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The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition



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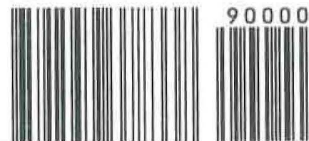
Sixth Edition

Standards Coordinating Committee 10, Terms and Definitions
Jane Radatz, Chair

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item; that is, one immediately after the other.

(C) 610.12-1990

consecutive sequence computer A type of computer in which instructions are executed in an implicitly defined sequence unless a jump instruction specifies the storage location of the next instruction to be executed. *Contrast:* arbitrary sequence computer.

(C) 610.10-1994

consecutive spill method *See:* linear probing.

conservation of radiance (fiber optics) A basic principle stating that no passive optical system can increase the quantity Ln^{-2} where L is the radiance of a beam and n is the local refractive index. Formerly called "conservation of brightness" or the "brightness theorem." *See also:* brightness; radiance.

(Std100) 812-1984w

conservator (expansion tank system) (power and distribution transformers) A system in which the oil in the main tank is sealed from the atmosphere, over the temperature range specified, by means of an auxiliary tank partly filled with oil and connected to the completely filled main tank.

(PE) C57.12.80-1978r

conservator/diaphragm system (power and distribution transformers) A system in which the oil in the main tank is completely sealed from the outside atmosphere, and is connected to an elastic diaphragm tank contained inside a tank mounted at the top of the transformer. As oil expands and contracts within a specified temperature range the system remains completely sealed with an approximately constant pressure.

(PE) C57.12.80-1978r

consistency (software) The degree of uniformity, standardization, and freedom from contradiction among the documents or parts of a system or component. *See also:* traceability.

(C) 610.12-1990

consistency check A check that verifies that an item of data is compatible with certain rules specified for that data. For example, one might wish to check the consistency between two data elements ORDER-DATE and DELIVER-DATE such that DELIVER-DATE may not be earlier than ORDER-DATE. *See also:* crossfooting check; limit check; range check; validity check.

(C) 610.5-1990

consol (navigation aid terms) A keyed C-W (continuous wave) short-baseline-radio navigation system operating in the L/MF (low- and medium frequency) band, generally useful to about 1500 nmi (nautical miles) (2800 kilometers [km]), and using three radiators to provide a multiplicity of overlapping lobes of dot-and-dash patterns which form equisignal hyperbolic lines of position. These lines of position are moved slowly in azimuth by changing rf (radio frequency) phase, thus allowing a simple listening and counting of timing operation to be used to determine a line of position within the sector bounded by any pair of equisignal lines.

(AE) 172-1983w

consolan (navigation aid terms) A form of consol using two radiators instead of three.

(AE) 172-1983w

console (1) (telephony) A control cabinet located apart from the associated switching equipment arranged to control those functions for which an attendant or an operator is required.

(COM/SWG) [48]

(2) **(telephony)** The part of a computer used for communication between the operator or maintenance engineer and the computer.

(C) [85]

(3) **(telephone switching systems) (telephony)** A desk or desk-top cordless switchboard which may include display elements in addition to those required for supervisory purposes is required.

(COM) 312-1977w

(4) **(station control and data acquisition) (supervisory control, data acquisition, data control) (telephony)** That component of the system that provides facilities for observation and control of the system (e.g., operator's console, maintenance console). *See also:* control; control panel; panel.

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

(5) A device used as the primary means of communication with a human being, consisting of an input device, used for receiving information supplied by the human, and an output device, used for sending information to the human. (Typically, a console is either an ASCII terminal connected to a serial port or the combination of a text/graphics display device and a keyboard.)

(BA/C) 1275-1994

(6) A functional unit used for communication between the computer operator and the computer. *Note:* May provide special-purpose keys, input devices, and display devices employed to operate and control the computer. *Synonyms:* console display; display console. *See also:* control panel.

(C) 610.10-1994

console display *See:* console.

consonant articulation (percent consonant articulation) The percent articulation obtained when the speech units considered are consonants (usually combined with vowels into meaningless syllables). *See also:* volume equivalent.

(EEC/PE) [119]

conspicuity (illuminating engineering) The capacity of a signal to stand out in relation to its background so as to be readily discovered by the eye.

(EEC/IE) [126]

constancy *See:* residual probe pickup.

constant (1) (computers) A quantity or data item whose value cannot change; for example, the data item FIVE, with an unchanging value of 5. *Contrast:* variable. *See also:* figurative constant; literal.

