

IEEE 100

THE
AUTHORITATIVE
DICTIONARY
OF IEEE STANDARDS TERMS

SEVENTH EDITION



IEEE

Published by
Standards Information Network
IEEE Press

REFERENCE

IEEE 100

**The
Authoritative
Dictionary
of IEEE
Standards
Terms**

Seventh Edition

TK9
.J28
2000
REF



IEEE

Trademarks and disclaimers

IEEE believes the information in this publication is accurate as of its publication date; such information is subject to change without notice. IEEE is not responsible for any inadvertent errors.

Other tradenames and trademarks in this document are those of their respective owners.

*The Institute of Electrical and Electronics Engineering, Inc.
3 Park Avenue, New York, NY, 10016-5997, USA*

Copyright © 2000 by the Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Published December 2000. Printed in the United States of America.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

To order IEEE Press publications, call 1-800-678-IEEE.

Print: ISBN 0-7381-2601-2

SP1122

See other standards and standards-related product listings at: <http://standards.ieee.org/>

The publisher believes that the information and guidance given in this work serve as an enhancement to users, all parties must rely upon their own skill and judgement when making use of it. The publisher does not assume any liability to anyone for any loss or damage caused by any error or omission in the work, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.

This work is published with the understanding that the IEEE is supplying information through this publication, not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought. The IEEE is not responsible for the statements and opinions advanced in this publication.

Library of Congress Cataloging-in-Publication Data

IEEE 100 : the authoritative dictionary of IEEE standards terms.—7th ed.
p. cm.

ISBN 0-7381-2601-2 (paperback : alk. paper)

1. Electric engineering—Dictionaries. 2. Electronics—Dictionaries. 3. Computer engineering—Dictionaries. 4. Electric engineering—Acronyms. 5. Electronics—Acronyms. 6. Computer engineering—Acronyms. I. Institute of Electrical and Electronics Engineers.

TK9 .J28 2000
621.3'03—dc21

00-050601

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

(SUB/PE) 1264-1993

(4) An obstruction composed of suitable construction and materials or a time delay mechanism that imposes a delay for an intended purpose.

(PE/NP) 692-1997

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

(ED) 158-1962w, [45]

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

(Std100) 812-1984w

barrier transaction (1) Transaction that is guaranteed to become visible to other observers after all transactions created before it have become visible.

(C/BA) 896.3-1993w

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

(C/MM) 1212.1-1993

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

(IA/ICTL) 518-1982r

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

(PE) [9]

bar, rotor *See:* rotor bar.

bar-type current transformer One that has a fixed and straight single primary winding turn passing through the magnetic circuit. The primary winding and secondary winding(s) are insulated from each other and from the core(s) and are assembled as an integral structure.

(PE/TR) C57.13-1993, [57]

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

(C) 162-1963w

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

(PE) [9]

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

(ED) [45], [84]

(4) (electroplating) (basis or base metals) The object upon which the metal is electroplated. *See also:* electroplating.

(PE/EEC) [119]

(5) (transistor) A region that lies between an emitter and a collector of a transistor and into which minority carriers are injected. *See also:* transistor.

(ED/IA) 216-1960w, [12]

(6) (high-voltage fuse) The supporting member to which the insulator unit or units are attached.

(SWG/PE) C37.40-1993, C37.100-1992

(7) (pulse terminology) The two portions of a pulse waveform which represents the first nominal state from which a pulse departs and to which it ultimately returns.

(IM/WM&A) 194-1977w

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

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

(C) 610.12-1990, 610.10-1994w

(2) A given address from which an absolute address is derived by combination with a relative address. *Synonyms:* reference address; presumptive address; constant address.

(C) [20], 610.10-1994w, [85]

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

(C) 610.10-1994w

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

(PE) [4]

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

(EM/PE) 86-1987w

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

86-1961

base assertion An assertion that is required to be tested for required features and for implemented conditional features.

(C/PA) 1326.2-1993w, 1328-1993w, 13210-1994, 2003.1-1992, 1328.2-1993w

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

(BT/COM/PE/AV) [34], 168-1956w, 599-1985w

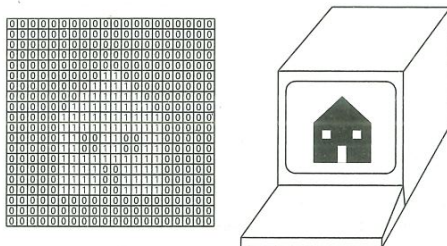
baseband coaxial system (1) A baseband system employing coaxial cables as a data transmission medium. At any point on the medium only one information signal at a time can be present without disruption. *Contrast:* baseband twisted-pair system.

