

*Fourth Edition  
Newly Revised and Expanded*

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***Standard Dictionary of  
Electrical and  
Electronics  
Terms***

PLUS A UNIQUE FEATURE:  
OVER 15,000 ACRONYMS DEFINED

The largest current list of acronyms  
used in electrical and electronics science,  
business and industry, government,  
and the military.

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of which is greater than warranted by the desired controlled speed in order to bring about a greater rate of speed change. *Note:* Forcing may be obtained by directing the control impulse so as to effect a change in the field or armature circuit of the motor, or both. *See:* electric drive. 206

**foreign area (telephone switching systems).** A numbering plan area other than the one in which the calling customer is located. 55

**foreign exchange line (1) (data transmission).** A subscriber line by means of which service is furnished to a subscriber at the subscriber's request from an exchange other than the one from which service would normally be furnished. 59

**(2) (telephone switching systems).** A loop form an exchange other than the one from which service would normally be furnished. 55

**forestalling switch.** *See:* acknowledge; forestaller.

**fork beat (facsimile).** *See:* carrier beat.

**form.** Any article such as a printing plate, that is used as a pattern to be reproduced. *See:* electroforming. 328

**formal language (software).** A language whose rules are explicitly established prior to its use. Examples include programming language, such as FORTRAN and Ada, and mathematical or logical languages, such as predicate calculus. *Syn:* artificial language. *See:* natural language; programming language. 434

**formal logic.** The study of the structure and form of valid argument without regard to the meaning of the terms in the argument. 255,77

**formal parameter (software).** A variable used in a subprogram to represent data or program elements to be transmitted to the subprogram by a calling routine. *Syn:* dummy parameter. *See:* actual parameter; data; program; routine; subprogram; variable. 434

**formal specification (software).** (1) A specification written and approved in accordance with established standards. (2) In proof of correctness, a description in a formal language of the externally visible behavior of a system or system component. *See:* component; formal language; proof of correctness; specification; system. 434

**formal testing (software).** The process of conducting testing activities and reporting results in accordance with an approved test plan. *See:* testing; test plan. 434

**format (1) (computing systems).** The general order in which information appears on the input medium.

**(2) (data transmission).** Arrangement of code characters within a group, such as a block or message. 194

**(3) Physical arrangement of possible locations of holes or magnetized areas.** *See:* address format. 107

**format classification (numerically controlled machines).** A means, usually in an abbreviated notation, by which the motions, dimensional data, type of control system, number of digits, auxiliary functions, etcetera, for a particular system can be denoted. 107

**format detail (numerically controlled machines).** De-

scribes specifically which words and of what length are used by a specific system in the format classification. 244,207

**formation lights (illuminating engineering).** A navigation light especially provided to facilitate formation flying. 167

**formation voltage.** The final impressed voltage at which the film is formed on the valve metal in an electrochemical valve. *See:* electrochemical valve. 328

**formatted (computer applications).** (1) Pertaining to magnetic media, such as tapes or diskettes, that have been initialized and prepared to accept and store data. (2) Pertaining to text that has been organized into a particular arrangement for output or display. 571

**form designation (watthour meter).** An alphanumeric designation denoting the circuit arrangement for which the meter is applicable and its specific terminal arrangement. The same designation is applicable to equivalent meters of all manufacturers. 212

**formette (rotating machinery).** *See:* form-wound motorette.

**form factor (1) (periodic function).** The ratio of the root-mean-square value to the average absolute value, averaged over a full period of the function. *See:* power rectifier; rectification. 208

**(2) (electric process heating).** Coil ratio of conductor width to turn to turn space. *See:* coil shape factor. 14

**(3)  $f_{1-2}$  (illuminating engineering).** The ratio of the flux directly received by surface 2 (and due to lambertian surface 1) to the total flux emitted by surface 1. It is used in flux transfer theory. 167

**forming (1) (electrical) (semiconductor devices).** The process of applying electric energy to a semiconductor device in order to modify permanently the electric characteristics. *See:* semiconductor. 66

**(2) (semiconductor rectifier).** The electrical or thermal treatment, or both, of a semiconductor rectifier cell for the purpose of increasing the effectiveness of the rectifier junction. *See:* rectification. 237,66

**(3) (electrochemical).** The process that results in a change in impedance at the surface of a valve metal to the passage of current from metal to electrolyte, when the voltage is first applied. *See:* electrochemical valve. 328

**forming shell (National Electrical Code).** A metal structure designed to support a wet-niche lighting fixture assembly and intended for mounting in a swimming pool structure. 256

**form-wound (performed winding) (rotating machinery).** Applied to a winding whose coils are formed essentially to their final shape prior to assembly into the machine. *See:* rotor (rotating machinery); stator. 63

