IEEE Std 100-1996

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The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

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

This standard is one of a number of information technology dictionaries being developed by standards organizations accredited by the American National Standards Institute. This dictionary was developed under the sponsorship of voluntary standards organizations, using a consensus-based process.

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Introduction

Since the first edition in 1941 of the American Standard Definitions of Electrical Terms, the work now known as IEEE Std 100, The IEEE Standard Dictionary of Electrical and Electronics Terms, has evolved into the unique compendium of terms that it is today.

The current edition includes all terms defined in approved IEEE standards through December 1996. Terms are categorized by their technical subject area. They are also associated with the standards or publications in which they currently appear. In some cases, terms from withdrawn standards are included when no current source can be found. Earlier editions of IEEE Std 100 included terms from sources other than IEEE standards, such as technical journals, books, or conference proceedings. These terms have been maintained for the sake of consistency and their sources are listed with the standards in the back of the book.

The practice of defining terms varies from standard to standard. Many working groups that write standards prefer to work with existing definitions, while others choose to write their own. Thus terms may have several similar, although not identical, definitions. Definitions have been combined wherever it has been possible to do so by making only minor editorial changes. Otherwise, they have been left as written in the original standard.

Users of IEEE Std 100 occasionally comment on the surprising omission of a particular term commonly used in an electrical or electronics field. This occurs because the terms in IEEE Std 100 represent only those defined in the existing or past body of IEEE standards. To respond to this, some working groups obtain authorization to create a glossary of terms used in their field. All existing, approved standard glossaries have been incorporated into this edition of IEEE Std 100, including the most current glossaries of terms for computers and power engineering.

IEEE working groups are encouraged to refer to IEEE Std 100 when developing new or revised standards to avoid redundancy. They are also encouraged to investigate deficiencies in standard terms and create standard glossaries to alleviate them.

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Assistance was provided by the IEEE Standards editorial staff.

How to use this dictionary

The terms defined in this dictionary are listed in *letter-by-letter* alphabetical order. Spaces are ignored in this style of alphabetization, so *cable value* will come before *cab signal*. Descriptive categories associated with the term in earlier editions of IEEE Std 100 will follow the term in parentheses. New categories appear after the definitions (see Categories, below), followed by the designation of the standard or standards that include the definition. If a standard designation is followed by the letter s, it means that edition of the standard was superseded by a newer revision and the term was not included in the revision. If a designation is followed by the letter w, it means that edition of the standard was withdrawn and not replaced by a revision. A bracketed number refers to the non-IEEE standard sources given in the back of the book.

Acronyms and abbreviations are no longer listed in a separate section in the dictionary; rather, they are incorporated alphabetically with other terms. Each acronym or abbreviation refers to its expanded term, where it is defined. Acronyms and abbreviations for which no definition was included in past editions have been deleted from this edition of IEEE Std 100.

Abstracts of the current set of approved IEEE standards are provided in the back of the book. It should be noted that updated information about IEEE standards can be obtained at any time from the IEEE Standards World Wide Web site at http://standards.ieee.org/.

Categories

The category abbreviations that are used in this edition of IEEE Std 100 are defined below. This information is provided to help elucidate the context of the definition. Older terms for which no category could be found have had the category "Std100" assigned to them. Note that terms from sources other than IEEE standards, such as the National Electrical Code® (NEC®) or the National Fire Protection Association, may not be from the most recent editions; the reader is cautioned to check the latest editions of all sources for the most up-to-date terminology.

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time multiplexed switching (TMS) A form of space-division switching in which each input line is a time division multiplexing strea. At the receiving end, the different signals are divided out and merged back into single streams. *See also:* circuit switching; message switching; space-division switching. (C) 610.7-1995

time-of-arrival location (TOA) A process whereby the position of a radiating transmitter can be located by means of the relative time delay between its signals as received in multiple receivers of known relative position. (AE) 686-1990w

time-of-day clock A clock that indicates the actual time of the day. *Synonym:* real-time clock. *See also:* wall clock. (C) 610.10-1994

time of death The term used to describe a field within a send packet that is used to determine when a send packet is stale and should be discarded. (C/MM) 1596-1992

time of decay of video pulses The duration of the decaying portion of a pulse measured between specified levels. *See also:* pulse timing of video pulses. (BT) 207-1950w

time of response *See:* response time.

