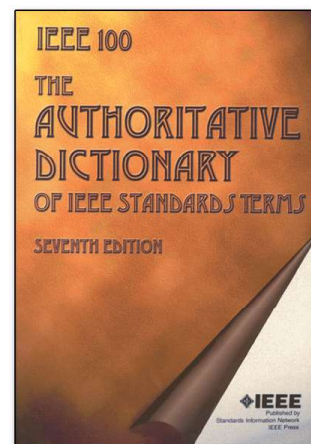


IEEE 100
The Authoritative Dictionary of
IEEE Standards Terms

Seventh Edition



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Introduction

IEEE standards establish an authoritative common language that defines quality and sets technical criteria. By guaranteeing consistency and conformity through open consensus, IEEE standards add value to products, facilitate trade, drive markets, and ensure safety. That's why leading companies, organizations, and industries around the globe rely on them.

Critical components of this common language are the terms and definitions that are at the foundation of the vast body of IEEE standards. In the past decade alone, hundreds of terms—describing the latest tools, techniques, and best practices—have been added to the lexicon of IEEE standards.

In this newly updated *Authoritative Dictionary of IEEE Standards Terms*, professional experts and students alike will gain an in-depth understanding and appreciation for the breadth of coverage of IEEE standards terms and definitions not found in any other single source.

The seventh edition of IEEE 100 has been revised to include nearly 35 000 technical terms and definitions from over 800 standards—covering areas such as power and energy, communications, information technology, and transportation systems. In addition to an extensive list of widely used acronyms and abbreviations, this new edition also contains detailed abstracts of each term's associated standard(s). 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 for further term clarification

In preparing this latest edition of the Dictionary, we realized that the standards community desired more than just a compilation of IEEE standardized terms and definitions. They needed an authoritative resource created by the organization that develops and produces the standards from which the terms and definitions are derived—the IEEE. In addition, we determined the Dictionary needed to be not only user friendly, but also rich in information. In other words, it needed to be the *Authoritative Dictionary of IEEE Standards Terms*.

Susan K. Tatiner
Director, IEEE Standards Publishing Programs

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Kim Breittfelder
Don Messina

Additional assistance was provided by the IEEE Standards editorial staff.

How to Use This Dictionary

The terms defined in the 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 the Dictionary 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.

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 the Dictionary 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.

Categories sorted by abbreviation

AES	aerospace and electronic systems
AHDL	computer—Analog Hardware Descriptive Language
AMR	automatic meter reading and energy management
AP	antennas and propagation
ATL	computer—Abbreviated Test Language for All Systems
BA	computer—bus architecture
BT	broadcast technology
C	computer
CAS	circuits and systems
CE	consumer electronics
CHM	components, hybrids, and manufacturing technology
COM	communications
CS	control systems
DA	computer—design automation
DEI	dielectrics and electrical insulation
DESG	dispersed energy storage and generation
DIS	computer—distributed interactive simulation
ED	electron devices
EDU	education
EEC	electrical equipment and components
ELM	electricity metering
EM	engineering management
EMB	engineering in medicine and biology
EMC	electromagnetic compatibility
GRS	geoscience and remote sensing
GSD	graphic symbols and designations
IA	industry applications
IE	industrial electronics
II	information infrastructure
IM	instrumentation and measurement
IT	information theory

IVHS	intelligent vehicle highway systems
LEO	lasers and electro-optics
LM	computer—local and metropolitan area networks
MAG	magnetics
MIL	military
MM	computer—microprocessors and microcomputers
MTT	microwave theory and techniques
NEC	National Electrical Code
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NI	nuclear instruments
NIR	non-ionizing radiation
NN	neural networks
NPS	nuclear and plasma sciences
ODM	computer—optical disk and multimedia platforms
OE	oceanic engineering
PA	computer—portable applications
PE	power engineering
PEL	power electronics
PQ	power quality
PSPD	power surge protective devices
PV	photovoltaics
QUL	quantities, units, and letter symbols
R	reliability
RA	robotics and automation
REM	rotating electrical machinery
RL	roadway lighting
S&P	computer—security and privacy
SB	stationary batteries
SE	computer—software engineering
SMC	systems, man, and cybernetics
SP	signal processing
Std100	Standard 100 legacy data
SUB	substations
SWG	power switchgear
T&D	transmission and distribution
TF	time and frequency
TRR	transformers, regulators, and reactors
TT	test technology
UFFC	ultrasonics, ferroelectrics, and frequency control
VT	vehicular technology