(C) 610.7-1995

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

(C/LM) 802.3-1998

bit map In computer graphics, a block of memory that stores a raster image of pixels in a device-specific format, in which the characteristics of each pixel are determined by a set of bits. *Synonyms:* refresh buffer; frame buffer.



bit map

(C) 610.6-1991w

(2) A data structure that stores information about entities in the form of a series of one-bit entries, each of which describes the state of the corresponding entity; for example, in graphics, a block of memory that stores a raster image in a device-specific format in which the characteristics of each pixel are determined by a set of bits. *See also:* bit plane; bit-mapped. (C) 610.10-1994w

bit map font A font defined in the form of a bit map that specifies the bit pattern which makes up each character. *Synonym:* intrinsic font. *Contrast:* derived font; vector font; outline font. (C) 610.10-1994w

bit-mapped Pertaining to a display screen on which a character or image is generated from a bit map in memory. (C) 610.10-1994w

bitonic merge *See:* bitonic sort.

bitonic sort A variation on Batchier's parallel sort in which one of the two ordered subsets begins in reverse order and the items to be compared and exchanged are selected from the same subset. *Synonym:* bitonic merge. (C) 610.5-1990w

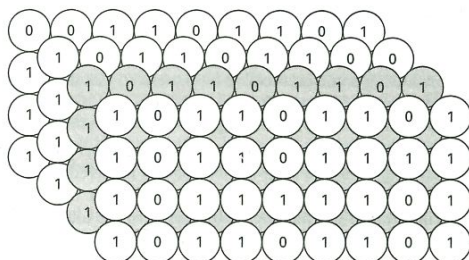
bit pad *See:* data tablet.

bit parallel Pertaining to a method for simultaneously processing all bits as a contiguous set of bits over separate wires, one wire for each bit. (C) 610.10-1994w

bit-parallel (programmable instrumentation) (696 interface devices) (signals and paths) A set of concurrent data bits present on a like number of signal lines used to carry information. Bit-parallel data bits may be acted upon concurrently as a group or independently as individual data bits. (IM/MM/C/AIN) 488.1-1987r, 696-1983w

bit pattern The image created on the screen of a display device by the mapping of the bit map onto the screen. (C) 610.10-1994w

bit plane A portion of a bit map that stores one bit of every pixel of a raster image. *Note:* Several bit planes are combined to make the full image.



bit plane

(C) 610.10-1994w

bit rate (BR) (1) (station control and data acquisition) (supervisory control) (data acquisition and automatic control) The number of bits transferred in a given time interval. Bits per second is a measure of the rate at which bits are transmitted. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) (data transmission) The speed at which bits are transmitted; usually expressed in bits per second.

(PE) 599-1985w

(3) The number of bits transmitted per unit of time, usually expressed in bits per second (bps).

(COM/TA) 1007-1991r

(4) The rate of data throughput on the medium in bits per second or hertz, whichever is more appropriate to the context. *Synonym:* bit transfer rate. *Contrast:* baud rate.

(C) 610.7-1995

(5) The rate at which data are transmitted, expressed in bits per unit time. *Synonym:* bit transfer rate. *See also:* baud rate.

(C) 610.10-1994w

(6) The total number of bits per second transferred to or from the Media Access Control (MAC). For example, 100BASE-T has a bit rate of one hundred million bits per second (10^8 b/s). (C/LM) 802.3-1998

bit rate/2 One-half of the BR in hertz. (C/LM) 802.3-1998

bit-retention The time interval from the writing of either state into a specified memory location to the earliest appearance of an incorrect state from such memory location, as measured on the specified output terminal(s). (ED) 1005-1998

bit-retention time The retention time for one address location. (ED) 641-1987w

bit serial Pertaining to a method of sequentially processing a contiguous set of bits one at a time over a single wire, according to a fixed sequence. (C) 610.10-1994w

bit slice Pertaining to a device consisting of an n-bit functional component, such as an arithmetic and logic unit (ALU), or a sequencer, which may be cascaded with one or more identical devices to expand the width of its function by multiples of n. *See also:* bit slice device; bit slice processor. (C) 610.10-1994w

bit slice architecture An architecture in which a section of the register and the arithmetic and logic unit in a computer is placed into one package. *See also:* bit slice processor. (C) 610.10-1994w

bit slice device A device that uses bit slice technology. (C) 610.10-1994w

bit slice microprocessor *See:* bit slice device; bit slice processor. (C) 610.10-1994w

bit slice processor A processor that is built from multiple bit slices to any given word-size. (C) 610.10-1994w

bits per second (bps) A unit of data transmission speed, expressed as the number of bits transmitted per second. *Note:* IEEE Std 260.1-1993 specifies b/s as the SI unit symbol for bits per second. *Contrast:* baud rate. (C) 610.7-1995

bits per unit time (test, measurement, and diagnostic equipment) Operating number of bits, handled by a device in a given unit of time, under specified conditions. (MIL) [2]

bit steering A microprogramming technique in which the meaning of a field in a microinstruction is dependent on the value of another field in the microinstruction. *Synonym:* immediate control. *Contrast:* residual control. *See also:* two-level encoding. (C) 610.12-1990

bit stream A continuous stream of bits transmitted over a channel with no separators between the character groups. (C) 610.7-1995, 610.10-1994w

bit string (1) A sequence of binary digits; for example, the bit string 0101001. *See also:* character string. (C) 610.5-1990w

(2) An ordered sequence of zero or more bits.

(C/PA) 1328-1993w, 1327-1993w, 1224-1993w

bit stuffing A method to insert extra bits in a bit stream to achieve transparency throughout the bit stream. (C) 610.7-1995

bit time (BT) The duration of one bit as transferred to and from the MAC. The bit time is the reciprocal of the bit rate. For example, for 100BASE-T the bit rate is 10^{-8} s or 10 ns.

(LM/C) 8802-3-1993s, 802.3-1998

bit transfer rate *See:* bit rate.

demand deviation The difference between the indicated or recorded demand and the true demand, expressed as a percentage of the full-scale value of the demand meter or demand register. *See also:* pulse-count deviation.

