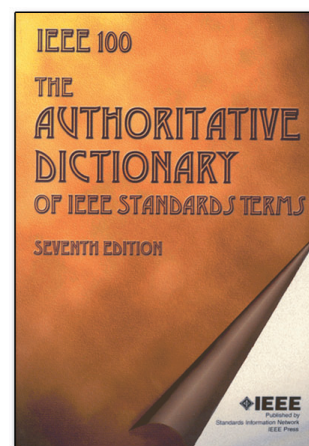


IEEE 100

The Authoritative Dictionary of IEEE Standards Terms

Seventh Edition



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where

D_V = voltage distortion factor in percent,

V_1 = rms value of the fundamental frequency component,

V_n = rms value of an individual non-fundamental frequency component,

f_1 = the fundamental frequency,

f_n = frequency of other individual waveform components, including harmonics and inter-harmonics (non-integral multiples of the fundamental),

$f_{\max}$ = the maximum frequency of measurement.

(PEL) 1515-2000

distortion, field-time waveform *See*: field-time waveform distortion.

distortion, intermodulation *See*: intermodulation distortion.

distortion, keystone *See*: keystone distortion.

distortion-limited operation (fiber optics) The condition prevailing when the distortion of the received signal, rather than its amplitude (or power), limits performance. The condition is reached when the system distorts the shape of the waveform beyond specified limits. For linear systems, distortion-limited operation is equivalent to bandwidth-limited operation. *See also*: multimode distortion; bandwidth-limited operation; distortion; attenuation-limited operation. (Std100) 812-1984w

distortion, linear *See*: linear distortion.

distortion, linear TV waveform *See*: linear TV waveform distortion.

distortion, line-time waveform *See*: line-time waveform distortion.

distortion, pattern *See*: pattern distortion.

distortion, percent harmonic *See*: percent harmonic distortion.

distortion, phase delay *See*: phase delay distortion.

distortion, pin-cushion *See*: pin-cushion distortion.

distortion power (A) (single-phase two-wire circuit) At the two terminals of entry of a single-phase two-wire circuit into a delimited region, a scalar quantity having an amplitude equal to the square root of the difference of the squares of the apparent power and the amplitude of the phasor power. *Note*: Mathematically, the amplitude of the distortion power D is given by the equation

$$D = (U^2 - S^2)^{1/2} = (U^2 - P^2 - Q^2)^{1/2}$$

$$= \left[\sum_{r=1}^{r=\infty} \sum_{q=1}^{q=\infty} \left\{ E_r^2 I_q^2 E_r E_q I_r I_q \cdot \cos [(\alpha_r - \beta_r) - (\alpha_q - \beta_q)] \right\} \right]^{1/2}$$

where the symbols are as in power, apparent (single-phase two-wire circuit). If the voltage and current are quasi-periodic and the amplitudes are slowly varying, the distortion power at any instant may be taken as the value derived from the amplitude of the apparent power and phasor power at that instant. By this definition the sign of distortion power is not definitely determined, and it may be given either sign. In the absence of other definite information, it is to be taken the same as for the active power. Distortion power is expressed in volt-amperes when the voltage is in volts and the current in amperes. The distortion power is zero if the voltage and the current have the same waveform. This condition is fulfilled when the voltage and current are sinusoidal and have the same period, or when the circuit consists entirely of non-inductive resistors. *See also*: apparent power. **(B) (polyphase circuit)** At the terminals of entry of a polyphase circuit, equal to the sum of the distortion powers for the individual terminals of entry. *Notes*: 1. The distortion power for each terminal of entry is determined by considering each phase conductor, in turn, with the common reference point as a single-phase, two-wire circuit and finding the distortion power for each in accordance with the definition of distortion power (single-phase two-wire circuit). The common reference terminal shall be taken as the neutral terminal of entry, if one exists, otherwise as the true neutral point. The sign given to the distortion

power for each single-phase current, and therefore to the total for the polyphase circuit, shall be the same as that of the total active power. 2. Distortion power is expressed in volt-amperes when the voltages are in volts and the current in amperes. 3. The distortion power is zero if each voltage has the same wave form as the corresponding current. This condition is fulfilled, of course, when all the currents and voltages are sinusoidal. (Std100/Std100) 270-1966

distortion, pulse *See*: pulse distortion.

distortion, short-time waveform *See*: short-time waveform distortion.

distortion, single frequency *See*: single frequency distortion.

distortion, spiral *See*: spiral distortion.

distortion tolerance (telegraph receiver) The maximum signal distortion that can be tolerated without error in reception. *See also*: telegraphy. (COM) [49]

distortion, total *See*: total distortion.

distortion, total harmonic *See*: total harmonic distortion.

distortion, waveform *See*: waveform distortion.

distributed Spread out over an electrically significant length or area. (EEC/PE) [119]

distributed architecture A computer architecture characterized by its suitability for distributed processing.