Categories sorted by name

aerospace and electronic systems	AES
antennas and propagation	AP
automatic meter reading and energy management	AMR
broadcast technology	BT
circuits and systems	CAS
communication	COM
components, hybrids, and manufacturing technology	CHM
computer	C
computer—Abbreviated Test Language for All Systems	ATL
computer—Analog Hardware Descriptive Language	AHDL
computer—bus architecture	BA
computer—design automation	DA
computer—distributed interactive simulation	DIS
computer—local and metropolitan area networks	LM
computer—microprocessors and microcomputers	MM
computer—optical disk and multimedia platforms	ODM
computer—portable applications	PA
computer—security and privacy	S&P
computer—software engineering	SE
consumer electronics	CE

quasi-Gaussian pulse shape A pulse shape approximated by the curve of a normal or Poisson distribution. In this standard, four or more integrators shall be used in producing the pulse. *See also:* integrated pulse. (NPS) 325-1996

quasi-Gaussian shaping (1) (germanium gamma-ray detectors) (charged-particle detectors) Pulse shaping consisting of one differentiation followed by four or more integrations resulting in a pulse shape that is approximated by a Gaussian curve. For n integrations the shaping network is sometime denoted as $CR - (RC)^n$. (NPS) 325-1986s

(2) (charged-particle detectors) Pulse shaping in a linear amplifier in which the amplitude of the shaped pulse versus time approximates that of a normal distribution (in the case of unipolar shaping) or its mathematical derivative (in the case of bipolar shaping). Unless otherwise stated, the shaping network shall contain at least four cascaded low-pass sections (integrators). (NPS) 300-1988r

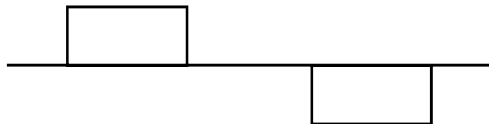
quasi-impulsive noise A superposition of impulsive and continuous noise. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

quasi-peak detector A detector having specified electrical time constants that, when regularly repeated pulses of constant amplitude are applied to it, delivers an output voltage that is a fraction of the peak value of the pulses, the fraction increasing toward unity as the pulse repetition rate is increased. *Synonym:* QP detector. *See also:* electromagnetic compatibility. (EMC/T&D/PE/INT) [53], 539-1990, [70]

quasi-peak voltmeter A quasi-peak detector coupled to an indicating instrument having a specific mechanical time-constant. *See also:* electromagnetic compatibility. (EMC/INT) [53], [70]

quasi-random signal A pseudo-random test signal that has artificial constraints to limit the maximum number of zeros in the bit sequence. (COM/TA) 1007-1991r

quasi-square wave (converter characteristics) (self-commutated converters) The stepped waveform obtained from the difference of two phase-shifted square waves of equal amplitude.



quasi-square wave

(IA/SPC) 936-1987w

quasi-static field A field that satisfies the condition $f \ll c/l\pi\sqrt{2}$, where f is the frequency of the field, c is the speed of light, and l is a characteristic dimension of the measurement geometry, e.g., the distance between the field source and the measurement point. *Note:* Power frequency magnetic and electric fields near power lines and appliances are examples of quasi-static fields. (T&D/PE) 1308-1994

quasi-triangular pulse shape (1) A pulse shape approximated by the curve of a normal or Poisson distribution. In this standard, four or more integrators shall be used in producing the pulse. *See also:* integrated pulse. (NPS) 325-1996

