ANSI/IEEE Std 100-1988

IEEE Standard Dictionary of Electrical and Electronics Terms

An American National Standard

Acknowledged as An American National Standard
July 8, 1988

IEEE Standard Dictionary of Electrical and Electronics Terms

Fourth Edition

IEEE Standards Board Members

Donald C. Fleckenstein, *Chairman*

Marco Migliaro, *Vice Chairman*

Andrew G. Salem, *Secretary*

Arthur A. Blaisdell
Fletcher J. Buckley
James M. Daly
Stephen R. Dillon
Eugene P. Fogarty
Jay Forster*
Thomas L. Hannan
Kenneth D. Hendrix
Theodore W. Hissey, Jr.
John W. Horch
Jack M. Kinn
Frank D. Kirschner
Frank C. Kitzantides
Joseph L. Koepfinger*
Irving Kolodny
Edward Lohse
John E. May, Jr.
Lawrence V. McCall
L. Bruce McClung
Donald T. Michael*
Richard E. Mosher
L. John Rankine
Gary S. Robinson
Frank L. Rose
Helen M. Wood
Karl H. Zaininger
Donald W. Zipse

Members Emeriti

detectivity. The reciprocal of noise equivalent power (NEP). *See:* **noise equivalent power (NEP).** 433

detector (1)(monitoring radioactivity in effluents). Any device for converting radiation flux to a signal suitable for observation and measurement. 559

(2) (electromagnetic energy). A device for the indication of the presence of electromagnetic fields. *Note:* In combination with an instrument, a detector may be employed for the determination of the complex field amplitudes. *See:* **auxiliary device to an instrument.** 185

(3) (overhead-power-line corona and radio noise). For purposes of this standard a detector is defined as a device which combines the function of detector (extraction of signal or noise from a modulated input) and weighting (extraction of a particular characteristic of the signal or noise). 411

(4) (radiation protection). A device or component which produces an electronically measurable quantity in response to ionizing radiation. 399

detector, average. *See:* **average detector.**

detector figure of merit (nonlinear, active, and nonreciprocal waveguide components). A measure of the performance of a diode detector. It can be expressed quantitatively as the ratio of the open-circuit voltage sensitivity to the square root of the video resistance. 530

detector geometry (detector jargon)(X-ray energy spectrometers)(charged-particle.detectors)(semiconductor radiation detectors). The physical configuration of a solid-state detector. 471,119,23,118

detector, totally depleted. *See:* **totally depleted detector.**

detector, transmission. *See:* **transmission detector.**

determinant (circuits and systems). A square array of numbers or elements bordered on either side by a straight line. The value of the determinant is a function of its elements. 67

developer (electrostatography). A material or materials that may be used in development. *See:* **electrostatography.** 236,191

development (electrostatography). The act of rendering an electrostatic image viewable. *See:* **electrostatography.** 191

development cycle. *See:* **software development cycle.**

development life cycle. *See:* **software development cycle.** 434

development methodology (software). A systematic approach to the creation of software that defines development phases and specifies the activities, products, verification procedures, and completion criteria for each phase. *See:* **software; verification procedures.** 434

development specification. Synonymous with requirements specification in DOD usage. 434

deviation (1)(navigation aid terms). The angle between the magnetic meridian and the axis of a compass card. Indicates the offset of the compass card from magnetic north. 526

(2) (automatic control). Any departure from a desired

(3) (metric practice). Variation from a specified dimension or design requirement, usually defining upper and lower limits. *See:* **tolerance.** 21

(4) (nuclear power quality assurance). A departure from specified requirements. 417

deviation distortion (data transmission). Distortion in an FM receiver due to inadequate bandwidth and inadequate amplitude modulation rejection, or inadquate discriminator linearity. 59

deviation factor (wave) (rotating machinery). The ratio of the maximum difference between corresponding ordinates of the wave and of the equivalent sine wave when the waves are superposed in such a way as to make this maximum difference as small as possible. *Note:* The equivalent sine wave is defined as having the same frequency and the same root-mean-square value as the wave being tested. *See:* **direct-axis synchronous impedance (rotating machinery).** 63

deviation, frequency. *See:* **frequency deviation.**

deviation from a sine wave (converter characteristics)-(self-commutated converters)(harmonic control and reactive compensation of static power converters). A single number measure of the distortion of a sinusoid due to harmonic components. It is equal to the ratio of the absolute value of the maximum difference between the distorted wave and the fundamental to the crest value of the fundamental. *See:* **maximum theoretical deviation from a sine wave.** 584,533

deviation from a sine wave, maximum theoretical. *See:* **maximum theoretical deviation from a sine wave.**

deviation integral, absolute (automatic control). The time integral of the absolute value of the system deviation following a stimulus specified as to location, magnitude, and time pattern. *Note:* The stimulus commonly employed is a step input. 56

deviation ratio (frequency-modulation system) (data transmission). The ratio of the maximum frequency deviation to the maximum modulating frequency of the system. 59

deviation sensitivity (1)(navigation aid terms). The rate of change of course indication with respect to the change of displacement from the course line. 526