(C) 610.12-1990

(2) *See also:* time constant of integrator.

constant address *See:* base address.

constant-amplitude recording (mechanical recording) A characteristic wherein, for a fixed amplitude of a sinusoidal signal, the resulting recorded amplitude is independent of frequency. *See also:* phonograph pickup.

(SP) [32]

constant available power source (transmission performance of telephone sets) A signal source with a purely resistive internal impedance and a constant open-circuit terminal voltage, independent of frequency. *Note:* Receiving is tested under conditions of constant available power. A generator having an open-circuit voltage, E , and an internal voltage, R_0 , both constant with frequency, provides a constant available power of $E^2/4R_0$. When the load impedance is a resistance equal to R_0 , an impedance match exists and the maximum available power of $E^2/4R_0$, is dissipated in the load. When a generator with a constant open-circuit voltage and a constant internal resistance of the required value is not available, suitable test conditions for this type of measurement can be provided by a generator whose voltage is maintained at a constant value, E_0 , across its terminals in series with a resistance, R_0 . The generator and the resistance, R_0 , in series are then equivalent to a source of constant available power.

(COM) 269-1983s

constant-current (Heising) modulation A system of amplitude modulation wherein the output circuits of the signal amplifier and the carrier-wave generator or amplifier are directly and conductively coupled by means of a common inductor that has ideally infinite impedance to the signal frequencies and that therefore maintains the common plate-supply current of the two devices constant. *Note:* The signal-frequency voltage thus appearing across the common inductor appears also as modulation of the plate supply to the carrier generator or amplifier with corresponding modulation of the carrier output.

(AP) 145-1983s

constant-current arc-welding power supply A power supply that has characteristically drooping volt-ampere curves producing relatively constant current with a limited change in load voltage. *Note:* This type of supply is conventionally used in connection with manual-stick-electrode or tungsten-inert-gas arc welding.

(EEC) [91]

constant-current characteristic (electron tube) The relation, usually represented by a graph, between the voltages of two

letter-quality (LQ) Pertaining to printed output that is suitable for high quality correspondence. *Note:* This term implies that "letter quality" output matches that of a standard typewriter. *See also:* draft quality; near-letter quality.

(C) 610.10-1994

letter spacing *See:* intercharacter spacing.

let-through sparkover (surge arresters) A measure of the highest lightning surge an arrester is likely to withstand without sparkover in 3 μ s or less. The value determined by a $1.2 \times 50\text{-}\mu$ s impulse sparkover test. *See also:* IEEE.

(PE) [8]

level (1) (data transmission) The magnitude of a quantity, especially when considered in relation to an arbitrary reference value. Level may be stated in the units in which the quantity itself is measured (for example, dB) expressing the ratio to a reference value.

(PE) 599-1985w

(2) (A) (software) The degree of subordination of an item in a hierarchical arrangement. *See also:* hierarchy. **(B) (software)** A rank within a hierarchy. An item is of the lowest level if it has no subordinates and of the highest level if it has no superiors. *See also:* hierarchy.

(C/SE) 729-1983s

(3) (general) (quantity) Magnitude, especially when considered in relation to an arbitrary reference value. Level may be stated in the units in which the quantity itself is measured (for example, volts, ohms, etc.) or in units (for example, decibels) expressing the ratio to a reference value. *Notes:* 1. Examples of kinds of levels in common use are electric power level, sound-pressure level, voltage level. 2. The level as here defined is measured in two common units: in decibels when the logarithmic base is 10, or in nepers when the logarithmic base is e . The decibel requires that k be 10 for ratios of power, or 20 for quantities proportional to the square root of power. The neper is used to represent ratios of voltage, current, sound pressure, and particle velocity. The neper requires that k be 1. 3. In symbols,

$$L = k \log_r(q/q_0)$$

where

L = level of kind determined by the kind of quantity under consideration

r = base of the logarithm of the reference ratio

q = the quantity under consideration

q_0 = reference quantity of the same kind

k = a multiplier that depends upon the base of the logarithm and the nature of the reference quantity

See also: blanking level; reference black level; reference white level; signal level; transmission level.

(PE/SP/T&D) [32], 539-1990

(4) (charge-storage tubes) A charge value which can be stored in a given storage element and distinguished in the output from other charge values. *See also:* channel.

(ED) 161-1971w

(5) The level in dBm of a signal or tone into a resistive load equal to the designated impedance at the point of measurement. Levels measured into complex impedances, as specified by ITU-T Recommendation O.41, clause 3.13, are not recognized by this standard.

(COM) 743-1995

(6) *See also:* transit.

(PE/T&D) 524-1992

level above threshold (sensation level) (sound) The pressure level of the sound in decibels above its threshold of audibility for the individual observer.

