IEEE Std 100-1996

The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

Published by the
Institute of Electrical and
Electronics Engineers, Inc.

SMA Solar Technology America, LLC, Ex. 1019

IEEE Std 100-1996

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.

ISBN 1-55937-833-6

SMA Solar Technology America, LLC, Ex. 1019

When the IEEE Standards Board approved this standard on 10 December 1996, it had the following membership.

Donald C. Loughry, *Chair* **Richard J. Holleman,** *Vice Chair*
Andrew G. Salem, *Secretary*

Gilles A. Baril
Clyde R. Camp
Joseph A. Cannatelli
Stephen L. Diamond
Harold E. Epstein
Donald C. Fleckenstein
Jay Forster*
Donald N. Heirman
Ben C. Johnson
E. G. "Al" Kiener
Joseph L. Koepfinger*
Stephen R. Lambert
Lawrence V. McCall
L. Bruce McClung
Marco W. Migliaro
Mary Lou Padgett
John W. Pope
Jose R. Ramos
Arthur K. Reilly
Ronald H. Reimer
Gary S. Robinson
Ingo Rüsch
John S. Ryan
Chee Kiow Tan
Leonard L. Tripp
Howard L. Wolfman

*Member Emeritus

Also included are the following nonvoting IEEE Standards Board liaisons:

Satish K. Aggarwal
Alan H. Cookson
Chester C. Taylor

Kim Breitfelder (1995-present), *IEEE Std 100 Editor*
Stephen Huffman (1993-1995), *IEEE Std 100 Editor*

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 If a standard designation is followed by the letter s, it means that edition of the standard was superseded by a newer revision and the term was not included in the revision. If a designation is followed by the letter w, it means that edition of the standard was withdrawn and not replaced by a revision.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.

Categori

AE
AHDL
AMR
AP
ATL
BA
BT
C
CAS
CE
CHM
COM
CS
DA
DEI
DESG
DIS
ED
EDU
EEC
ELM
EM
EMB
EMC
GRS
GSD
IA
IE
II
IM
IT
IVHS
LEO
LM
MAG
MIL
MM
MTT
NEC
NESC
NFPA
NI
NIR
NN
NPS
ODM
OE
PA
PE
PEL
PQ
PSPD
PV
QUL
R
RA
REM

SMA Solar Technology America, LLC, Ex. 1019

chrominance subcarrier (color television) The carrier whose modulation sidebands are added to the luminance signal to convey color information. (BT) 201-1979w

chronaxie (medical electronics) The minimum duration of time required to stimulate with a current of twice the rheobase. (EMB) [47]

chronic exposure Exposure over a relatively long time. (PE/T&D) 539-1990

chronometer (navigation aids) A time piece with a nearly constant rate. Set approximately to Greenwich Mean Time. (AE) 172-1983w

chute *See:* feed tube.

CI *See:* configuration item.

CIE *See:* Commission Internationale de l'Eclairage.

CIE (L*a*b*) uniform color space (illuminating engineering) A transformation of CIE tristimulus values X, Y, Z into three coordinates that define a space in which equal distances are more nearly representative of equal magnitudes of perceived color difference. This space is specially useful in cases of colorant mixtures, for example, dye-stuffs, paints. (EEC/IE) [126]

CIE (L*u*v*) uniform color space (illuminating engineering) A transformation of CIE tristimulus values X, Y, Z into three coordinates that define a space in which equal distances are more nearly representative of equal magnitudes of perceived color difference. This space is specially useful in cases where colored lights are mixed additively for example, color television. (EEC/IE) [126]

CIE standard chromaticity diagram (illuminating engineering) One in which the x and y chromaticity coordinates are plotted in rectangular coordinates. *Note:* The diagram may be based on the CIE 1931 Standard Observer or on the CIE 1964 Supplementary Standard Observer. *See also:* color matching functions (spectral tristimulus values). (EEC/IE) [126]

CIE standard colorimetric observer, 1931 Receptor of radiation whose colorimetric characteristics correspond to the distribution coefficients $\bar{x}_\lambda$, $\bar{y}_\lambda$, $\bar{z}_\lambda$ adopted by the International Commission on Illumination in 1931. *See also:* color. (BT) [34], [84]

CIGRE *See:* Conférence Internationale Des Grands Réseaux Electriques.

CIM *See:* computer input microfilm; computer-integrated manufacturing.

CINEMA A hardware description language with a compiler written in BCPL; contains normal control statements and also statements providing parallel execution of program statements. (C) 610.13-1993

cine-oriented image In micrographics, an image appearing on a roll of microfilm in such a manner that the top edge of the image is perpendicular to the long edge of the film. *Synonyms:* motion picture display; portrait image. *Contrast:* comic-strip oriented image. (C) 610.2-1987

