. (PE/PSE) 762-1980s

unit derated hours (electric generating unit reliability, availability, and productivity) The available hours during which a unit derating was in effect. (PE/PSE) 762-1987w

unit derating (electric generating unit reliability, availability, and productivity) The difference between dependable capacity and available capacity. (PE/PSE) 762-1987w

unit development folder (UDF) *See:* software development file.

unit-distance code (mathematics of computing) A code in which the Hamming distance between consecutive numerals is 1. *Synonyms:* continuous-progression code; cyclic permuted code. (C) 1084-1986w

uniterm indexing A variation of derivative indexing in which each keyword must be a single word. (C) 610.2-1987

unit function *See:* function.

unit-impulse function *See:* unit-impulse signal.

unit-impulse signal (automatic control) A signal that is an impulse having unity area. *See also:* feedback control system. (PE/EDPG) [3]

unit_initialization_block (UIB) A contiguous buffer in System Memory used to pass Unit-dependent parameters to the I/O Unit during initialization or on command during normal DMA operation. The Processor writes the address of this block in a Unit-global CSR or passes it in a message, respectively. (C/MM) 1212.1-1993

unit interval (UI) (1) (local area networks) One half of a bit time. 125 ns for 4 Mbit/s transmission and 31.25 ns for 16 Mbit/s transmission. UI is used in the specification of jitter. (LM/C) 802.5-1989s

(2) (telecommunications) The nominal difference in time between consecutive significant instants of an isochronous signal. (COM/TA) 1007-1991r

(3) *See also:* signal element. (PE) 599-1985w

unitized equipment (packaging machinery) Electrical controls so constructed that separate panels are provided for each working station, or section as specified, of a multiple-station transfer-type machine. (IA/PKG) 333-1980w

unit of acceleration (digital accelerometer) The symbol *g* denotes a unit of acceleration equal in magnitude to the local value of gravity at the test site unless otherwise specified. (AES/GYAC) 530-1978r

unit operation (1) An interrupting operation followed by a closing operation. The final operation is also considered one unit operation. (SWG/PE) C37.60-1981r

(2) Discharge of a surge through an arrester while the arrester is energized. (SPD/PE) C62.22-1997, C62.11-1999

(3) Discharging a surge through the surge-protective-device while the device is energized. (SPD/PE) C62.62-2000

unit-ramp function *See:* unit-ramp signal.

unit-ramp signal (automatic control) A signal that is zero for all values of time prior to a certain instant and equal to the

time measured from that instant. *Note:* The unit-ramp signal is the integral of the unit-step signal. *See also:* feedback control system. (PE/EDPG) [3]

unit rate-limiting controller (electric power system) A controller that limits rate of change of generation of a generating unit to an assigned value or values. (PE/PSE) 94-1991w

unit requirements documentation (software unit testing) Documentation that sets forth the functional, interface, performance, and design constraint requirements for a test unit. (C/SE) 610.12-1990, 1008-1987r

units The units of a measured value of a physical variable define the standard quantity of the measure of that variable used to express the value. The representation of the units of an Object is the datatype `Units`. (IM/ST) 1451.1-1999

units and letter symbols (International System of Units (SI)) The three classes of SI units are: 1) Base units, regarded by convention as dimensionally independent:

Quantity	Unit	Symbol
length	meter	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
thermodynamic temperature	kelvin	K
amount of substance	mole	mol
luminous intensity	candela	cd

(2) Supplementary units, regarded as either base units or as derived units:

Quantity	Unit	Symbol
plane angle	radian	rad
solid angle	steradian	sr

(3) Derived units, formed by combining base elements, supplementary units, and other derived units according to the algebraic relations linking the corresponding quantitiies. The sysmbols for derived units are obtained by means of the mathematical signs for multiplication, division, and use of exponents.

unit sequence starting relay (power system device function numbers) A relay that functions to start the next available unit in a multiple-unit equipment upon the failure or nonavailability of the normally preceding unit. (PE/SUB) C37.2-1979s

unit sequence switch (power system device function numbers) A switch that is used to change the sequence in which units may be placed in and out of service in multiple-unit equipments. (SUB/PE) C37.2-1979s

unit service power The power used to operate a unit. (PE/PSE) 94-1991w

units of luminance (light emitting diodes) The luminance (photometric brightness) of a surface in a specified direction may be expressed in luminous intensity per unit of projected area of surface. *Note:* Typical units in this system are the candela per square meter. *Synonym:* units of photometric brightness. (ED) [127]

units of luminous exitance (illuminating engineering) Lumens per square meter (lam/m^2) and lumens per square foot (lm/ft^2) are preferred practice for the SI and English (USA) systems respectively. (EEC/IE) [126]

units of photometric brightness *See:* units of luminance.

units of wavelength The distance between two successive points of a periodic wave in the direction of propagation, in which the oscillation has the same phase. The three commonly used units are listed in the following table:

Name	Symbol	Value
micrometer	μm	$1\mu m = 10^{-3}$ millimeters
nanometer	nm	$1\ nm = 10^{-6}$ millimeters
angstrom	Å = 10^{-7} millimeters	

See also: radiant energy. (EEC/IE) [126]

units position In a positional notation system, the position corresponding to the zero power of the radix. This is the rightmost position in a numeral representing an integer. (C) 1084-1986w

unit state (electric generating unit reliability, availability, and productivity). A particular unit condition that is important for purposes of collecting data on performance. *Note:* The state definitions are related as shown in the figure below. The transitions between states are described in Appendix B of IEEE Std 762-1987. The correlation between these definitions and those in use by the industry is shown in Appendix A of IEEE Std 762-1987. (PE/PSE) 762-1987w

unit-step function *See:* unit-step signal.