(2) A pulse shape approximated by a triangle with a truncated top. Such a shape can be obtained from a $CR - (RC)^n$ or n or n sinen network by summing appropriate signal fractions from the n integrating sections. (NPS) 325-1996

quaternary code A code whose output alphabet consists of four symbols. *See also:* ternary code. (IT) [123]

quenched sample (1) (liquid-scintillation counters) A counting sample (material of interest plus liquid-scintillation solution) that contain adulterants that reduce the photon output from the vials. (NI) N42.16-1986

(2) (liquid-scintillation counters) A counting sample (material of interest plus liquid-scintillation solution) that contains chemical impurities that reduce the photon output to the photomultiplier tubes. (NI) N42.15-1990

quenched spark gap converter (dielectric heating) A spark-gap generator or power source that utilizes the oscillatory discharge of a capacitor through an inductor and a spark gap as a source of radio-frequency power. The spark gap comprises one or more closely spaced gap operating in series. *See also:* induction heating. (IA) 54-1955w, 169-1955w

quenching The process of terminating a discharge in a Geiger-Mueller radiation-counter tube by inhibiting a reignition. *Note:* This may be effected by self-quenching (internal quenching) by use of an appropriate gas or vapor filling, or externally (external quenching) by momentary reduction of the applied potential difference. (NI/NPS) 309-1999

quenching circuit (radiation counters) A circuit that reduces the voltage applied to a Geiger-Mueller tube after an ionizing event, thus preventing the occurrence of subsequent multiple discharges. Usually the original voltage level is restored after a period that is longer than the natural recovery time of the Geiger-Mueller tube. *See also:* anticoincidence. (ED) [45]

query (data transmission) The process by which a master station asks a slave station to identify itself and to give its status. *See also:* poll. (PE) 599-1985w

query language A database manipulation language used to access information stored in a database. *Contrast:* specification language; programming language. (C) 610.13-1993w

queue (1) (software) A list that is accessed in a first-in, first-out manner. *See also:* stack. (C/SE) 729-1983s

(2) *See also:* batch queue.

queue allocation protocols The protocols used to allocate queue space when several nodes are sending packets to a shared node. This involves rejecting packets (with a busy status), but reserving future queue space; the reserved queue space is eventually used during one of the packet's retransmissions. (C/MM) 1596-1992

queued arbitrated access function The *access control function* in this part of ISO/IEC 8802 that uses the *Distributed Queue* to access *empty Queued Arbitrated (QA) slots* for the transfer of *QA segments*. *Synonym:* QA access function. (LM/C) 8802-6-1994

queued arbitrated segment A *segment* transferred using *Queued Arbitrated (QA) Access functions*. *Synonym:* QA segment. (LM/C) 8802-6-1994

queued arbitrated slot A *slot* that is used for the transfer of a *QA segment*. *Synonym:* QA slot. (LM/C) 8802-6-1994

queue on lock bit (QOLB) A mechanism for efficiently sequencing the access to resources that are not to be used by more than one process at a time. (C/MM) 1596-1992

queue position The place a job occupies in a queue. This place is relative to other jobs in the queue and defined in part by submission time and its priority. *See also:* job priority. (C/PA) 1003.2d-1994

queue priority The maximum job priority allowed for any job in a given queue. The *queue priority* is set and may be changed by users with appropriate privilege. The priority shall be bounded in an implementation-defined manner. (C/PA) 1003.2d-1994

quick-break A term used to describe a device that has a high contact opening speed independent of the operator. (SWG/PE) C37.100-1992

quick-break switch (high-voltage switchgear) A switch that has a high contact opening speed independent of the operator. (SWG/PE) C37.40-1993

quick charge *See:* boost charge.

quick-flashing light (illuminating engineering) A rhythmic light exhibiting very rapid regular alternations of light and darkness. There is no restriction on the ratio of the durations of the light to the dark periods. (EEC/IE) [126]

Quick FORTRAN A subset of FORTRAN that is easy to learn due to its efficient debugging facility and interactive interface. (C) 610.13-1993w