(ELM) C12.1-1982s

demand factor (1) (power operations) The ratio of the maximum coincident demand of a system, or part of a system, to the total connected load of the system, or part of the system, under consideration. (PE/PSE) 858-1987s

(2) **(electric power systems in commercial buildings)** The ratio of the maximum demand of a system to the total connected load of the system. *Notes:* 1. Since demand load cannot be greater than the connected load, the demand factor cannot be greater than unity. 2. Those demand factors permitted by the NEC (for example, services and feeders) must be considered in sizing the electric system (with few exceptions, this is 100%); otherwise, the circuit may be sized to support the anticipated load. (IA/PSE) 241-1990r

(3) The ratio of the maximum coincident demand of a system, or part of a system, to the total connected load of the system, or part of the system, under consideration. The resultant is always 1 or less and can range from 0.8 to 1 to as low as 0.15 to 0.25 for some plants with very low diversity. (IA/PSE) 141-1993r

(4) The ratio of the operating load demand of a system or part of a system to the total connected load of the system or part of the system under consideration. (IA/MT) 45-1998

demand failure rate (reliability data for pumps and drivers, valve actuators, and valves) The probability (per demand) of failure that a component will fail to operate upon demand when required to start, change state, or function. (PE/NP) 500-1984w

demand, instantaneous *See:* instantaneous demand.

demand, integrated *See:* integrated demand.

demand interval (1) (demand meter or register) The length of the interval of time upon which the demand measurement is based. *Note:* The demand interval of a block-interval demand meter is a specific period of time such as 15, 30, or 60 minutes during which the electric energy flow is average. The demand interval of a lagged-demand meter is the time required to indicate 90 percent of the full value of a constant load suddenly applied. Some meters record the highest instantaneous load. *See also:* demand meter; electricity meter. (ELM/PE/PSE) [54]

(2) **(block-interval demand meter)** The specified interval of time on which a demand measurement is based. *Note:* Intervals such as 15, 30, or 60 minutes are commonly specified. *See also:* demand meter—time characteristic. (ELM) C12.1-1988

(3) The period during which the demand is integrated. (PE/PSE) 858-1993w

demand-interval deviation (metering) The difference between the measured demand interval and the specified demand interval, expressed as a percentage of the specified demand interval. (ELM) C12.1-1988

demand load *See:* demand.

demand—maximum The highest demand measured over a selected period of time, such as 1 month. (ELM) C12.1-1981

demand meter (metering) A metering device that indicates or records the demand, maximum demand, or both. *Note:* Since demand involves both an electrical factor and a time factor, mechanisms responsive to each of these factors are required, as well as an indicating or recording mechanism. These mechanisms may be either separate from or structurally combined with one another. (ELM) C12.1-1988

demand meter—contact-making clock A device designed to close momentarily an electric circuit to a demand meter at periodic intervals. (ELM) C12.1-1988

demand meter—indicating A demand meter equipped with a readout that indicates demand, maximum demand, or both. (ELM) C12.1-1988

demand meter—integrating (block-interval) A meter that integrates power or a related quantity over a fixed-time interval, and indicates or records the average. (ELM) C12.1-1988

demand meter—lagged A meter that indicates demand by means of thermal or mechanical devices having an approximately exponential response. (ELM) C12.1-1988

demand meter—time characteristic (lagged-demand meter) The nominal time required for 90% of the final indication, with constant load suddenly applied. *Note:* The time characteristic of lagged-demand meters describes the exponential response of the meter to the applied load. The response of the lagged-demand meter to the load is continuous and independent of the selected discrete time intervals. (ELM) C12.1-1988

demand meter—timing deviation The difference between the elapsed time indicated by the timing element and the true elapsed time, expressed as a percentage of the true elapsed time. (ELM) C12.1-1988

demand, native system *See:* native system demand.

demand, noncoincident *See:* noncoincident demand.

demand paging (software) A storage allocation technique in which pages are transferred from auxiliary storage to main storage only when those pages are needed. *Contrast:* anticipatory paging. (C) 610.12-1990

demand priority A round-robin arbitration method to provide LAN access based on message priority level. local area networks. (C) 8802-12-1998

demand register A mechanism, for use with an integrating electricity meter, that indicates maximum demand and also registers electric energy (or other integrated quantity). (ELM) C12.1-1988

demand register—cumulative A register that indicates the sum of the previous maximum demand readings prior to reset. When reset, the present reading is added to the previous accumulated readings. The maximum demand for the present reading period is the difference between the present and previous readings. (ELM) C12.1-1988

demand register—multiple-pointer form An indicating demand register from which the demand is obtained by reading the position of the multiple pointers relative to their scale markings. The multiple pointers are resettable to zero. (ELM) C12.1-1988

demand register—single-pointer form An indicating demand register from which the demand is obtained by reading the position of a pointer relative to the markings on a scale. The single pointer is resettable to zero. (ELM) C12.1-1988

demand-totalizing relay A device designed to receive and totalize electric pulses from two or more sources for transmission to a demand meter or to another relay. *See also:* demand meter. (ELM) C12.1-1982s

demarcation strip (data transmission) The terminals at which the telephone company's service ends and the customer's equipment is connected. (PE) 599-1985w

demineralization The process of removing dissolved minerals (usually by chemical means). (Std100) [71]

demodulate To receive signals transmitted over a communications computer; and to convert them into electrical pulses that can serve as inputs to a computer system. *Contrast:* modulate. (C) 610.7-1995

demodulation (1) A modulation process wherein a wave resulting from previous modulation is employed to derive a wave having substantially the characteristics of the original modulating wave. *Note:* The term is sometimes used to describe the action of a frequency converter or mixer, but this practice is deprecated except in the case of shifting a single-sideband signal to baseband. (IT) [123]