unit-step signal (automatic control) A signal that is zero for all values of time prior to a certain instant and unity for all values of time following. *Note:* The unit-step signal is the integral of the unit-impulse signal. *See also:* feedback control system. (PE/EDPG) [3]

unit string A string consisting of only one entity. (C) 610.5-1990w

unit substation A substation consisting primarily of one or more transformers mechanically and electrically connected and coordinated in design with one or more switchgear or motor control assemblies or combination thereof. *Note:* A unit substation may be described as *primary* or *secondary* depending on the voltage rating of the low-voltage section: *primary,* more than 1000 V; *secondary,* 1000 V and below. (SWG/PE/TR) C37.100-1992, C57.12.80-1978r

unit-substation transformer (power and distribution transformers) A transformer that is mechanically and electrically connected to, and coordinated in design with, one or more switchgear or motor-control assemblies, or combinations thereof. *See also:* integral unit substation; articulated unit substation; secondary unit substation; primary unit substation; unit substation. (PE/TR) C57.12.80-1978r

unit symbol *See:* symbol for a unit.

unit test A test performed on a single unit or group of units. *Note:* one widespread use of such tests is extrapolation of test results for the purpose of representing overall performance of a device composed of several units. (SWG/PE) C37.20-1968w, C37.100-1981s

unit testing Testing of individual hardware or software units or groups of related units. *See also:* system testing; component testing; interface testing; integration testing. (C) 610.12-1990

unit transformer (UT) (generating stations electric power system) A power system supply transformer that transforms all or a portion of the unit power from the unit to the power system voltage. (PE/TR/EDPG) C57.116-1989r, 505-1977r

unit under test (UUT) (1) The entity to be tested. It may range from a simple diagnostic unit to a complete system. (ATLAS) 1232-1995

(2) The entity to be tested. It may range from a simple component to a complete system. (SCC20/SCC20) 771-1998, 993-1997

unit-under-test-oriented language (test, measurement, and diagnostic equipment) A computer language used to program automatic test equipment to test units under test (UUTs), whose characteristics are directed to the test needs of the UUTs and therefore do not imply the use of a specific ATE (automatic test equipment) system or family of ATE systems. *Synonym:* UTT-oriented language. (MIL) [2]

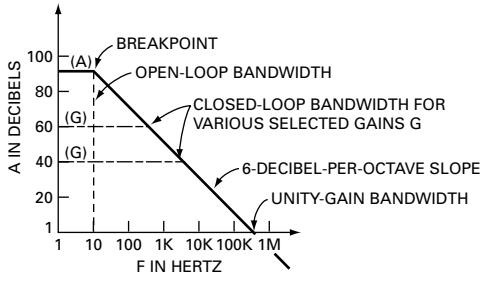
unit vector A vector whose magnitude is unity. (Std100) 270-1966w

unit warmup time (power supply) The interval between the time of application of input power to the unit and the time at which the regulated power supply is supplying regulated power at rated output voltage. *See also:* regulated power supply. 209-1950w

unit years (power system measurement) For any unit or for a group of units, unit years is the total period hours accumulated, divided by 8760: PH UY = 8760. (PE/PSE) 762-1980s

unity gain (broadband local area networks) A design principle wherein amplifiers supply enough signal gain at appropriate frequencies to compensate for the system's cable loss and flat loss: cable loss + flat loss = amplifier gain. (LM/C) 802.7-1989r

unity-gain bandwidth (power supplies) A measure of the gain-frequency product of an amplifier. Unity-gain bandwidth is the frequency at which the open-loop gain becomes unity, based on a 6-decibel-per-octave crossing. (See corresponding figure.)



Typical gain-frequency (Bode) plot, showing unity-gain bandwidth.

unity-gain bandwidth

(AES) [41]

unity power-factor test (synchronous machines) A test in which the machine is operated as a motor under specified operating conditions with its excitation adjusted to give unity power factor. (PE) [9]

univalent function If to every value of u there corresponds one and only one value of x (or one and only one set of values of $x_1, x_2, \ldots, x_n$) then u is a univalent function. Thus $u^2 = ax + b$ is univalent, within the interval of definition. (Std100) 270-1966w

universal asynchronous receiver/transmitter A universal receiver/transmitter device used in asynchronous transmission applications. *Synonym:* asynchronous receiver/transmitter. (C) 610.7-1995

universal demand register (mechanical demand registers) A demand register of specific ratio used in conjunction with all ratings of any type of integrating electricity meter designed to accommodate it. The register constant of a universal demand register is proportional to the watthour constant K_1h of the meter on which it is mounted. (ELM) C12.4-1984

universal fuse links Fuse links that, for each rating, provide mechanical and electrical interchangeability within prescribed limits over the specified time-current range. (SWG/PE) C37.40-1993, C37.100-1992

universally unique identifier (UUID) Various versions of UUIDs exist, and references for generation of UUIDs abound. (C/SS) 1244.1-2000

universal motor A series-wound or a compensated series-wound motor designed to operate at approximately the same speed and output on either a direct- or single-phase alternating current of a frequency not greater than 60 Hz and of approximately the same rms voltage. (IA/MT) 45-1998

universal-motor parts (rotating machinery) A term applied to a set of parts of a universal motor. Rotor shaft, conventional stator frame (or shell), end shields, or bearings may not be included, depending on the requirements of the end product into which the universal-motor parts are to be assembled. *See also:* asynchronous machine. (PE) [9]

universal-numbering plan (telephone switching systems) A numbering plan employing nonconflicting codes so arranged that all main stations can be reached from any point within a telecommunications system. (COM) 312-1977w

universal or arcshear machine A power-driven cutter that will not only cut horizontal kerfs, but will also cut vertical kerfs or at any angle, and is designed for operation either on track, caterpillar treads, or rubber tires. (EEC/PE) [119]

universal product code (UPC) A bar code appearing on many retail products to uniquely identify the product. The code is designed to be read by an optical scanner attached to an electronic cash register. (See corresponding figure.)

