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The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

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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 In some cases, terms from withdrawn standards are included when no current source can be found.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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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.

identified by the name "Sealed Beam" branded on the lens. (EEC/IE) [126]

sealed bushing An oil-filled bushing in which the oil is contained within the bushing and not allowed to mix with the oil of the apparatus on which it is used. (PE) C57.19.03-1996

sealed cell (lead storage batteries) (nuclear power generating station) A cell in which the only passage for the escape of gases from the interior of the cell is provided by a vent of effective spray-trap design adapted to trap and return to the cell particles of liquid entrained in the escaping gases. (PE) 484-1987s

sealed cell or battery A sealed cell or battery is one that has no provision for the addition of water or electrolyte or for external measurement of electrolyte specific gravity. (NEC/NESC) [86]

sealed dry-type transformer, self-cooled (power and distribution transformers) (class GA) A dry-type self-cooled transformer with a hermetically sealed tank. *Note:* The insulating gas may be air, nitrogen, or other gases (such as fluorocarbons) with high dielectric strength. (PE) C57.12.80-1978r, C57.94-1982r

sealed end (cable) (shipping seal) The end fitted with a cap for protection against the loss of compound or the entrance of moisture. (EEC) [91]

sealed refrigeration compressor (hermetic type) A mechanical compressor consisting of a compressor and a motor, both of which are enclosed in the same sealed housing, with no external shaft or shaft seals, the motor operating in the refrigerant atmosphere. *See also:* appliance. (NESC) [86]

sealed-tank system (power and distribution transformers) A method of oil preservation in which the interior of the tank is sealed from the atmosphere and in which the gas plus the oil volume remains constant over the temperature range. (PE) C57.12.80-1978r

sealed transformer (power and distribution transformers) A dry-type transformer with a hermetically sealed tank. (PE) C57.12.80-1978r

sealed tube An electron tube that is hermetically sealed. *Note:* This term is used chiefly for pool-cathode tubes. (ED) [45]

sealing current *See:* sealing voltage.

sealing gap The distance between the armature and the center of the core of a magnetic circuit-closing device when the contacts first touch each other. *See also:* electric controller. (IA) 74-1958w

sealing voltage (contactors) The voltage (or current) necessary to complete the movement of the armature of a magnetic circuit-closing device from the position at which the contacts first touch each other. *Synonym:* sealing current. *See also:* contactor; control switch. (QUL) 268-1982s

seal-in relay An auxiliary relay that remains picked up through one of its own contacts which bypasses the initiating circuit until deenergized by some other device. (PE/SWG) C37.100-1992

seal, pressure barrier (nuclear power generating station) A seal that consists of an aperture seal and an electric conductor seal. (IM) [76]

seal, single electric conductor (nuclear power generating station) A mechanical assembly providing a single pressure barrier between the electric conductors and the electric penetration. (IM) [76]

search (1) (information processing) To examine a set of items for those that have a desired property. *See also:* binary search; dichotomizing search. (C) [20], [85]

(2) (test, measurement, and diagnostic equipment) The scanning of information contained on a storage medium by comparing the information of each field with a predetermined standard until an identity is obtained. (IM) 194-1977w

(3) (A) (data management) The examination of a set of items to find all those having a desired property or properties. For example, to find all items in a file that meet some search criterion. **(B) (data management)** To examine a set of items as in definition (A). **(C) (data management)** To retrieve the results of an examination as in definition (A). **(D) (data management)** To retrieve the first item witin a set of items as in definition "A." *Note:* The use of the term "search" in place of the term "seek" is deprecated in IEEE Std 610.5-1990. (C) 610.5-1990

search argument In a search, the value compared with the search key of each item in the set being searched. *See also:* condition. (C) 610.5-1990

search criterion In a search, the relationship that a search key must have to the search argument in order for the search to be successful. For example, "NAME equals 'SMITH;'" "SALARY greater than 10000." (C) 610.5-1990

search cycle That portion of a search that is repeated for each item in the set being searched. (C) 610.5-1990

search key In a search, the key within each item in the set being searched that is compared to the search argument. *Synonym:* seek key. (C) 610.5-1990

search length (A) For a node in a search tree, the number of nodes that must be examined in order to find that node. **(B)** For a search tree, the average search length as in definition (A) for all nodes in the tree. (C) 610.5-1990

searchlight (illuminating engineering) A projector designed to produce an approximately parallel beam of light. *Note:* The optical system of a searchlight has an aperture of greater than 20 cm (8 in). (EEC/IE) [126]

searchlighting The process of projecting a radar beam continuously at a particular object or in a particular direction as contrasted to scanning. (AE) 686-1990w

search memory *See:* associative memory.

search radar (navigation aids) A radar used primarily for the detection of targets in a particular volume of interest. (AE) 172-1983w, 686-1990w

search time (A) The time required to locate a particular item of data in a storage medium. **(B)** The time interval required for the read/write head of a rotating storage device to locate a particular record on a track corresponding to a given address or key. *See also:* rotational delay; seek time. (C) 610.10-1994

search tree (A) A tree into which items in a set are placed in order for the set to be searched. The tree is traversed according to some searching algorithm, making key comparisons until the search argument is found or the algorithm is halted. For example, a B-tree. **(B)** A multiways tree of order m in which each nonterminal node may contain $(m - 1)$ key values and each terminal node, called a leaf, contains associated data for one of the key values contained in its parent node. Each subtree is used to contain all the items with key values falling in the intervals formed by the key values contained in its root node. *See also:* B-tree; binary search tree; digital search tree. (C) 610.5-1990

sea return (navigation aids) The radar response from the sea surface. (AE) 172-1983w, 686-1990w

seasonal derated hours (electric generating unit reliability, availability, and productivity) (power system measurement) The available hours during which a seasonal derating was in effect. (PE) 762-1987r

seasonal derating (electric generating unit reliability, availability, and productivity) The difference between maximum capacity and dependable capacity. (PE) 762-1987r

seasonal diversity Load diversity between two or more electric systems that occurs when their peak loads are in different seasons of the year. (PE) 858-1993

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