(2) **(data transmission)** A modulation process wherein a wave resulting from previous modulation is employed to derive a wave substantial to the characteristics of the original modulating wave. *Note:* The term is sometimes used to describe the action of a frequency converter or mixer, but this practice is deprecated. (PE) 599-1985w

(3) (overhead power lines) The process by which the signal is recovered from a modulated carrier.

(PE/T&D) 539-1990

(4) The reconversion of a modulated signal back into its original form by extracting the data from the modulated carrier. *Contrast*: modulation. (C) 610.7-1995

demodularization In software design, the process of combining related software modules, usually to optimize system performance. *See also*: lateral compression; downward compression; upward compression. (C) 610.12-1990

demodulator A device to effect the process of demodulation. *See also*: demodulation. (Std100) 270-1964w

demodulator-modulator *See*: modem.

demonstration (1) (safety systems equipment in nuclear power generating stations) The provision of evidence to support the conclusion derived from assumed premises.

(PE/NP) 627-1980r

(2) (Class 1E battery chargers and inverters) A course of reasoning showing that a certain result is a consequence of assumed premises; an explanation or illustration, as in teaching by use of examples. (PE/NP) 650-1979s

(3) (software) A dynamic analysis technique that relies on observation of system or component behavior during execution, without need for post-execution analysis, to detect errors, violations of development standards, and other problems. *See also*: testing. (C) 610.12-1990

demultiplexer An electronic switch with one input and several outputs. Encoded selection signals control which output is connected to the input. *Contrast*: multiplexer.

(C) 610.7-1995

demultiplexing The separation from a common input into several outputs. For example, hardware may demultiplex signals from a transmission line based on time or carrier frequency to allow multiple, simultaneous transmissions across a single physical cable. *Contrast*: multiplexing. (C) 610.7-1995

denary *See*: decimal.

denial of message service Preventing or delaying the performance of legitimate or critical communication services. Denial of message service attacks may be perpetrated at any point in the communication architecture (e.g., data link, network, transport, application), and could result in denial of service conditions. (C/BA) 896.3-1993w

denormalized number (1) (mathematics of computing) A nonzero floating-point number whose exponent has a reserved value, usually the format's minimum, and whose explicit or implicit significand digit is zero. (C) 1084-1986w

(2) (binary floating-point arithmetic) A nonzero floating-point number whose exponent has a reserved value, usually the format's minimum, and whose explicit or implicit leading significand bit is zero. (MM/C) 754-1985r

dense binary code A binary code in which all possible bit combinations are used. (C) 1084-1986w

dense list *See*: packed array.

densitometer (illuminating engineering) A photometer for measuring the optical density (common logarithm of the reciprocal of the transmittance or reflectance) of materials. (EEC/IE) [126]

density (1) (facsimile) A measure of the light-transmitting or reflecting properties of an area. *Notes*: 1. It is expressed by the common logarithm of the ratio of incident to transmitted or reflected light flux. 2. There are many types of density that will usually have different numerical values for a given material; for example, diffuse density, double diffuse density, specular density. The relevant type of density depends upon the geometry of the optical system in which the material is used. *See also*: scanning. (COM) 168-1956w

(2) (electron or ion beam) The density of the electron or ion current of the beam at any given point. (Std100) [84]

(3) (computers) *See also*: packing density.

(4) (A) On an integrated circuit, the number of logic gates per unit area of usable surface. *See also*: surface density; chip

density. (B) A measure of the number of characters per inch on an output medium such as paper. *See also*: recording density. (C) 610.10-1994

density coefficient *See*: environmental coefficient.

density-modulated tube (space-charge-control tube) (microwave tubes) Microwave tubes or valves characterized by the density modulation of the electron stream by a gating electrode. *Note*: The electron stream is collected on those electrodes that form a part of the microwave circuit, principally the anode. These electrodes are often small compared to operating wavelength so that for this reason space-charge-control tubes or valves are often not considered to be microwave tubes even though they are used at microwave frequencies. (ED) [45]

density modulation (electron beams) The process whereby a desired time variation in density is impressed on the electrons of a beam. *See also*: velocity-modulated tube.

(Std100) [84]

density-tapered array antenna *See*: space-tapered array antenna.

denuder That portion of a mercury cell in which the metal is separated from the mercury. (EEC/PE) [119]

dependability (of a relay or relay system) The facet of reliability that relates to the degree of certainty that a relay or relay system will operate correctly.