universal product code

(SWG/C/PE) C37.20.1-1987s

universal receiver/transmitter A circuit used in data communication applications to provide the necessary logic to recover data in a serial-in/parallel-out fashion and to transmit data in a parallel-in/serial-out fashion. (C) 610.7-1995

universal stick A stick, or type of insulating tool, with an end to which universal tools can be attached. (T&D/PE) 516-1995

universal synchronous receiver/transmitter A universal receiver/transmitter that is used in synchronous communication applications. (C) 610.7-1995

universal tool An accessory designed to attach to a universal stick allowing one insulated stick to be used to perform many different operations. (T&D/PE) 516-1995

universal Turing machine A Turing machine that can simulate any other Turing machine. (C) [20], [85]

unloaded applicator impedance (dielectric heating) The complex impedance measured at the point of application, without the load material in position, at a specified frequency. (IA) 54-1955w

unloaded delay The conceptual delay value for a delay arc of a cell when the output pin is unloaded (unconnected) and the signal at the input pin conforms to some ideal waveform. (C/DA) 1481-1999

unloaded labor rate Variable costs of labor per hour, excluding all forms of benefits such as vacations, medical insurance, retirement, etc. (SCC22) 1346-1998

unloaded Q (switching tubes) (intrinsic) The Q of a tube unloaded by either the generator or the termination. *Note:* As here used, Q is equal to 2ν times the energy stored at the resonance frequency divided by the energy dissipated per cycle in the tube or, for cell-type tubes, in the tube and its external resonant circuit. *See also:* gas tube. (ED) 161-1971w

unloaded sag (conductor or any point in a span) The distance measured vertically from the particular point in the conductor to a straight line between its two points of support, without any external load. (IA/APP) [90]

unloaded tension (A) (initial) The longitudinal tension in a conductor prior to the application of any external load. **(B)** (final) The longitudinal tension in a conductor after it has been subjected for an appreciable period to the loading prescribed for the loading district in which it is situated, or equivalent loading, and the loading removed. Final unloaded tension includes the effect of inelastic deformation (creep). (NESC/T&D) C2-1984, C2.2-1960

unloading amplifier An amplifier that is capable of reproducing or amplifying a given voltage signal while drawing negligible current from the voltage source. *Note:* The term buffer amplifier is sometimes used as a synonym for unloading amplifier, in an incorrect sense, since a buffer amplifier draws significant current, but at a constant load impedance (seen at the input). (C) 610.10-1994w, 165-1977w

unloading circuit (1) (analog computer) In an analog computer, a computing element or combination of computing elements capable of reproducing or amplifying a given voltage signal while drawing negligible current from the voltage

source, thus eliminating any possible loading errors. *See also:* unloading amplifier. (C) 165-1977w

(2) In an analog computer, a circuit that is capable of reproducing or amplifying a given voltage signal while drawing negligible current from the voltage source, thus eliminating possible load errors. (C) 610.10-1994w

unloading point (electric transmission system used on self-propelled electric locomotives or cars) The speed above or below which the design characteristics of the generators and traction motors or the external control system, or both, limit the loading of the prime mover to less than its full capacity. *Note:* The unloading point is not always a sharply defined point, in which case the unloading point may be taken as the useful point at which essentially full load is provided. *See also:* traction motor. (EEC/PE) [119]

unmodulated groove (mechanical recording) A groove made in the medium with no signal applied to the cutter. *Synonym:* blank groove. *See also:* phonograph pickup. (SP) [32]

unnormalized form The form assumed by data that have not been normalized. *Contrast:* normalized form. (C) 610.5-1990w

unnormalized relation A relation that is not in normal form. *Contrast:* normalized relation. (C) 610.5-1990w

unnumbered (U) format The format used to provide additional data link control functions and unnumbered information transfer. This format shall contain no sequence numbers, but shall include a P/F bit that may be set to "1" or "0." (EMB/MIB) 1073.3.1-1994

unodecimal (A) Pertaining to a selection in which there are 11 possible outcomes. **(B)** Pertaining to the numeration system with a radix of 11. (C) 1084-1986

unordered access (communication satellite) A system in which access to a radio frequency channel is gained without determining channel availability. This method is useful in common spectrum or random access discrete address systems. (COM) [19]

unordered list A list in which data items are not arranged in any specific order. *Synonym:* random-ordered list. *Contrast:* ordered list. (C) 610.5-1990w

unordered tree A tree in which the left-to-right order of the subtrees of a given node is not significant. *Contrast:* ordered tree. (C) 610.5-1990w

unpack (1) To separate various sections of packed data. (C) [20], [85]

(2) (data management) (software) To recover the original form of one or more data items from packed form. *Contrast:* pack. (C) 610.5-1990w, 610.12-1990

unpacked decimal data *See:* zoned decimal data.

unplanned derated hours (electric generating unit reliability, availability, and productivity) The available hours during which an unplanned derating was in effect. (PE/PSE) 762-1987w

unplanned derating (electric generating unit reliability, availability, and productivity) That portion of the unit derating that is not a planned derating. Unplanned derating events are classified according to the urgency with which the derating needs to be initiated. Class 1 (immediate). A derating that requires an immediate action for the reduction of capacity. Class 2 (delayed). A derating that does not require an immediate reduction of capacity, but requires a reduction of capacity within 6 h (hours). Class 3 (postponed). A derating that can be postponed beyond 6 h, but requires a reduction of capacity before the end of the next weekend. Class 4 (deferred). A derating that can be deferred beyond the end of the next weekend, but requires a reduction of capacity before the next planned outage. (PE/PSE) 762-1987w

unplanned outage (electric generating unit reliability, availability, and productivity) The state in which a unit is unavailable but is not in the planned outage state. *Notes:* 1. When an unplanned outage is initiated, the outage is classified according to one of five classes, as defined in Class 0 unplanned outage, Class 1 unplanned outage, Class 2 unplanned outage, Class 3 unplanned outage, and Class 4 unplanned outage. Unplanned outage Class 0 applies to a start-up failure and Class 1 applies to a condition requiring immediate outage. Also, unplanned outage starts when planned outage ends but is extended due to unplanned work. Classes 2, 3, and 4 apply to outages where some delay is possible in time of removal of the unit from service. The class (2, 3, or 4) of outage is to be determined by the amount of delay that can be exercised in the time of removal of the unit. The class of outage is not made more urgent if the time of removal is advanced due to favorable conditions of system reserves or availability of replacement capacity for the predicted duration of the outage. However, outage starts when the unit is removed from service or is declared unavailable when it is not in service. 2. During the time the unit is in the unplanned outage state, the outage class is determined by the outage class that initiates the state. 3. In some cases, the opportunity exists during unplanned outages to perform some of the repairs or maintenance that would have been performed during the next planned outage. If the additional work extends the outage beyond that required for the unplanned outage, the remaining outage should be reported as a planned outage. 4. Unlike planned outages, unplanned outages do not have a fixed duration that can be estimated each year. *See also:* Class 1 unplanned outage; Class 0 unplanned outage; Class 3 unplanned outage; Class 2 unplanned outage; Class 4 unplanned outage. (PE/PSE) 762-1987w

unplanned outage hours (electric generating unit reliability, availability, and productivity) The number of hours a unit was in a Class 0, 1, 2, 3, or 4 unplanned outage state. (PE/PSE) 762-1987w

unpolarized *See:* randomly polarized.