(2) (frequency-modulation receivers). The least frequency deviation that produces a specified output power. 339

deviation, steady-state (control). The system deviation after transients have expired. *Note:* For the purpose of this definition, drift is not considered to be a transient. *See:* **deviation.** 206,329

deviation system (control). The instantaneous value of the ultimately controlled variable minus the command. *Note:* The use of system error to mean a system deviation with its sign changed is deprecated. *Syn:* **system overshoot.** *See:* **deviation.** 206,105

deviation, transient (control). The instantaneous value of the ultimately controlled variable minus its steady-state value. *Syn:* **transient overshoot.** *See:* **deviation.** 206,105

ing element such as a relay, contactor, circuit breaker, switch, valve, or governor used to perform a given function in the operation of electrical equipment. 570

(2)(FASTBUS device)(FASTBUS acquisition and control). Any equipment capable of connecting to a segment and responding to the mandatory features of the FASTBUS protocol. 480

(3)(general-system term)(696 interface devices). A circuit or logical group of circuits resident on one or more boards capable of interacting with other such devices through the bus. 538

(4)(measuring longitudinal balance of telephone equipment operating in the voice band). An item of electric equipment that is used in connection with, or as an auxiliary to, other items of electric equipment. 529

(5) (nuclear power generating stations). An item of electric equipment that is used in connection with, or as an auxiliary to, other items of electric equipment. (For example, as used in this document (IEEE Std 649-1980), a device is a starter, contactor, circuit breaker, relay, etcetera. 28, 440

(6) (electrical equipment) (station control and data acquisition). An operating element such as a relay, contractor, circuit breaker, switch, valve, or governor used to perform a given function in the operation of electrical equipment. 403

(7) (packaging machinery). A unit of an electrical system which is intended to carry but not consume electrical energy. 429

device address (DA)(FASTBUS acquisition and control). The (32-m)-bit identifying number assigned to a FASTBUS device that is compared with the signals on the address/data (AD) lines during a logical primary address cycle of a FASTBUS operation. The device address is formed by the group and module address fields. The (remaining) low-order m-bits are assigned to the internal address field. 480

device class--broadcast (FASTBUS acquisition and control). Selective broadcast-class specified by CSR#7 (control and status register #7). Controls device response to subsequent cycles within the broadcast. 480

device rise time (DRT) (photomultipliers for scintillation counting). The mean time difference between the 10- and 90-percent amplitude points on the output waveform for full cathode illumination and delta-function excitation. DRT is measured with a repetitive delta-function light source and a sampling oscilloscope. The trigger signal for the oscilloscope may be derived from the device output pulse, so that light sources such as the the scintillator light source may be employed. 117

dew withstand voltage test (metal-enclosed bus and calculating losses in isolated-phase bus). A test to determine the ability of the insulating system to withstand specified overvoltages for a specified time without flashover or puncture while completely covered with dew. 574

is the preferred term). *Note:* Other terms in this category, such as denickelification, dealuminification, demolybdenization, etcetera, should be replaced by the term parting. *See:* **electrometallurgy.** 205

DF (direction finder). *See:* **radio direction finder.**

DF (direction finder) antenna (navigation aid terms). Any antenna used for radio direction finding. 526

DF (direction finder) antenna system (navigation aid terms). One or more DF antennas, their combining circuits and feeder systems, together with the shielding and all electrical and mechanical items up to the termination at the receiver-input terminals. 526

DF (direction finder) noise level (navigation aid terms). In the absence of the desired signals, the average power or rms (root-mean-square) voltage at any specified point in a direction finder system circuit. *Note:* In rf (radio frequency) and audio channels, The DF noise level is usually measured in terms of the power dissipated in suitable termination. In a video channel, it is customarily measured in terms of voltage across a given impedance, or of the cathode-ray deflection. 526

DF (direction finder) sensitivity (navigation aid terms). That field strength at the DF antenna, in microvolts per meter, which produces a ratio of signal-plus-noise to noise, equal to 20 dB (decibels) in the receiver output, the direction of arrival of the signal being such as to produce maximum pickup in the DF antenna system. 526

DF. *See:* **direction-finder; radio direction-finder.**

DF noise level. In the absence of the desired signals, the average power or rms voltage at any specified point in a direction finder system circuit. *Note:* In radio-frequency and audio channels, the direction finding noise level is usually measured in terms of the power dissipated in suitable termination. In a video channel, it is customarily measured in terms of voltage across a given impedance, or of the cathode-ray deflection. 13

DF sensitivity. That field strength at the DF antenna, in microvolts per meter, which produces a ratio of signal-plus-noise to noise equal to 20 decibels in the receiver output, the direction of arrival of the signal being such as to produce maximum pickup in the direction finding antenna system. 13

dg. *See:* **decilog.**

diagnostic (software). (1) Pertaining to the detection and isolation of faults or failures. (2) A message generated by a computer program indicating possible faults in another system component, for example, a syntax fault flagged by a compiler. *See:* **compiler; computer program; failure; fault; system component; syntax.** 434

diagnostic factor (evaluation of thermal capability)(-thermal classification of electric equipment and electrical insulation). A variable or fixed stress, which can be applied periodically or continuously during an accelerated test, to measure the degree of aging without in itself influencing the aging process. 506