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

dependable capability (power operations) The maximum generation, expressed in kilowatt-hours per hour (kWh/h) which a generating unit, station, power source, or system can be depended upon to supply on the basis of average operating conditions. (PE/PSE) 858-1987s

dependable capacity The maximum capacity modified for ambient limitations that a generating unit, power plant, item of electrical equipment, or system can sustain over a specified period of time. (PE/PSE) 858-1993w, 762-1987w

dependency (1) A logical relationship between two tests or between a test and an element of the unit under test (UUT) (either an actual part or a failure mode of a part). A diagnostic test is said to be dependent on a particular diagnostic element or test if the failed outcome of the test implies the failed condition of the diagnostic element or test on which the dependent test relies. (ATLAS) 1232-1995

(2) *See also*: multivalued dependency; functional dependency; join dependency; nontransitive dependency; transitive dependency.

dependency model A diagram, list, or topological graph indicating which events depend on related elements and other events. (ATLAS) 1232-1995

dependency notation A means of obtaining simplified symbols for complex elements by denoting the relationships between inputs, outputs, or inputs and outputs, without actually showing all the elements and interconnections involved. (GSD) 91-1984r

dependency_spec A software_spec that describes a dependency. (C/PA) 1387.2-1995

dependent A software object that specifies a prerequisite, requisite or exrequisite on another software object. (C/PA) 1387.2-1995

dependent biaxial test A test in which the horizontal and the vertical acceleration components are derived from a single-input signal.

(SWG/PE/PSR) C37.100-1992, C37.98-1977s

dependent contact A contacting member designed to complete any one of two or three circuits, depending on whether a two- or a three-position device is considered. (EEC/PE) [119]

dependent entity An entity for which the unique identification of an instance depends upon its relationship to another entity. Expressed in terms of the foreign key, an entity is said to be dependent if any foreign key is wholly contained in its primary key. *Synonym*: identifier-dependent entity. *Contrast*: independent entity. (C/SE) 1320.2-1998

paper tape *See*: punch tape.

paper tape reader A reader that senses hole patterns in punched paper tape and translates them into internal machine data representations. *Synonym*: perforated tape reader.

(C) 610.10-1994w

paper throw character *See*: form feed character.

paper traffic *See*: information traffic.

PAR *See*: precision-approach radar.

parabolic approximation *See*: parabolic equation.

parabolic equation Results when the Helmholtz equation is approximated to emphasize preferred propagation in the axial direction, leading to a differential equation of parabolic form. *Synonym*: parabolic approximation. (AP/PROP) 211-1997

parabolic profile (fiber optics) A power-law index profile with the profile parameter, g , equal to 2. *Synonym*: quadratic profile. *See also*: multimode optical waveguide; profile parameter; power-law index profile; graded index profile.

(Std100) 812-1984w

parabolic torus reflector A toroidal reflector formed by rotating a segment of a parabola about a non-intersecting co-planar line.

(AP/ANT) 145-1993

paraboloidal reflector An axially symmetric reflector that is a portion of a paraboloid. *Note*: This term may be applied to any reflector that is a portion of a paraboloid, provided the term is appropriately qualified. For example, if the reflector is a portion of a paraboloid but does not include its vertex, then it may be called an off-set paraboloidal reflector.

(AP/ANT) 145-1993

parachute harness An assembly of webbing, strapping, and attachments, that permits the attachment of a support device (e.g. D-ring), and fits the human such that the entire weight of same can be supported without injury. The lanyard is constructed so that it will support the normal weight of a human, but can be released by pulling on a disconnection means. Upon this action, there will be separation of the body support assembly from the lanyard that has been attached to the harness, thus permitting the movement of the body support means from the human body support assembly. A parachute harness allows separation of the lanyard supporting assembly from an object, commonly an aircraft or helicopter. As released, the force to complete the full separation of the harness is of the order of 1/3 of that required to produce separation resulting from the actuation of the master (main) release (disconnection) means.

(T&D/PE) 1307-1996

paraelastic crystal (primary ferroelectric terms) By analogy with paraelectric crystals, a crystal in which mechanical strain S is a single-valued function of mechanical stress T , whose elastic compliance exhibits an obvious Curie-Weiss behavior with temperature over some given temperature range, and that at some critical temperature T_c undergoes a phase transition to a ferroelastic phase. Crystals that clearly have a paraelastic phase include the metallic alloys Nb_3Sn , $In-Th$, $Au-Zn-Sn$, and lithium ammonium tartrate.

(UFFC) 180-1986w

paraelastic phase (primary ferroelectric terms) A phase that encompasses the range of temperature in which the elastic compliance exhibits Curie-Weiss behavior.

(UFFC) 180-1986w

paraelectric Curie temperature (of a ferroelectric material) The intercept of the linear portion of the plot of $1/\epsilon$ versus T , where ϵ is the small signal dielectric permittivity measured at zero bias field and T is the absolute temperature in the region above the ferroelectric Curie temperature where ϵ generally follows the Curie-Weiss relation. *See also*: ferroelectric domain.

(UFFC) 180w

paraelectric phase (primary ferroelectric terms) Encompasses the range of temperature or pressure over which the permittivity exhibits Curie-Weiss behavior.

(UFFC) 180-1986w

paraelectric region The region above the Curie point where the small signal permittivity increases with decreasing temperature. *See also*: small-signal permittivity; ferroelectric Curie point.

(UFFC) [21]

parallax (computer graphics) The apparent displacement of an object as seen from two different points. It is used to simulate a three-dimensional image on a graphical display device.