unpowered retention time The retention time with an terminals of the memory at ground voltage, except for an occasional read cycle to test the device state. (ED) 641-1987w

unprecedented system A system for which design examples do not exist so that the design architecture alternatives are unconstrained by previous system descriptions. (C/SE) 1220-1998

unpredictable Describes an aspect of the architecture that in nondeterministic. This term is used only to describe the targets of branches and the occurrence of certain traps in unusual situations. *See also:* undefined. (C/MM) 1754-1994

unpropagated potential (electrobiology) An evoked transient localized potential not necessarily associated with changed excitability. *See also:* excitability. (EEC/PE) [119]

unprotected field On a display device, a field in which a user can enter, modify or erase data. *Contrast:* protected field. (C) 610.10-1994w

unqualified climber A worker that does not meet the requirements of a qualified climber. (T&D/PE) 1307-1996

unquenched sample (1) (liquid-scintillation counters) A counting sample (material of interest plus liquid-scintillation solution) that contains a minimum of colored species and chemical impurities that would reduce the photon output from the vial. (NI) N42.16-1986

(2) (liquid-scintillation counting) A counting sample (material of interest plus liquid-scintillation solution) that contains a minimum of colored species and chemical impurities that would reduce the light output to the photomultiplier tubes. (NI) N42.15-1990

unrecoverable light loss factors (illuminating engineering) Factors which give the fractional light loss that cannot be recovered by cleaning or lamp replacement. (EEC/IE) [126]

unregulated voltage (electronically regulated power supply) The voltage at the output of the rectifier filter. *See also:* regulated power supply. 209-1950w

unrepresented channel A channel that is not represented by a Public Transducer. (IM/ST) 1451.1-1999

unsafe Having unacceptable risk of the occurrence of a hazard. (VT/RT) 1483-2000

unsaturated standard cell A cell in which the electrolyte is a solution of cadmium sulphate at less than saturation at ordinary temperatures. (This is the commercial type of cadmium standard cell commonly used in the United States). *See also:* electrochemistry. (EEC/PE) [119]

unscheduled interrupt (UI) An interrupt caused by the occurrence of an event within the computer that is not associated with normal functional operation. (C) 610.10-1994w

unselected slave A slave that does not recognize its address on the bus lines during the connection phase of a bus transaction. (C/BA) 10857-1994, 896.4-1993w

unsharp masking In image processing, a sharpening technique in which an intentionally blurred version of the image is subtracted from the image itself. (C) 610.4-1990w

unshielded strip transmission line A strip conductor above a single ground plane. Some common designations are, microstrip (flat-strip conductor), unbalanced strip line. *See also:* strip-type transmission line; shielded strip transmission line; waveguide. (AP/ANT) [35]

unshielded twisted pair (UTP) (1) A twisted pair medium consisting of only a pair of conductors exposed to outside electrical interferences and noise. *Contrast:* shielded twisted pair. (C) 610.7-1995

(2) Normally refers to those cables with individual pairs of conductors twisted, or with a group of four conductors in a star quad configuration, with any characteristic impedance. When used in this document, the term specifically refers to those cables whose pairs have a high-frequency characteristic impedance of 100 Ω. Shielded cables with the same high-frequency characteristic impedance are included within this definition. (C/LM) 8802-5-1998

unshielded twisted-pair cable (UTP) An electrically conducting cable, comprising one or more pairs, none of which is shielded. There may be an overall shield, in which case the cable is referred to as unshielded twisted-pair with overall shield. (C/LM) 802.3-1998

unsigned byte A byte that represents positive integers in the decimal range 0–255. (C/MM) 1284.1-1997

unsigned dword A dword that represents positive integers in the decimal range 0–4 294 967 295. (C/MM) 1284.1-1997

unsigned word A word that represents positive integers in the decimal range 0–65 535. (C/MM) 1284.1-1997

unsigned packed decimal data Integer data in which each decimal digit is represented in binary, occupying four bits. *Note:* Since no sign is stored, only non-negative integers can be represented.

decimal 75_{10}

unsigned packed decimal $0111\ 0101_2$

See also: packed decimal data. (C) 610.5-1990w

unsolicited status Information generated by the peripheral that has not been asked for by the host, yet is important enough that the peripheral desires to send it to the host. (C/MM) 1284-1994

unspecialize A change by an instance from being an instance of its current subclass within a cluster to being an instance of none of the subclasses in the cluster. *Contrast:* respecialize; specialize. (C/SE) 1320.2-1998

unspecified (1) A value or behavior is unspecified if the standard imposes no portability requirements on applications for a correct program construct or correct data. Implementations (or other standards) may specify the result of using that value or causing that behavior. An application requiring a specific behavior, rather than tolerating any behavior when using that functionality, is using extensions. (C/PA) 1003.1-1988s

(2) An indication that this standard imposes no portability requirements on applications for correct program constructs or correct data regarding a value or behavior. Implementations (or other standards) may specify the result of using that value or causing that behavior. An application requiring a specific behavior, rather than tolerating any behavior when using that functionality, is using extensions. (PA/C) 1238.1-1994w, 2003.2-1996, 1326.2-1993w

unspecified behavior Behavior (for a correct program construct and correct data) that depends on the implementation. The implementation is not required to document which behavior occurs. Usually the range of possible behaviors is delineated by the standard. (C/DA) 1481-1999

unstable (1) (control system feedback) Not possessing stability. *See also:* feedback control system. (IM/PE/EDPG) [120], [3]