**form-wound motorette (formette) (rotating machinery).** A motorette for form-wound coils. *See:* asynchronous machine. 63

**fortuitous distortion (data transmission).** A random distortion of telegraph signals such as that commonly produced by interference. 59

**fortuitous telegraph distortion.** Distortion that in-



- (C) An arrangement of equipment that performs a protective action when it receives a signal from the protection system. 20
- protective covering (power cable joint).** A field-applied material to provide environmental protection over the joint or housing, or both. 34
- protective device (series capacitors).** A bypass gap or other device which limits the voltage on the capacitor segment to a predetermined level when overcurrent flows through the series capacitor (that is, during system faults, system swings, or other abnormal events), and which is capable of carrying capacitor discharge, system fault, and load current for specified durations. 474
- protective function (nuclear power generating station).** (1) Any one of the functions necessary to mitigate the consequences of a design basis event (for example, reduce power, isolate containment, or cool the core). *Note:* A protective function is design basis objective that must be accomplished: a successfully completed protective action at the system level, including the sensing of one or more variables, will accomplish the protective function. However, the design may be such that a given protective function may be accomplished by any one of several protective actions at the system level. 356
- (2) The completion of those protective actions at the system level required to maintain plant conditions within the allowable limits established for a design basis event (for example, reduce power, isolate containment, or cool the core). 102, 387
- (3) The sensing of one or more variables associated with a particular generating station condition, the signal processing and the initiation and completion of the protective action at values of the variables established in the design bases. 109, 20
- protective gap (power switchgear).** A gap placed between live parts and ground to limit the maximum over-voltage that may occur. 103
- protective lighting (illuminating engineering).** A system intended to facilitate the nighttime policing of industrial and other properties. 167
- protective margin (surge arresters).** The value of the protective ratio minus one expressed in percent ((PR minus 1) mult 100). 62
- protective power gap (series capacitor).** A bypass gap which limits the voltage on the capacitor segment to a predetermined level when system fault occurs on the line, and which is capable of carrying capacitor discharge, system fault, and load currents for specified durations. 86
- protective ratio (surge arresters).** The ratio of the insulation withstand characteristics of the protected equipment to the arrester protective level, expressed as a multiple of the latter figure. 62
- protective relay (1)(power operations).** A device whose function is to detect defective lines or apparatus or other power system conditions of an abnormal or dangerous nature and to initiate appropriate control action. 516
- (2) (power switchgear). A relay whose function is to detect defective lines or apparatus or other power system conditions of an abnormal or dangerous nature and to initiate appropriate control circuit action. *Note:* A protective relay may be classified according to its input quantities, operating principle, or performance characteristics. 127, 103
- (3) (seismic testing of relays). A relay whose function is to detect defective lines or apparatus or other power system conditions of an abnormal or dangerous nature and to initiate appropriate control circuit action. *Note:* A protective relay may be classified according to its operating quantities, operating principle, or performance characteristics. 392
- protective screen (burglar-alarm system).** A lightweight barrier of either solid strip or lattice construction, carrying electric protection circuits, and barring access through a normal opening to protected premises. *See:* protective signaling. 328
- protective signaling.** Protective signaling comprises the initiation, transmission, and reception of signals involved in the detection and prevention of property loss or damage due to fire, burglary, robbery, and other destructive conditions, and in the supervision of persons and of equipment concerned with such detection and prevention. 328
- protective system (class 1E power systems for nuclear power generating stations).** The electrical and mechanical devices (from measured process variables to protective action system input terminals) involved in generating those signals associated with the protective functions. These signals include those that initiate reactor trip, engineered safety features (for example, containment isolation, core spray, safety injection, pressure reduction, and air cleaning) and auxiliary supporting features. 102
- protector tube (1) (surge arresters).** An expulsion arrester used primarily for the protection of line and switch insulation. 2, 62
- (2) (electron-tube type). A glow-discharge cold-cathode tube that employs a low-voltage breakdown between two or more electrodes to protect circuits against overvoltage. 190
- protocol (1)(supervisory control, data acquisition, and automatic control).** A strict procedure required to initiate and maintain communication. 570
- (2) (data communication). A formal set of conventions governing the format and relative timing of message exchange between two communications terminals. *See:* control procedure. 12
- (3) (software). (A) A set of conventions or rules that govern the interactions of processes or applications within a computer system or network. (B) A set of rules that govern the operation of functional units to achieve communication. *See:* computer system; functional unit; network; process. 434
- protocol data unit (PDU)(1)(logical link control).** The sequence of contiguous octets delivered as a unit from or to the medium access control (MAC) sublayer. A valid logical link control (LLC) PDU is at least 3 octets in length, and contains two address fields and a control field. A PDU may or may not include an information field in addition. 585