(C) 610.10-1994w

distributed constant (waveguide) A circuit parameter that exists along the length of a waveguide or transmission line. *Note*: For a transverse electromagnetic wave on a two-conductor transmission line, the distributed constants are series resistance, series inductance, shunt conductance, and shunt capacitance per unit length of line. *See also*: waveguide.

(MTT) 146-1980w

distributed computer network A network in which all node pairs are connected either directly or through redundant paths through intermediate nodes. *See also*: decentralized computer network; centralized computer network. (C) 610.7-1995

distributed control system A system comprised of software, hardware, cabling, sensors, and activators, which is used to control and monitor equipment. (PE/EDPG) 1050-1996

distributed coordination function (DCF) A class of coordination function where the same coordination function logic is active in every station in the basic service set (BSS) whenever the network is in operation. (C/LM) 8802-11-1999

distributed database (A) A database that is not stored in its entirety at a single physical location, but is dispersed over a network of interconnected computers. **(B)** A database under the overall control of a central database management system, whose storage devices are not all attached to the same processor. (C) 610.5-1990

distributed data processing (DDP) The use of computers for processing information within a distributed system.

(C) 610.2-1987

distributed element (waveguide) (for a transmission line) A circuit element that exists continuously along a transmission line. *Note*: For a transverse electromagnetic wave on a two-conductor transmission line, the distributed elements are series resistance, series inductance, shunt conductance, and shunt capacitance per unit length of line.

(MTT) 146-1980w

distributed element circuit (microwave tubes) A circuit whose inductance and capacitance are distributed over a physical distance that is comparable to a wavelength.

(ED) [45]

distributed function (dot logic, wired logic) A logic function (either AND or OR) implemented by connecting together outputs of the appropriate type; these outputs are the inputs of the logic function thus formed; the joined connection is the output. (GSD) 91-1984r

Distributed Interactive Simulation (DIS) A time-and-space-coherent synthetic representation of world environments designed for linking the interactive, free play activities of people in operational exercises. The synthetic environment is created

through real-time exchange of data units between distributed, computationally autonomous simulation applications in the form of simulations, simulators, and instrumented equipment interconnected through standard computer communicative services. The computational simulation entities may be present in one location or may be distributed geographically.

(C/DIS) 1278.4-1997, 1278.2-1995, 1278.1-1995

distributed-network type A unit substation which has a single stepdown transformer having its outgoing side connected to a bus through a circuit breaker equipped with relays which are arranged to trip the circuit breaker on reverse power flow to the transformer and to reclose the circuit breaker upon the restoration of the correct voltage, phase angle, and phase sequence at the transformer secondary. The bus has one or more outgoing radial (stub-end) feeders and one or more tie connections to a similar unit substation.

(PE/TR) C57.12.80-1978r

distributed numerical control (DbNC) Numerical control in which a computer controls one or more remote numerical control machines.

(C) 610.2-1987

distributed polling A polling technique in which all stations participate equally in the control of access to the transmission medium. *Contrast*: centralized polling.

(C) 610.7-1995

distributed processing (1) (supervisory control, data acquisition, and automatic control) A design in which data is processed by more than one processor.

(PE/SUB) C37.1-1994

(2) A design in which all data is not processed in one processor. Multiple processors in the master station or in the remote stations, or both, share the functions.

(SWG/PE) C37.100-1992

distributed queue The medium access control (MAC) procedure in ISO/IEC 8802 for queued arbitrated (QA) access.

(LM/C) 8802-6-1994

distributed resource islanding An islanding condition in which the distributed resource(s) supplying the loads within the island are not within the direct control of the power system operator.

(SCC21) 929-2000

distributed simulation accreditation The official certification that a distributed simulation is acceptable for use for a specific purpose.

(DIS/C) 1278.3-1996

distributed simulation validation The process of determining the degree to which a distributed simulation is an accurate representation of the real world from the perspective of its intended use(s) as defined by the requirements.