(2) Pertaining to circuit or device in which the circuit will remain for a limited time, after which the circuit will change to another state without any external stimulus. *Note:* Often used to describe an undesirable or unexpected circuit behavior. *Contrast:* stable. (C) 610.10-1994w

unstable limit cycle One from which state trajectories recede for all initial states sufficiently close. (CS/PE/EDPG) [3]

unstratified language A language that can be used as its own metalanguage; for example English, German. *Contrast:* stratified language. *See also:* natural language. (C) 610.13-1993w, 610.12-1990

unstructured A postal O/R address that specifies the postal address of a user in a single attribute. Its structure is left largely unspecified. (C/PA) 1224.1-1993w

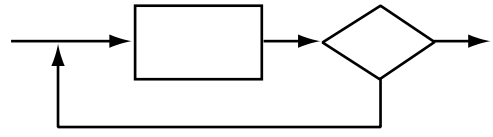
unsuccessful test A completed test that is invoked by a write to the TEST_START register and detects one or more errors. (C/MM) 1212-1991s

unsupported command A word-serial protocol error that occurs when a servant receives a command that it does not support. (C/MM) 1155-1992

unsupported transaction A transaction whose returned data value or side effects are not defined by the hardware architecture that is addressed. For example, a write64 transactions to the 4-byte STATE_CLEAR register is unsupported. (C/MM) 1212-1991s

untagged frame An *untagged frame* is a frame that does not contain a tag header immediately following the Source MAC Address field of the frame or, if the frame contained a Routing Information field, immediately following the Routing Information field. *See also:* tagged frame. (C/LM) 802.1Q-1998

UNTIL A single-entry, single-exit loop, in which the loop control is executed after the loop body. (See the corresponding figure.) *Contrast:* WHILE; closed loop. *See also:* trailing decision.



UNTIL construct

(C) 610.12-1990

untransposed Refers to the physical positions of the phase conductors of a transmission line, which are not interchanged periodically to balance the mutual impedances between phases. (PE/PSR) C37.113-1999

unused Used to describe an instruction field or register field that is not currently defined by the architecture. When read by software, the value of an unused register field is undefined. However, since an unused field could be defined by a future version of the architecture, an unused field should only be written to zero by software. *See also:* reserved; ignored. (C/MM) 1754-1994

unwind In programming, to state explicitly and in full all of the instructions involved in multiple executions of a loop. *See also:* straight-line coding. (C) 610.12-1990

unsupported length Unbraced length of a column. (PE/T&D) 751-1990

unusual service conditions Environmental conditions that may affect the constructional or operational requirements of a machine. This includes the presence of moisture and abrasive, corrosive, or explosive atmosphere. It also includes external structures that limit ventilation, unusual conditions relating to the electrical supply, the mechanical loading, and the position of the machine. (PE) [9]

unwanted radiation (radiation protection) Any ionizing radiation other than that which the instrument is designed to measure. (NI) N323-1978r

unwanted signal A signal that may impair the measurement or reception of a wanted signal. (T&D/PE) 539-1990

UP *See:* Unformatted Page.

up (1) Pertaining to a system or component that is operational and in service. Such a system is either busy or idle. *Contrast:* down. *See also:* idle; busy. (C) 610.12-1990
(2) A colloquial expression used in reference to a system or system component that is functioning and ready to use. *Contrast:* down. (C) 610.10-1994w

UPC *See:* universal product code.

updateable argument The designation given to an operation argument that identifies an instance to which a request may be sent that will change the state of the instance. An argument not designated as "updatable" means that there will be no requests sent that will change the state of the instance identified by the argument. (C/SE) 1320.2-1998

update (1) (supervisory control, data acquisition, and automatic control) The process of modifying or reestablishing data with more recent information. (SWG/PE/SUB) C37.1-1987s, C37.100-1992
(2) (A) (data management) To change information in accordance with information that is more recent than that which was available previously. For example, a master file containing account balances might be updated nightly to reflect transactions precessed the previous day. **(B) (data management)** To replace data in a storage device or on a data medium. *See also:* read; delete; write. (C) 610.5-1990
(3) Installing a newer version of software than one that is currently installed, into the same location. This is also referred to as upgrading. (C/PA) 1387.2-1995

updateable microfilm Microfilm that permits the addition or deletion of images. (C) 610.2-1987

update access A type of access to data in which the data can be updated. *See also:* read/write access; write access; read-only access; delete access. (C) 610.5-1990w

update transaction A transaction that modifies a master file by adding, deleting, or changing data to make it more current. *See also:* null transaction; change transaction; add transaction; delete transaction. (C) 610.2-1987

uplift plates *See:* bearing plates.

uplift roller (conductor stringing equipment) A small single-grooved wheel designed to fit in or immediately above the throat of the traveler and keep the pulling line in the traveler groove when uplift occurs due to stringing tensions. (T&D/PE) 524-1992r

up link (communication satellite) A ground to satellite link, very often the command link. (COM) [24]

uplink (local area networks) The transmission medium between an end node or repeater and a connected higher-level repeater, as viewed from the local entity. *Contrast:* downlink. (C) 8802-12-1998

upload (A) To transfer some collection of data from some storage location to a computer memory. **(B)** To transfer some collection of data from the memory of a small computer to the memory of a relatively larger computer; for example, to transfer data from a microcomputer to a mainframe computer. (C) 610.5-1990

upper (driving) beams (illuminating engineering) One or more beams intended for distant illumination and for use on the open highway when not meeting other vehicles. Formerly "country beam." (EEC/IE) [126]

upper bracket (rotating machinery) A bearing bracket mounted above the core of a vertical machine. (PE) [9]

upper burst reference (audio and electroacoustics) A selected multiple of the long-time average magnitude of the quantity mentioned in the definition of burst. *See also:* burst duration; burst. (SP) 257-1964w, [32]

upper coil support (rotating machinery) A coil support to restrain field-coil motion in the direction toward the air gap. *See also:* stator; rotor. (PE) [9]

upper frequency limit (coaxial transmission line) The limit determined by the cutoff frequency of higher-order waveguide modes of propagation, and the effect that they have on the impedance and transmission characteristics of the normal TEM coaxial-transmission-line mode. The lowest cutoff frequency occurs with the TE1,1 mode, and this cutoff frequency in air dielectric line is the upper frequency limit of a practical transmission line. How closely the TE1,1 mode cutoff frequency can be approached depends on the application. *See also:* waveguide. (EEC/REWS) [92]