(C) 610.6-1991w

parallel (1) (A) (networks) (parallel elements) Two-terminal elements are connected in parallel when they are connected between the same pair of nodes. **(B) (networks) (parallel elements)** Two-terminal elements are connected in parallel when any cut-set including one must include the others. *See also*: network analysis.

(Std100) 270-1966

(2) (A) Pertaining to the simultaneity of two or more processes. **(B)** Pertaining to the simultaneity of two or more similar or identical processes. **(C)** Pertaining to simultaneous processing of the individual parts of a whole, such as the bits of a character and the characters of a word using separate facilities for the various parts. *See also*: serial-parallel.

(C) 162-1963, [20], [85], 270-1966

(3) (radio-wave propagation) Of a propagating wave for which the electric field vector lies parallel to the plane of incidence. *Note*: Sometimes called vertical polarization.

(AP) 211-1977s

(4) (software) Pertaining to the simultaneous transfer, occurrence, or processing of the individual parts of a whole, such as the bits of a character, using separate facilities for the various parts. *Contrast*: serial. *See also*: concurrent.

(C) 610.12-1990

(5) Many bits transmitted over a single pathway simultaneously. *Contrast*: serial. *See also*: bit parallel.

(C) 610.10-1994w

(6) In a propulsion system, the motor circuit in which the final parallel or series-parallel motor connection is achieved and the maximum available per-motor voltage is applied.

(VT) 1475-1999

parallel adder An adder in which addition is performed concurrently on multiple digits of the operands. *Contrast*: serial adder.

(C) 610.10-1994w

parallel addition Addition that is performed concurrently on all digit places of the operands. *Note*: This technique uses partial sums and partial carries to obtain its results. *Contrast*: serial addition.

(C) 1084-1986w

parallel architecture A multiprocessor architecture in which parallel processing can be performed, that is, different parts of a single task can be executed concurrently on different processors. *See also*: fine-grain parallel architecture; medium-grain parallel architecture; coarse-grain parallel architecture.

(C) 610.10-1994w

parallel classes A pair of classes that are distinct, are not mutually exclusive and have a common generic ancestor class and for which neither is a generic ancestor of the other.

(C/SE) 1320.2-1998

parallel computer (A) A computer that has multiple arithmetic units or logic units that are used to accomplish parallel operations or parallel processing. *Contrast*: sequential computer; serial computer. **(B)** A computer design in which more than one operation can occur simultaneously. *See also*: simultaneous computer.

(C) 610.10-1994

parallel-connected capacitance (as applied to interrupter switches) Capacitances are defined to be parallel-connected when the crest value of inrush current to the capacitance being switched exceeds the switch inrush current capability for single capacitance.

(SWG/PE) C37.100-1992

parallel-connected capacitor unit A capacitor unit with the elements connected in parallel groups, with the parallel groups connected in series between the line terminals. A capacitor unit that has only one string of capacitor elements between the capacitor terminals is considered to be parallel-connected power systems relaying.

(PE) C37.99-2000

parallel connection The arrangement of cells in battery made by connecting all positive terminals together and all negative terminals together, the voltage of the group being only that of one cell and the current drain through the battery being divided among the several cells. *See also*: battery.

(EEC/PE) [119]

radio button A visual user interface control used to represent one of a group of mutually exclusive settings. When a radio button is selected, a visual indication is provided to indicate it is the selected button. (C) 1295-1993w

radio channel (data transmission) A band of frequencies of a width sufficient to permit its use for radio communication. *Note:* The width of the channel depends on the type of transmission and the tolerance for the frequency of emission. Normally allocated for radio transmission in a specified type of service or by a specified transmitter. (AP/PE/ANT) 145-1983s, 599-1985w

radio circuit A means for carrying out one radio communication at a time in either or both directions between two points. *See also:* radio transmission; radio channel. (EEC/PE) [119]

radio compass A direction-finder used for navigational purposes. *See also:* radio navigation. (EEC/PE) [119]

radio compass indicator A device that, by means of a radio receiver and rotatable loop antenna, provides a remote indication of the relationship between a radio bearing and the heading of the aircraft. (EEC/PE) [119]

radio compass magnetic indicator A device that provides a remote indication of the relationship between a magnetic bearing, radio bearing, and the aircraft's heading. (EEC/PE) [119]

radio control The control of mechanism or other apparatus by radio waves. *See also:* radio transmission. (EEC/PE) [119]

radio detection (radio warning) The detection of the presence of an object by radiolocation without precise determination of its position. *See also:* radio transmission. (EEC/PE) [119]

radio direction-finder (RDF) (navigation aid terms) A device used to determine the direction of arrival of radio signals. *Note:* At one time this term was used by the British to mean radio distance-finding—that is, radar. (AES/GCS) 172-1983w

radio direction finding (navigation aid terms) A procedure for determining the bearing, at a receiving point, of the source of a radio signal by observing the direction of arrival and other properties of the signal. (AES/GCS) 172-1983w

radio distress signal (SOS) Radiotelegraph distress signal consists of the group . . . --- . . . in Morse code, transmitted on prescribed frequencies. The radiotelephone distress signal consists of the spoken words May Day (*m'aidez* = help me). *Note:* By international agreement, the effect of the distress signal is to silence all radio traffic that may interfere with distress calls. (EEC/PE) [119]