(DIS/C) 1278.3-1996

distributed simulation verification the process of determining that an implementation of a distributed simulation accurately represents the developer's conceptual description and specifications.

(DIS/C) 1278.3-1996

distributed system A computer system in which several interconnected computers share the computing tasks assigned to the system.

(C) 610.2-1987, 610.10-1994w

distributed target A target composed of a number of scatterers, where the target extent in any dimension is greater than the radar resolution in that dimension. *See also*: complex target.

(AES) 686-1997

distributed winding (rotating machinery) A winding, the coils of which occupy several slots per pole. *See also*: stator; armature; rotor.

(PE) [9]

distributing cable *See*: distribution cable.

distributing frame (1) A structure for terminating permanent wires of a central office, private branch exchange, or private exchange and for permitting the easy change of connections between them by means of cross-connecting wires.

(COM) [48]

(2) A structure for terminating permanent wires of a central office for permitting the easy change of connections between them by means of cross-connect wires.

(C) 610.7-1995

distributing valve The element of the governor-control actuator that controls the flow of hydraulic fluid to the turbine-control servomotor(s).

(PE/EDPG) 125-1988r

distribution (1) (used as an adjective) A general term used, by reason of specific physical or electrical characteristics, to denote application or restriction of the modified term, or both, to that part of an electrical system used for conveying energy to the point of utilization from a source or from one or more main receiving stations. *Notes*: 1. From the standpoint of a utility system, the area described is between the generating source or intervening substations and the customer's entrance equipment. 2. From the standpoint of a customer's internal system, the area described is between a source or receiving station within the customer's plant and the points of utilization.

(SWG/PE/PE) C37.40-1993, C37.100-1992

(2) A software_collection containing software in the software packaging layout.

(C/PA) 1387.2-1995

(3) The service that, by using association information, delivers medium access control (MAC) service data units (MSDUs) within the distribution system (DS).

(C/LM) 8802-11-1999

(4) *See also*: probability distribution function.

(T&D/PE) 539-1990

distribution amplifier A high-gain amplifier used to overcome high losses encountered in signal distribution. The generic term referring to any amplifier in a broadband coaxial system. In this document, the term signifies an amplifier that is used to operate at the higher levels that are normally associated with the distribution portion of the cable plant.

(LM/C) 802.7-1989r

distribution arrester (A) Light duty class: An arrester generally installed on and used to protect underground distribution systems where the major portion of the lightning stroke current is discharged by an arrester located at the overhead line/cable junction. **(B) Normal duty class**: An arrester generally used to protect overhead distribution systems exposed to normal lightning currents. **(C) Heavy duty class**: An arrester most often used to protect overhead distribution systems exposed to severe lightning currents.

(SPD/PE) C62.22-1997, C62.11-1999

distribution box (mine type) A portable piece of apparatus with enclosure by means of which an electric circuit is carried to one or more machine trailing cables from a single incoming feed line, each trailing cable circuit being connected through individual overcurrent protective devices. *See also*: mine feeder circuit; distributor box.

(EEC/PE) [119]

distribution catalog The catalog of metadata for a distribution software_collection. Unlike a catalog for an installed_software object, a distribution catalog is stored in a particular exported catalog structure that is part of the software packaging layout.

(C/PA) 1387.2-1995

distribution cable (communication practice) (distributing cable) A cable extending from a feeder cable into a specific area for the purpose of providing service to that area. *See also*: cable.

(EEC/PE) [119]

distribution center Enclosed apparatus that consists of automatic protective devices connected to bus bars, to subdivide the feeder supply and provide control and protection of subfeeders or branch circuits.

(IA/MT) 45-1998

distribution coefficients (television) (color) The tristimulus values of monochromatic radiations of equal power. *Note*: Generally represented by overscored, lowercase letters such as $\bar{x}$, $\bar{y}$, $\bar{z}$ in the CIE system.

(BT/AV) 201-1979w

distribution counting sort An insertion sort in which the sort keys of the items to be sorted fall within some finite range of values, and by counting the number of sort keys having each value, the position of the items in the sorted set can be determined.

(C) 610.5-1990w

distribution current-limiting fuse A fuse consisting of a fuse support and a current-limiting fuse unit. *Note*: In addition, the distribution current-limiting fuse is identified by the following characteristics:

- a) Dielectric withstand basic impulse insulation level (BIL) strengths at distribution levels
- b) Application primarily on distribution feeders and circuits