upper guide bearing (rotating machinery) A guide bearing mounted above the core of a vertical machine. *See also:* bearing. (PE) [9]

upper half bearing bracket (rotating machinery) The top half of a bracket that can be separated into halves for mounting or removal without access to a shaft end. *See also:* bearing. (PE) [9]

upper limit (test, measurement, and diagnostic equipment) The maximum acceptable value of the characteristic being measured. (MIL) [2]

upper range-value The highest quantity that a device is adjusted to measure. *Note:* The following compound terms are used with suitable modifications in the units: measured variable upper range-value, measured signal upper range-value, etc. *See also:* instrument. (EEC/EMI) [112]

upper sideband (data transmission) The higher of two frequencies or groups of frequencies produced by a modulation process. (PE) 599-1985w

upper-sideband parametric down-converter A noninverting parametric device used as a parametric downconverter. *See also:* parametric device. (ED) 254-1963w, [46]

upper-sideband parametric up-converter A noninverting parametric device used as a parametric up-converter. *See also:* parametric device. (ED) [46]

UPS *See:* uninterruptible power supply.

upset Malfunction of a system because of electrical disturbances. (SPD/PE) C62.62-2000

upset duplex system A direct-current telegraph system in which a station between any two duplex equipments may transmit signals by opening and closing the line circuit, thereby causing the signals to be received by upsetting the duplex balance. *See also:* telegraphy. (EEC/PE) [119]

UPS module *See:* uninterruptible power supply module.

upstream The direction along a bus that is towards the head of bus function. This is opposite to the direction of data flow along a bus. (LM/C) 8802-6-1994

upstream neighbor's address (UNA) The address of the station functioning upstream from a specific station. (C/LM) 8802-5-1998

up time (1) (supervisory control, data acquisition, and automatic control) The time during which a device or system is capable of meeting performance requirements. (SWG/PE/SUB) C37.100-1992, C37.1-1994
(2) (availability) The period of time during which an item is in a condition to perform its required function. (R) [29]
(3) The period of time during which a system or component is operational and in service; that is, the sum of busy time and idle time. *Contrast:* down time. *See also:* idle time; busy time; mean time between failures; setup time. (C) 610.12-1990

upward compatible (1) Pertaining to hardware or software that is compatible with a later or more complex version of itself; for example, a program that handles files created by a later

version of itself. *Contrast:* downward compatible. (C) 610.12-1990

(2) Pertaining to hardware or software that is compatible with a later or more complex version of itself; for example, a new version of a program that handles files created by an earlier version of that program is said to be "upwardly compatible." *Contrast:* downward compatible. (C) 610.10-1994w

upward component (illuminating engineering) That portion of the luminous flux from a luminaire which is emitted at angles above the horizontal. (EEC/IE) [126]

upward compression In software design, a form of demodularization in which a subordinate module is copied in-line into the body of a superordinate module. *Contrast:* downward compression; lateral compression. (C) 610.12-1990

urban districts Thickly settled areas (whether in cities or suburbs) or where congested traffic often occurs. A highway, even though in thinly settled areas, on which the traffic is often very heavy, is considered as urban. (NESC) C2-1997

usability (1) The ease with which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component. (C) 610.12-1990

(2) A measure of an executable software unit's or system's functionality, ease of use, and efficiency. *See also:* reusability. (C/SE) 1517-1999

usable levels (storage tubes) The output levels, each related to a different input, that can be distinguished from one another regardless of location on the storage surface. *Note:* The number of usable levels is normally limited by shading and disturbance. *See also:* storage tube. (ED) 158-1962w

usable sensitivity The minimum standard modulated carrier-signal power required to produce usable receiver output. (VT) [37]

usage attributes The classification of software as delivered to a user of the final product, or as nondelivered when created only to support the development process. (C/SE) 1045-1992

usage count *See:* traffic usage count.

usage mode Primary manner in which the document issuer expects that document to be used. IEEE Std 1063-1987 recognizes two usage modes, instructional and reference. (C/SE) 1063-1987r

USASCII* *See:* USA Standard Code for Information Interchange.

* Deprecated.

USA Standard Code for Information Interchange* (USASCII) (nuclear power quality assurance) A disposition permitted for a nonconforming item when it can be established that the item is satisfactory for its intended use. (PE/NP) [124]

* Deprecated.

useful active dimension (charged-particle detectors) (of a position-sensitive detector) A dimension (length, width) of that region of a position-sensitive detector over which the specifications of resolution and linearity are met. (NPS) 300-1988r

useful energy range The set or range of continuous energies for a specific type of radiation in which the instrument meets specified criteria. (NI) N42.17B-1989r

useful life (1) The period from a stated time, during which, under stated conditions, an item has an acceptable failure rate, or until an unrepairable failure occurs." (R) [29]

(2) (nuclear power generating station) The time to failure for a specific service condition. (PE/NP) 380-1975w

useful line *See:* available line.

useful output power That part of the output power that flows into the load proper. (ED) [45]

useful service life (thermal classification of electric equipment and electrical insulation) The length of time (usually in hours) for which an insulating material, insulation system, or electric equipment performs in an adequate or specified fashion. (EI) 1-1986r

user (1) (radix-independent floating-point arithmetic) (binary floating-point arithmetic) Any person, hardware, or program not itself specified by IEEE Std 754-1985 or IEEE Std 854-1987 or both, having access to and controlling those operations of the programming environment specified in these standards. (MM/C) 854-1987r, 754-1985r

(2) One who uses the services of a computer system. (C) 610.2-1987, 610.10-1994w

(3) (broadband local area networks) An individual whose principal concern is the transfer of information through the system, and to whom the system is transparent. The user is assumed to be in possession of a device that is capable of one- or two-way communication through the system. (LM/C) 802.7-1989r

(4) (software user documentation) Person who uses software to perform a task. (C/SE) 1063-1987r

(5) (repair and rewinding of motors) The owner of the motor or an authorized agent of the owner. (IA/PC) 1068-1996

(6) The independent party that may be a purchaser of utility electric power or a producer of electric energy for sale to an electric utility, or both. (SUB/PE) 1109-1990w