(SP) [32]

level band pressure (electroacoustics) (for a specified frequency band) The sound-pressure level for the sound contained within the restricted band. *Notes:* 1. The reference pressure must be specified. 2. The band may be specified by its lower and upper cutoff frequencies or by its geometric or arithmetic center frequency and bandwidth. The width of the band may be indicated by a prefatory modifier, for example, octave band (sound pressure) level, half-octave band level, third-octave band level, 50-hertz band level.

(SP) [32]

level compensator (signal transmission) An automatic transmission-regulating feature or device to minimize the effects of variations in amplitude of the received signal. *See also:* telegraphy.

(EEC/PE) [119]

level detector (as applied to relaying) A device that produces a change in output at a prescribed input level.

(PE/SWG) C37.100-1992

leveling *See:* platform erection.

leveling block *See:* leveling plate.

leveling error (accelerometer) (inertial sensors) The angle between the local horizontal and the input reference axis when the accelerometer output is zero.

(AE) 528-1984s

leveling plate (leveling block) (rotating machinery) A heavy pad built into the foundation and used to support and align the bed plate or rails using shims for adjustment before grouting.

(PE) [9]

leveling zone (elevators) The limited distance above or below an elevator landing within which the leveling device may cause movement of the car toward the landing. *See also:* elevator car-leveling device.

(EEC/PE) [119]

level n repeater A repeater that is $(n - 1)$ link segments below the root repeater in a cascade.

(C/LM) 802.12-1995

level of documentation (software) A description of required documentation indicating its scope, content, format, and quality. Selection of the level may be based on project cost, intended usage, extent of effort, or other factors. *See also:* documentation; quality.

(C/SE) 729-1983s

level of maintenance A level at which diagnostics can operate (e.g., maintenance depot, factory, in the field).

(ATL) 1232-1995

Level 1 device A device that supports the Level 1 electrical interface.

(C/MM) 1284-1994

level, power dBm Decibels relative to one milliwatt. This is the customary unit worldwide for measurement of telecommunications signal power. Zero dBm equals one milliwatt.

(COM) 1007-1991

level, relay *See:* relay level.

level sensitive Pertaining to a circuit that can be held in one state as long as an input signal maintains a certain value. *Contrast:* edge sensitive. *See also:* transparent latch.

(C) 610.10-1994

level-sensitive scan design A variant of the scan design technique that results in race-free, testable digital electronic circuits.

(C/TT) 1149.1-1990

level-sensitive signal Signals whose high or low state is sampled based on the leading and/or trailing edges of edge-sensitive strobe signals.

(BA/C) 896.9-1994

levels, usable (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

level switch (power system device function numbers) A switch which operates on given values, or on a given rate of change, of level.

(PE/SUB) C37.2-1979s

level, tracking Deviation of the gain or loss as the input level to a codec is varied. Usually the reference level is 0 dBm0 at 1004 Hz.

(COM) 1007-1991

Level 2 device A device that supports the Level 2 electrical interface.

(C/MM) 1284-1994

lever blocking device (railway signaling) A device for blocking a lever so that it cannot be operated.

(EEC/PE) [119]

lever indication (railway signaling) The information conveyed by means of an indication lock that the movement of an operated unit has been completed.

(EEC/PE) [119]

LEX A compiler specification language in which the input is (1) a specification of a set of regular expressions and (2) actions to be taken upon recognizing each of these. The output

V

vacant code (telephone switching systems) A digit or a combination of digits that is unassigned. (COM) 312-1977w

vacant-code tone (telephone switching systems) A tone that indicates that an unassigned code has been dialed. (COM) 312-1977w

vacant number (telephone switching systems) An unassigned or unequipped directory number. (COM) 312-1977w

vacuum column In a tape drive, a cavity in which a low air pressure is maintained so as to attract a tape loop between the spool and the driving mechanism. (C) 610.10-1994

vacuum envelope (electron tube) The airtight envelope that contains the electrodes. *See also:* electrode. (EEC/PE) [119]

vacuum-tube amplifier An amplifier employing electron tubes to effect the control of power from the local source. *See also:* amplifier. (AP) 145-1983s

vacuum-tube radio frequency generator *See:* radio-frequency generator, electron tube type.