radio disturbance An electromagnetic disturbance in the radio-frequency range. *See also:* radio interference; radio noise. (EMC) [53]

radio Doppler The direct determination of the radial component of the relative velocity of an object by an observed frequency change due to such velocity. *See also:* radio transmission. (EEC/PE) [119]

radio fadeout (Dellinger effect) A phenomenon in radio propagation during which substantially all radio waves that are normally reflected by ionospheric layers in or above the E region suffer partial or complete absorption. *See also:* radiation. (EEC/PE) [119]

radio field strength The electric or magnetic field strength at a radio frequency. *Synonym:* field strength. (AP/PROP) 211-1997

radio frequency (RF) (I) (A) (data transmission) (Loosely) The frequency in the portion of the electromagnetic spectrum that is between the audio-frequency portion and the infrared portion. **(B) (data transmission)** A frequency useful for radio transmission. *Note:* The present practicable limits of radio frequency are roughly 10 kHz (kilohertz) to 100 000 MHz (megahertz). Within this frequency range electromagnetic radiation may be detected and amplified as an electric current at the wave frequency. (PE) 599-1985

(2) (power line filters) A frequency in the portion of the electromagnetic spectrum that is between the audio frequency portion and the infrared portion. (EMC) C63.13-1991

(3) A frequency in the radio spectrum. *See also:* radio spectrum. (AP/PROP) 211-1997

(4) A frequency that is useful for radio transmission. (NIR) C95.1-1999

(5) (A) (Loosely) The frequency in the portion of the electromagnetic spectrum that is between the audio-frequency portion and the infrared portion. **(B)** A frequency useful for radio transmission. *Note:* The present practicable limits of radio frequency are roughly 10 kHz to 100 000 MHz. Within this frequency range, electromagnetic radiation may be detected and amplified as an electric current at the wave frequency. (EMB/MIB) 1073.3.2-2000

radio-frequency absorber A material designed to absorb electromagnetic energy. The material may have a flat face or may be formed into pyramids, wedges, or cones. Radar absorber material is commonly referred to as RAM. (EMC) 1128-1998

radio-frequency alternator A rotating-type generator for producing radio-frequency power. (AP/ANT) 145-1983s

radio-frequency attenuator (signal-transmission system) A low-pass filter that substantially reduces the radio-frequency power at its output relative to that at its input, but transmits lower-frequency signals with little or no power loss. *See also:* signal. (IE) [43]

radio-frequency converter A power source for producing electric power at a frequency of 10 kHz and above. (IE/IA) 169-1955w

radio-frequency electric current hazard advisory symbol Refers to the overall design and shape shown in the figure below.



RF electric current hazard advisory symbol

radio-frequency (RF) electric current hazard advisory symbol (NIR/SCC28) C95.2-1999

radio-frequency energy Includes radio frequency fields and radiation with frequencies between 3 kHz and 300 GHz, and includes microwave frequencies. (NIR/SCC28) C95.2-1999

radio-frequency energy advisory symbol Refers to the overall design, and shape shown in the figure below.



RF energy advisory symbol

radio-frequency (RF) energy advisory symbol (NIR/SCC28) C95.2-1999

serial (1) (A) Pertaining to the time sequencing of two or more processes. **(B)** Pertaining to the time sequencing of two or more similar or identical processes, using the same facilities for the successive processes. **(C)** Pertaining to the time-sequential processing of the individual parts of a whole, such as the bits of a character, the characters of a word, etc., using the same facilities for successive parts. *See also:* serial-parallel. (C) 162-1963

(2) (software) Pertaining to the sequential transfer, occurrence, or processing of the individual parts of a whole, such as the bits of a character, using the same facilities for successive parts. *Contrast:* parallel. *See also:* sequential. (C) 610.12-1990

(3) One bit following another over a single pathway. *Contrast:* parallel. *See also:* bit serial. (C) 610.10-1994w

serial access (1) (computers) Pertaining to the process of obtaining data from, or placing data into, storage when there is a sequential relation governing the access time to successive storage locations. (C) [20], [85]

(2) (data management) *See also:* sequential access. (C) 610.5-1990w

serial access storage *See:* sequential access storage.

serial adder An adder in which addition is performed by adding, digit place after digit place, the corresponding digits of the operands. *Contrast:* parallel adder. (C) 610.10-1994w

serial addition Addition that is performed by adding the corresponding digits of the operands, one digit place at a time. *Contrast:* parallel addition. (C) 1084-1986w

serial by bit *See:* serial transmission.

serial bus (1) Intended as a low-cost peripheral connect or an alternate diagnostic and control path. One instantiation of a serial bus is the "Serial Bus" as specified in IEEE P1394. (C/BA) 896.2-1991w

(2) A peripheral interconnect and an alternate diagnostic and control path. (C/BA) 896.10-1997

Serial Bus (1) The name that refers to the IEEE project, P1394, which specifies a serial bus intended as a low-cost peripheral connect or an alternate diagnostic and control path. (C/MM) 1212-1991s

(2) A bit-serial interconnect defined by IEEE P1394. (C/MM) 1212.1-1993

(3) Refers to the IEEE P1394 project, which defines an inexpensive serial network that can be used as an alternate control or diagnostic path, as an I/O connection, or in place of a parallel bus in some systems. (C/MM) 1596.5-1993, 1596-1992