(7) (power systems) The owner of the transformer. (PE/TR) C57.117-1986r

(8) The ultimate human interface or top-most application program. For example, text typed into a terminal interface can be referred to as "user data." This document does not use the ISO Open Systems "layer-user" concept, in which each module in a vertical stack is the "user" of the adjacent, lower module. (MM/C) 1212.1-1993

(9) The entity or person that accesses the Directory, used in this standard to refer to the application program that is using the interface. (C/PA) 1328.2-1993w, 1224.2-1993w, 1327.2-1993w, 1326.2-1993w

(10) Those who use the CASE tools. They are not necessarily those who will execute this evaluation and selection process. (C/SE) 1209-1992w

(11) A person, system, process, or tool that generates the VHDL source code that a synthesis tool processes. (C/DA) 1076.3-1997

(12) The person, or persons, who operate or interact directly with the product. The user(s) and the customer(s) are often not the same person(s). (C/SE) 830-1998

(13) (A) An individual or organization who uses a software-intensive system in their daily work activities or recreational pursuits. **(B)** The person (or persons) who operates or interacts directly with a software-intensive system. (C/SE) 1362-1998

(14) The person or persons operating or interacting directly with the system. (C/SE) 1219-1998

(15) The source of the business drivers that the User Organization OSE Profile must address and support. (C/PA) 1003.23-1998

(16) A person, system, process, or tool that generates the VHDL source code that a synthesis tool. (C/DA) 1076.6-1999

user application program *See:* application program.

user certificate The public keys of a user, together with some other information, rendered unforgeable by encipherment with the secret key of the certification authority that issued it. *Synonym:* certificate. (C/PA) 1328.2-1993w, 1327.2-1993w, 1224.2-1993w, 1326.2-1993w

USERCODE *See:* user identity code.

user command A command that may be issued by the user. For example, "sort" or "print." (C) 610.2-1987

user-definable key (1) A key on a computer keyboard that initiates operations or functions that have been defined by the user. *Synonyms:* user-programmable key. (C) 610.2-1987

(2) A function key on a keyboard that initiates operations or functions that have been defined by the user by programming

the terminal or keyboard. *Synonym:* programmable function key; user-programmable key. (C) 610.10-1994w

user defined These 12 records can be used to contain any text data that needs to go with the spectrum. (NPS/NID) 1214-1992r

user-defined data type A non-standard data type determined to meet the needs of a particular user or to solve a particular problem. (C) 610.5-1990w

user-defined date systems Some users may implement locally developed date systems to track user-specific events. For example, manufacturing, production, or just-in-time (JIT) dates. Methodologies developed for verification of Year 2000 issues associated with the Gregorian calendar may need to be adapted to apply to user-defined date systems. (C/PA) 2000.2-1999

user documentation (software) Documentation describing the way in which a system or component is to be used to obtain desired results. *See also:* data input sheet; user manual. (C) 610.12-1990

user-driven computing *See:* end user computing.

user friendly Pertaining to a computer system, device, program, or document designed with ease of use as a primary objective. *Synonym:* user-oriented. (C/C) 610.2-1987, 610.12-1990

user group An organization of users of a particular class of computer systems, designed to allow the users to share knowledge about and programs for those systems and to formulate feedback for the systems' manufacturers. *Synonym:* user's group. (C) 610.2-1987

user guide *See:* user manual.

user hotline Telephone access to a specialist who provides users with answers to questions concerning some product, system, or application. (C) 610.2-1987

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

(2) A value identifying a system user. A User ID is a value of the type `User_ID` defined in the package `POSIX_Process_Identification`. When the identity of a user is associated with a process, a user ID value is referred to as a real user ID, an effective user ID, or an (optional) saved set-user-ID. (C) 1003.5-1999

user identity code A defined instruction for the test logic defined by 1149.1-1990. (TT/C) 1149.1-1990

user interaction Communication between a computer system and a user in which each user entry causes a response from the system. (C) 610.2-1987

user interface (1) The portion of a firmware system that process commands entered by a human. (The user interface defined by this standard consists of a Forth command interpreter plus a set of Forth words for interactively performing various Open Firmware functions. In its fully elaborated form, the Open Firmware user interface gives interactive access to all Firmware capabilities.) (C/BA) 1275-1994

(2) A physical interface between the operator and the system equipment. (SUB/PE) C37.1-1994

(3) An interface that enables information to be passed a human user and the hardware or software components of a computer system. *Synonym:* human interface. *See also:* character-based user interface. (C) 610.10-1994w, 610.12-1990

(4) The part of the application that permits the user and application to communicate with each other to perform certain tasks. (SCC20) 1226-1998

user manual A document that presents the information necessary to employ a system or component to obtain desired results. Typically described are system or component capabilities, limitations, options, permitted inputs, expected outputs, possible error messages, and special instructions. *Note:* A user manual is distinguished from an operator manual when a distinction is made between those who operate a computer system (mounting tapes, etc.) and those who use the system for its intended purpose. *Synonym:* user guide. *See also:* user manual; operator manual; data input sheet; programmer manual; installation manual; support manual; diagnostic manual. (C) 610.12-1990

user mode A processor state that is active when the S bit of the PSR is not set (when PSR.S = 0). (C/MM) 1754-1994

user name (1) A string that is used to identify a user. (PA/C) 9945-1-1996, 9945-2-1993

(2) A value of `POSIX_String` that is used to identify a user. (C) 1003.5-1999

user need (1) A user requirement for a system that a user believes would solve a problem experienced by the user. (C/SE) 1362-1998

(2) The user's set of qualitative and quantitative requirements in a particular problem domain. (C/SE) 1209-1992w

user-oriented *See:* user friendly.

user outlet port (A) (broadband local area networks) A connection port, located at a user location, that provides user access to the cable system. **(B) (broadband local area networks)** A broadband attachment location that provides connection access to the broadband coaxial cable system. (LM/C) 802.7-1989

user program (mathematics of computing) (data management) A computer program written specifically for or by a particular user. (C) 610.2-1987, 610.5-1990w

user-programmable computer A computer that can be programmed by the user. *Contrast:* fixed-instruction computer. *See also:* microprogrammable computer. (C) 610.10-1994w

user-programmable key *See:* user-definable key.

user's group *See:* user group.

user stack The protocols residing above SDE that request services from any SDE SAP except those supported by the use of a bootstrap SAID. (C/LM) 802.10-1998

user state *See:* problem state.

user terminal An input-output device by which a user communicates with a computer. (C) 610.10-1994w

user-user protocol A protocol that is adopted between two or more users to ensure communication between them. (C) 610.7-1995

user working area (data management) A work area used by a database management system to load and unload data in response to a call by some application program for data. *Synonym:* workspace. (C) 610.5-1990w

USRT *See:* universal synchronous receiver/transmitter.

usual service conditions Environmental conditions in which standard machines are designed to operate. The temperature of the cooling medium does not exceed 40 degrees Celsius and the altitude does not exceed 3300 feet. (PE) [9]

UT *See:* unit transformer.