vacuum-tube transmitter A radio transmitter in which electron tubes are utilized to convert the applied electric power into radio-frequency power. *See also:* radio transmitter. (AP) 145-1983s

vacuum valve A device for sealing and unsealing the passage between two parts of an evacuated system. *See also:* rectification. (EEC/PE) [119]

valance (illuminating engineering) A longitudinal shielding member mounted across the top of a window or along a wall, to conceal light sources, giving both upward and downward distributions. (EEC/IE) [126]

valance lighting (illuminating engineering) Lighting comprising light sources shielded by a panel parallel to the wall at the top of a window. (EEC/IE) [126]

valence band The range of energy states in the spectrum of a solid crystal in which lie the energies of the valence electrons that bind the crystal together. *See also:* semiconductor. (ED) 216-1960w

validated metric A metric whose values have been statistically associated with corresponding quality factor values. (C/SE) 1061-1992

validation (1) (programmable digital computer systems in safety systems of nuclear power generating stations) The test and evaluation of the integrated computer system to ensure compliance with the functional, performance, and interface requirements. 7432-1982w

(2) (software verification and validation) The process of evaluating software at the end of the software development process to ensure compliance with software requirements. *See also:* requirement; software; software development process; verification. (C/SE) 1012-1986r

(3) (test, measurement, and diagnostic equipment) That process in the production of a test program by which the correctness of the program is verified by running it on the automatic test equipment together with the unit under test. The process includes the identification of run-time errors, procedure errors, and other non-compiler errors, not uncovered by pure software methods. The process is generally performed with the customer or designated representative as a witness. (MIL) [2]

(4) (software) The process of evaluating a system or component during or at the end of the development process to determine whether it satisfies specified requirements. *Contrast:* verification. (BA/C/SE) 1233-1996, 610.12-1990, 896.9-1994

(5) The process of testing an application or system to ensure that it conforms to its specification. (C/PA) 14252-1996

valid bid for service An originating or incoming call attempt for which the switching system receives the expected number

of digits. *See also:* ineffective attempts.

(COM) 973-1990w

valid call Occurs if enough digits are received to complete the call through the office or to give the subscriber an appropriate tone or signal. (COM) 973-1990w

validity check A consistency check that is based upon known limits relating to particular data. For example, a month may not be numbered greater than 12, and a week cannot have more than 168 hours. (C) 610.5-1990

valley (pulse terminology) A portion of a pulse waveform between two specified peak magnitudes of the same polarity. *See also:* preshoot. (IM) 194-1977w

valley point (tunnel-diode characteristic) The point on the forward current-voltage characteristic corresponding to the second-lowest positive (forward) voltage at which $di/dV = 0$. *See also:* peak point. (ED) [46], 253-1963w

valley-point current (tunnel-diode characteristic) The current at the valley point. *See also:* peak point. (ED) [46], 253-1963w

valley-point voltage (tunnel-diode characteristic) The voltage at which the valley point occurs. *See also:* peak point. (ED) [46], 253-1963w

valuator (1) A logical input device used to input a scalar value in a graphics system. A typical physical device is a control dial. (C) 610.6-1991

(2) (A) An input device that provides a scalar value; for example, a thumb wheel or a potentiometer. **(B)** A logical input device used to input a scalar value in a graphics system. *Note:* A corresponding physical device is a control dial. (C) 610.10-1994

value (1) (automatic control) The quantitative measure of a signal or variable. *See also:* control system, feedback. (IM) [120]

(2) (direct-current through test object) The arithmetic mean value. (PE) [6], 4-1978s

(3) (test direct voltages) The arithmetic mean value: that is, the integral of the voltage over a full period of the ripple divided by the period. *Note:* The maximum value of the test voltage may be taken approximately as the sum of the arithmetic mean value plus the ripple magnitude. (PE) [55], 4-1978s

(4) (alternating test voltage) The peak value divided by $(2)^{1/2}$. (PE) [55]

See also: data value. (C) 610.5-1990

(6) An arbitrarily complex information item that can be viewed as a characteristic or property of an object. (C/PA) 1224-1993, 1327-1993, 1328-1993

(7) *See also:* attribute value; OM attribute value. (C/PA) 1328.2-1993

value-added network A communications network that provides enhanced services, such as character set conversion, protocol conversion, and message storing and forwarding. (C) 610.7-1995

value-added service A communications service utilizing communications common carrier networks for transmission and providing added data services with separate additional equipment. Such added service features may be store-and-forward switching, terminal interfacing and host interfacing. (COM/LM) 168-1956w

value, desired *See:* value, ideal.

value, ideal (automatic control) The value of the ultimately controlled variable of an idealized system under consideration. *Synonym:* desired value. *See also:* ideal value. (PE) [3]

value, Munsell *See:* Munsell value.

value of the test current (high voltage testing) The value of the test current is normally defined by the crest value. With