Serial Bus management The set of protocols, services, and operating procedures that monitors and controls the various Serial Bus layers: physical, link, and transaction. See figure 34 for the relation of Serial Bus management to the Serial Bus protocol stack. (C/MM) 1394-1995

serial clock driver A functional module that provides a periodic timing signal that synchronizes the operation of IEEE P1132 serial bus. Two backplane signal lines are reserved for use by a serial bus. However, the protocols of the serial bus are completely independent of this standard, and the inclusion of a serial bus is not a required feature of IEEE Std 1014-1987. (C/BA) 1014-1987

serial communication (1) (supervisory control, data acquisition, and automatic control) A method of transmitting information between devices by sending all bits serially over a single communication channel. (SWG/PE/SUB) C37.100-1992, C37.1-1994

(2) Method of transferring information between devices by transmitting a sequence of individual bits in a prearranged order of significance. (SUB/PE) 999-1992w

serial computer (A) A computer that has a single arithmetic and logic unit. **(B)** A computer, some specified characteristic of which is serial; for example, a computer that manipulates all bits of a word serially. *Contrast:* parallel computer. (C) 610.10-1994

serial construct A program construct consisting of a sequence of steps not involving a decision or loop. *Synonym:* sequential construct. (C) 610.12-1990

serial digital computer A digital computer in which the digits are handled serially. Mixed serial and parallel machines are frequently called serial or parallel according to the way arithmetic processes are performed. An example of a serial digital computer is one that handles decimal digits serially although it might handle the bits that comprise a digit either serially or in parallel. *See also:* parallel digital computer. (Std100) 270-1966w

serial file *See:* sequential file.

serial interface An interface that transmits data bit by bit rather than in whole bytes. (C) 610.10-1994w

serialization Serialization is the process of transmitting coded characters one bit at a time. *See also:* deserialization. (C/BA) 1355-1995

serializer A device that converts a set of simultaneous signals into a corresponding time sequence of signals. *Synonyms:* parallel-serial converter; dynamicizer. (C) 610.10-1994w

serially correlated variable *See:* lag variable.

serial medium A medium that contains a POSIX.1 extended tar or extended `cpio` archive. (C/PA) 1387.2-1995

serial mouse A mouse that is connected to a computer system through a serial port. *Contrast:* bus mouse. (C) 610.10-1994w

serial operation (data transmission) (telecommunications) The flow of information in time sequence, using only one digit, word, line, or channel at a time. (PE) 599-1985w

serial-parallel Pertaining to processing that includes both serial and parallel processing, such as one that handles decimal digits serially but handles the bits that comprise a digit in parallel. (C) 162-1963w

serial port A port that transfers data one bit at a time. *Contrast:* parallel port. (C) 610.10-1994w

serial printer A printer that receives its input data in the form of a serial stream of data. *Contrast:* parallel printer. *See also:* character-at-a-time printer. (C) 610.10-1994w

serial processing Pertaining to the sequential execution of processes in a single device, such as a processing unit or channel. *Synonym:* sequential processing. *Contrast:* parallel processing. (C) 610.10-1994w

serial protocol Any communication protocol in which data is transferred serially to or from a fixed location. (C/MM) 1155-1992

serial transmission (1) (data transmission) (telecommunications) Used to identify a system wherein the bits of a character occur serially in time. Implies only a single transmission channel. *Synonym:* serial by bit. (PE) 599-1985w

(2) In data communications, the conveying of a character of information one bit at a time on a single path. *Contrast:* parallel transmission. (C) 610.7-1995

series In a propulsion system, the motor connection in which all motors are connected in a series circuit for the purpose of applying to them some fraction (usually one half) of the maximum available per-motor voltage. (VT) 1475-1999

series capacitor A device that has the primary purpose of introducing capacitive reactance in series with an electric circuit. (T&D/PE) 824-1994

series capacitor bank (series capacitor) An assembly of capacitors and associated auxiliaries, such as structures, support insulators, switches, and protective devices, with control equipment required for a complete operating installation. (T&D/PE) 824-1994

series circuit A circuit supplying energy to a number of devices connected in series, that is, the same current passes through each device in completing its path to the source of supply. *See also:* center of distribution. (T&D/PE) [10]

series circuit lighting transformer (power and distribution transformers) Dry-type individual lamp insulating transformer, autotransformer, and group series loop transformers

IEEE 100

The Authoritative Dictionary of IEEE Standards Terms

Seventh Edition

Your Dependable Source for IEEE Standardized Terminology

The Authoritative Dictionary of IEEE Standards Terms is today's trustworthy resource for terminology in IEEE standards. In this newly updated edition, professional experts and students alike gain an in-depth understanding of the breadth of coverage of IEEE standards terms and definitions—not found in any other single source.

Rich in information, the seventh edition contains:

- Nearly 35,000 terms and definitions from over 800 IEEE standards
- An extensive, convenient acronym and abbreviation section
- A complete set of abstracts describing IEEE standards
- Equations and formulas in easy-to-read type

What's more, ALL definitions are augmented by a combination of indispensable information, including:

- Preferred and popular usage of each term
- Variations in meanings among different technical specialties
- Cross-indexing to related works
- Key explanatory notes that clarify terms when needed
- Field of application for each entry, along with the source of each term

SP1122
0-7381-2601-2

ISBN 0-7381-2601-2



9 780738 126012