UTP (1) (local area networks) A 100 Ω unshielded balanced cable meeting the specifications in ISO/IEC 11801:1995. (C) 8802-12-1998

(2) *See also:* unshielded twisted pair. (C) 610.7-1995

utilance *See:* room utilization factor.

utility (1) (software) A software tool designed to perform some frequently used support function. For example, a program to copy magnetic tapes. (C) 610.12-1990

(2) A program that can be called by name from a shell to perform a specific task or a related set of tasks. This program shall either be an executable file, such as might be produced by a compiler/linker system from computer source code, or a file of shell source code, directly interpreted by the shell. The program may have been produced by the user, provided by the implementor of this standard, or acquired from an independent distributor. The term *utility* does not apply to the special built-in utilities provided as part of the shell command language. The system may implement certain utilities as shell

functions or built-ins, but only an application that is aware of the command search order described or of performance characteristics can discern differences between the behavior of such a function or built-in and that of a true executable file. (C/PA) 9945-2-1993

(3) An organization responsible for the installation, operation, or maintenance of electric supply or communications systems. (NESC) C2-1997

(4) A provider of electricity, gas, water, telecommunications, or related services to a community. (AMR/SCC31) 1377-1997

utility bus This bus includes signals that provide periodic timing and coordinate the power-up and power-down of the systems. It is one of the four buses provided by the backplane. (C/BA) 1014-1987

utility controller (UC) A controller resident on a utility/enhanced service provider (ESP) premises, that connects, via the telephone network, to the telemetry interface unit (TIU) (using the direct dial network access method), to the central office service unit (COSU) (using the COSU network access method or the no-test trunk network access method). (AMR/SCC31) 1390-1995, 1390.2-1999, 1390.3-1999

utility interactive system An electric power production system that is operating in parallel with and capable of delivering energy to a utility electric supply system. (NESC) C2-1997

utility interconnection point Point of interconnection between the utility-owned equipment (conductors) and that of the SPC owner. This is usually the metering location. (DESG) 1035-1989w

utility-interface disconnect switch A switch that may be required at the interface between the photovoltaic (PV) system and the utility system. This terminology is used to distinguish this switch from others that may be installed for other reasons, such as to satisfy requirements of the National Electrical Code®. (SCC21) 929-2000

utility power *See:* commercial power.

utility routine *See:* service routine.

utility signals A set of discrete lines in the backplane that provide communications among modules for which a bus is not adequate because of latency or other reasons. (C/BA) 14536-1995

utility software Computer programs or routines designed to perform some general support function required by other application software, by the operating system, or by system users. *See also:* computer program; operating system; routine; application software; function; system. (C/SE) 729-1983s

utility telemetry trunk (UTT) A two-way telephone company facility connecting the central office service unit (COSU) to the switch. This facility allows a utility or enhanced service provider (ESP), via the telephone network (COSU), to automatically invoke/ignore certain telephone network capabilities as well as provide suppressed or abbreviated ringing access to a telemetry interface unit(s) [TIU(s)] on an end user's line. The TIU may also originate calls, through the telephone network (COSU and switch), which will automatically invoke/ignore certain telephone network capabilities and provide a connection to the utility or ESP. (AMR/SCC31) 1390-1995, 1390.2-1999, 1390.3-1999

utilization (software) In computer performance evaluation, a ratio representing the amount of time a system or component is busy divided by the time it is available. *See also:* busy time; idle time. (C) 610.12-1990

utilization equipment (1) Equipment that utilizes electric energy for mechanical, chemical, heating, lighting, or similar purposes. (NESC/NEC) [86]

(2) (electric power systems in commercial buildings) Electrical equipment that converts electric power into some other form of energy, such as light, heat, or mechanical motion. (IA/PSE) 241-1990r

(3) Equipment, devices, and connected wiring that utilize electric energy for mechanical, chemical, heating, lighting, testing, or similar purposes and are not a part of supply equipment, supply lines, or communication lines. (NESC) C2-1997

utilization factor (system utilization factor) The ratio of the maximum demand of a system to the rated capacity of the system. *Note:* The utilization factor of a part of the system may be similarly defined as the ratio of the maximum demand of the part of the system to the rated capacity of the part of the system under consideration. *See also:* direct-current distribution; alternating-current distribution. (T&D/PE) [10]

utilization time (A) (medical electronics) (hauptnutzzeit) The minimum duration that a stimulus of rheobasic strength must have to be just effective. **(B) (medical electronics)** (hauptnutzzeit) The shortest latent period between stimulus and response obtainable by very strong stimuli. **(C) (medical electronics)** (hauptnutzzeit) The latent period following application of a shock of theobasic intensity. (EMB) [47]

utilization voltage (1) (system voltage ratings) The root-mean-square phase-to-phase or phase-to-neutral voltage at the line terminals of utilization equipment. *See also:* high voltage; medium voltage; low voltage; maximum system voltage; service voltage; nominal system voltage; system voltage. (IA/SPD/PE/APP) [80], C62.62-2000

(2) (elecrtic power systems in commercial buildings) The voltage at the line terminals of utilization equipment. (IA/PSE) 241-1990r

UTT *See:* utility telemetry trunk.

UTT-oriented language *See:* unit-under-test-oriented language.

UUID *See:* universally unique identifier.

UUT *See:* unit under test.

uvh *See:* ultra-high voltage.