time of rise of video pulses (television) (decay) The duration of the rising (decaying) portion of a pulse measured between specified levels. *See also:* pulse timing of video pulses. (BT) 207-1950w

time-of-use period (watthour meters) A selected period of time during which a specified rate will apply to the energy usage or demand. (ELM) C12.13-1985s

time-of-use register (watthour meters) That portion of a watthour meter that, for selected periods of time, accumulates and may display amounts of electric energy, demand, or other quantities measured or calculated. (ELM) C12.13-1985s

time origin line (pulse terminology) A line of constant and specified time which, unless otherwise specified, has a time equal to zero and passes through the first datum time, t_0, of a waveform epoch. *See also:* waveform epoch. (IM) 194-1977w

time-out (1) (A) A condition that occurs when a predetermined amount of time elapses without the occurrence of an expected event. For example, the condition that causes termination of an on-line process if no user input is received within a specified period of time. **(B)** To experience the condition in definition (A). (C/Std100) 610.10-1994, 610.12-1990
(2) A time-out occurs when a protective timer completes its assigned time without the expected event occurring. Time-outs prevent the system from waiting indefinitely in case of error or failure. 960-1993

time-out of tone If the calling party reaches a call progress tone or announcement and does not abandon the call within a specified length of time, called the timeout of ringing interval, the switch may release the call. (COM) 973-1990w

time-overcurrent relay An overcurrent relay in which the input current and operating time are inversely related throughout a substantial portion of the performance range. (PE/SWG) C37.100-1992

time parameters and references *See:* pulse start time; pulse duration; time reference lines; transition duration.

time pattern (television) A picture-tube presentation of horizontal and vertical lines or dot rows generated by two stable frequency sources operating at multiples of the line and field frequencies. (BT) 202-1954w

time per point (multiple-point recorders) The time interval between successive points on printed records. *Note:* For some instruments this interval is variable and depends on the magnitude of change in measured signal. For such instruments, time per point is specified as the minimum and maximum time intervals. (EEC) [112]

time proportioning (electrical heating applications to melting furnaces and forehearths in the glass industry) An operation in which variable length bursts of full cycles of output voltage are alternated with variable length off periods to produce modulation of output. (IA) 668-1987w

timer (1) A register or storage location whose value is changed at regular intervals in such a manner as to measure time. *Synonyms:* clock register; time register. *See also:* interval timer; watchdog timer. (C) 610.10-1994
(2) An object that can notify a process when the time as measured by a particular clock has reached or passed a specified value, or when a specified amount of time, as measured by a particular clock, has passed. (C/PA) 9945-1-1996
(3) An object that can notify a process when the time as measured by a particular clock has reached or passed a specified value, or when a specified amount of time, as measured by a particular clock has passed. Timers are per process; that is, they cannot be shared between processes. (C/PA) 1003.5b-1995

time rate (storage cell) The current in amperes at which a storage battery will be discharged in a specified time, under specified conditions of temperature and final voltage. *See also:* battery. (EEC/PE) [119]

Time rating of a VAM The maximum amount of time the motor can be operated at rated running load without exceeding the allowable temperature rise for the insulation class being used. (PE) 1290-1996

time, real *See:* real time.

time referenced point (pulse terminology) A point at the intersection of a time reference line and a waveform. (IM) 194-1977w

time reference line (pulse terminology) A line parallel to the time origin line at a specified instant. (IM) 194-1977w

time reference lines (A) (pulse terminology) (pulse start[stop]) line. The time reference line at pulse start (stop) time. *See also:* waveform epoch. **(B) (pulse terminology)** (top center line) The time reference line at the average of pulse start time and pulse stop time. *See also:* waveform epoch. (IM) 194-1977w

time register *See:* timer.

time-related adjectives (A) (pulse terminology) (periodic[aperiodic]) Of or pertaining to a series of specified waveforms or features which repeat or recur regularly (irregularly in time. **(B) (pulse terminology)** (coherent[incoherent]) Of or pertaining to two or more repetitive waveforms whose constituent features have (lack) time correlation. **(C) (pulse terminology)** (synchronous[asynchronous]) Of or pertaining to two or more repetitive waveforms whose sequential constituent features have (lack) time correlation. (IM) 194-1977w

time-related definitions *See:* interval; duration; period; frequency; cycle.

time release A device used to prevent the operation of an operative unit until after the expiration of a predetermined time interval after the device has been actuated. (EEC/PE) [119]

time resolution The minimum time interval that a clock can measure or whose passage a timer can detect. (C/PA) 9945-1-1996

time response (1) (control system feedback) An output, expressed as a function of time, resulting from the application of a specified input under specified operating conditions. *Note:* It consists of a transient component that depends on the initial conditions of the system, and a steady-state component that depends on the time pattern of the input. *Synonym:* dynamic response. (IA) [60]
(2) (excitation systems) An output expressed as a function of time, resulting from the application of a specified input under specified operating conditions. See the corresponding figure for a typical time response of a system to step increase of input and for identification of the principle characteristics of interest.