C interface The C language binding, defined in terms of ISO/IEC 9899: 1990. (C/PA) 1327-1993, 1328-1993

ciphertext Data produced through the use of encipherment, the semantic content of which is not available. *Note:* Ciphertext may itself be input to encipherment, producing superenciphered data. (C/LM) 802.10-1992

circadian rhythm Oscillation of biological processes with an approximate 24 h period regulated by external stimuli. (PE/T&D) 539-1990

circle diagram (A) (rotating machinery) Circular locus describing performance characteristics (current, impedance, etc.) of a machine or system. In case of rotating machinery, the term "circle diagram" has, in addition, some specific usages: The locus of the armature current phasor of an induction machine, or of some other type of asynchronous machine, displayed on the complex plane, with the shaft speed as the variable (parameter), when the machine operates at a constant voltage and at a constant frequency. **(B) (rotating machinery)** The locus of the current vector(s) of a nonsalient-pole synchronous machine, displayed in a synchronously rotating reference frame (Park transform, d-q coordinates), with the active component of the load, hence with the rotor displacement angle, as the variable (parameter), when the machine operates at a constant field current. **(C) (rotating machinery)** The locus of the current phasor(s) of (2) *See also:* asynchronous machine. (PE) [9]

circling guidance lights (illuminating engineering) Aeronautical ground lights provided to supply additional guidance during a circling approach when the circling guidance furnished by the approach and runway lights is inadequate. (EEC/IE) [126]

circuit **(1)** The physical medium on which signals are carried across the AUI. The data and control circuits consist of an A circuit and a B circuit forming a balanced transmission system so that the signal carried on the B circuit is the inverse of the signal carried on the A circuit. (C/LM) 8802-3-1990s **(2)** A conductor or system of conductors through which an electric current is intended to flow. (NESC/PE) 599-1985w, C2-1997 **(3) (machine winding)** The element of a winding that comprises a group of series-connected coils. A single-phase winding or one phase of a polyphase winding may comprise one circuit or several circuits connected in parallel. (PE) [9] **(4)** An interconnection of electrical elements. *See also:* network. (CAS) [13] **(5) (data transmission)** A network providing one or more closed paths. (COM/PE) 455-1985r, 599-1985w **(6)** In networking, a means of communication of electrical or electronic signals between two points. *Synonym:* network. *See also:* channel; dial-up circuit; foreign exchange circuit; four-wire circuit; leased circuit; simplex circuit; telecommunication circuit; two-wire circuit. (C) 610.7-1995 **(7) (A)** An arrangement of interconnected components that has at least one input and one output terminal, and whose purpose is to produce at the output terminals a signal that is a function of the signal at the input terminals. *Synonyms:* network; physical circuit. *See also:* channel; expansion board; telecommunication circuit. **(B)** An arrangement of interconnected electronic components that can perform specific functions upon application of proper voltages and signals. *See also:* integrated circuit; logic circuit. (C) 610.10-1994 **(8)** The physical medium on which signals are carried across the AUI for 10BASE-T or MII (for 100BASE-T). For 10BASE-T, the data and control circuits consist of an A circuit and a B circuit forming a balanced transmission system so that the signal carrier on the B circuit is the inverse of the signal carried on the A circuit. (C/LM) 802.3u-1995

circuit analyzer (multimeter) The combination in a single enclosure of a plurality of instruments or instrument circuits for use in measuring two or more electrical quantities in a circuit. *See also:* instrument. (EEC/PE) [119]

circuit, balanced *See:* balanced circuit.

circuit board A flat piece of insulating material, often multilayered, constituted of epoxy-glass or phenolic resin, on which electrical components are mounted and interconnected by etched copper foil so patterned as to form a circuit. *Note:* Sometimes referred to as a "board" or a "card." *See also:* printed circuit board. (C) 610.10-1994

circuit bonding jumper The connection between portions of a conductor in a circuit to maintain required ampacity of the circuit. (NEC/NESC) [86]

circuit breaker (1) (general) (thyristor) A device designed to open and close a circuit by nonautomatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating. *Note:* A circuit breaker is usually intended to operate infrequently, although some types are suitable for frequent operation. (IA/NESC) [86], 333-1980w, 428-1981w **(2)** A switching device capable of making, carrying, and breaking currents under normal circuit conditions and also making, carrying for a specified time, and breaking currents

under specified abno
circuit.
(3) (packaging mach
open under abnorma
without damage to it
(4) (hydroelectric p
vice used to close an
interruption of fault
(5) A mechanical sw
rying, and breaking
and also, making and
ing currents under sp
as those of short circ
intended to operate i
frequent operation. 2
tion is performed m
is, airblast circuit bre
circuit breaker, gas
uum circuit breaker.
breakers are classifie
acteristics and these
lowing modifying w
fields of application.
power—Rated above
definition. Low-volta
or 300 V dc and belo
breakers. Direct-curr
are subdivided acco
fault-current magnit
high-speed, semi-hig
cations of these
applicable standard.

circuit-breaker compa
assembly that contai
primary conductors a
including current tra

(2) That portion of t
circuit breaker or oth
and the associated p

circuit breaker downt
ure until the breaker

circuit breaker, field
contacts for energiz
erator, motor, synch
having discharge
through the dischar
opening of the circu
contacts also discon
at the instant follow
direct-current gener
open before the mai
main field circuit of
tor, motor, or synch
designated as a ma
used in the field ci
machine, the circuit
discharge circuit b
breaker. (F

circuit breaker, gene
circuit breaker that
current peak of the
may not prevent the
value. *Note:* This d
short-time, and a sh

(2) A circuit breake
the current peak of
and may not prever
tained value.

SMA Solar Technology America, LLC, Ex. 1019