

WILEY ELECTRICAL AND ELECTRONICS ENGINEERING DICTIONARY

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Lexicographer



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Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
Published simultaneously in Canada.

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Library of Congress Cataloging-in-Publication Data is available.

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Wiley Electrical and Electronics Engineering Dictionary

ISBN 0-471-40224-9

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

emphasizer 1. An electric network which serves to provide emphasis (1). 2. An electric network which serves to provide emphasis (2). Also called **preemphasis network**.

empiric Same as **empirical**.

empirical Based on, or depending upon observation, experience, or experimentation, as opposed to theory. Also spelled **empiric**.

empty band 1. A band which is not in use. 2. A band which is not occupied. 3. An energy band which is not occupied by any electrons.

EMR Abbreviation of **electron magnetic resonance**.

EMS 1. Abbreviation of **electromagnetic susceptibility**.

2. Abbreviation of **Expanded Memory Specification**.

3. Abbreviation of **event-management system**.

emu Abbreviation of **electromagnetic system of units**.

emulation 1. The use of an emulator. 2. The function of an emulator.

emulation mode A hardware and/or software operation mode in which another device and/or software is being emulated. For instance, a printer which emulates another printer, so as to be compatible with existing software.

emulator Computer hardware and/or software which is designed to work exactly like another. Seen, for instance, in printer emulation, so that a printer made by one manufacturer is able to work with the software intended for a printer of a different manufacturer. Another example is the design of a computer to run on software intended for another.

EMV Abbreviation of **electromagnetic vulnerability**. Same as **electromagnetic susceptibility**.

enable To turn on, or to put into operation. May refer to a component, device, circuit, piece of equipment, function, program, or system.

enable pulse An pulse that turns on, puts into operation, or prepares for a subsequent action. May refer to a component, circuit, device, piece of equipment, function, program, or system.

enabled Turned on, or operating. May refer to a component, circuit, device, piece of equipment, function, program, or system.

enamel A glass-like coating utilized to provide a hard and/or glossy finish. May be used, for instance, for insulation and/or corrosion protection.

enameled wire Wire which has a baked-on enamel film, which provides insulation. May be used, for instance, in coils.

encapsulant That which serves to encapsulate (2). For instance, a wax, a plastic, or a ceramic.

encapsulate 1. To embed or incorporate into something else. 2. To encase or embed in a surrounding mass or enclosure which houses and protects. For instance, an electronic component may be encapsulated in plastic, to insulate and protect from moisture. Such a plastic would usually be in a molten state when applied to the component, then let solidify for a snug fit.

Encapsulated PostScript A file format for importing and exporting Postscript files. Its abbreviation is **EPS**.

encapsulation 1. The process of applying an encapsulant. May be accomplished, for example, by dipping a component or device in molten glass, then letting cool. 2. In object-oriented programming, the hiding of the implementation details of an object. The services the object provides are defined and accessible, but their internal workings are not. Also called **information hiding** (2). 3. A technique which enables a network to send data utilizing one protocol, through another network using different protocol. It does so by encapsulating packets using one network protocol within packets being transmitted through the other network. Also called **tunneling** (2).

encipher Same as **encode** (2).

enclosure 1. That which serves to house something else. For instance, a cabinet which holds an apparatus. 2. A cabinet designed to house one or more speaker units. Two common designs are acoustic reflex and acoustic suspension. Within a speaker system, a specialized speaker such as a woofer or tweeter may have its own enclosure, helping enhance performance. Also called **speaker enclosure**, or **loudspeaker enclosure**. 3. Same as **email attachment**.

encode 1. To express information utilizing a code. 2. To scramble information, such as data, in a manner which only those with a key can decipher. Usually used for security purposes. Also called **encrypt**, **encipher**, **code** (4), or **scramble** (1). 3. To write a set of computer instructions.

encoded Also called **coded**. 1. Information, such as data, which is in the form of a code. Also called **encrypted** (1). 2. Information, such as data, which has been scrambled in some manner. Also called **encrypted** (2). 3. Programs or program instructions which have been written.

encoded data Data which has been encoded. May be used, for instance, where privacy or security is a concern. Also called **coded data**, or **scrambled data**.

encoded signal A signal which has been encoded. May be used, for instance, where privacy or security is a concern. Also called **coded signal**, or **scrambled signal**.

encoded speech Speech which has been encoded (2), so that it can only be understood with a receiver with the proper circuits and settings. May be used, for instance, where eavesdropping is a concern. Also called **coded speech**, or **scrambled speech**.

encoder 1. A circuit, device, piece of equipment, program, system, or method utilized to encode. For instance, computer hardware and/or software used for such a purpose. 2. In a TV transmitter, a circuit or device which transforms the separate red, green, and blue camera signals into color-difference signals, and combines these with the chrominance subcarrier. Also called **color encoder**, or **matrix** (3). 3. An electromechanical device, such as a shaft-position encoder, which converts the rotations of a shaft into pulses. 4. A device which converts an analog quantity into a digital signal. 5. A device or piece of equipment which prints characters in a certain font and places them in specific locations, so as to facilitate being read by optical character recognition devices.

encoding That processes performed by an encoder.

encrypt Same as **encode** (2).

encrypted 1. Same as **encoded** (1). 2. Same as **encoded** (2).

encryption The coding of information so that only the intended recipients can understand it. It is an extremely efficient method to achieve data security, and a code, or key, is used to convert the information back to its original form. Public-key encryption and secret-key encryption are the two most common types.

encryption algorithm A set of mathematic formulas utilized to scramble information, such as data, in a manner which only those with a key can decipher.

encryption key A series of binary digits or characters that are incorporated into data to encrypt it.

end bell 1. In a rotating motor, the part of the housing which supports the bearing and guards the rotating parts. Also called **end bracket**, or **end shield**. 2. A cable clamp which is affixed to the back of a plug or receptacle.

end bracket Same as **end bell** (1).

end cell In a storage battery, a cell which may be connected with the others, so as to adjust the overall voltage.

end device Same as **end instrument**.

end effect In an antenna, an effect due to capacitance at the ends of the radiators. Capacitive coupling with the sur-

initial voltage The voltage of a battery at the beginning of a discharge.

initialization 1. In a computer, the process of setting variables, counters, addresses, and the like to their starting value, such as zero. This may occur, for instance, at the start of a routine. 2. The process of preparing a storage medium, such as a floppy or hard disk, for use. This may include locating bad sectors, indexing, and so on. 3. The powering up of a computer. 4. The process of preparing a device or piece of equipment for operation.

initialization string A sequence of events which prepare a peripheral, such as a printer or modem, for proper operation.

initialize 1. In a computer, to set all variables, counters, addresses, and the like to their starting value, such as zero. This may occur, for instance, at the start of a routine. 2. To prepare a storage medium, such as a floppy or hard disk, for use. This may include locating bad sectors, indexing, and so on. 3. To power up a computer. 4. To prepare a device or piece of equipment for operation.

initiate To begin, or otherwise set an operation or process in motion. For instance, to start a transmission.

initiation The act of beginning, or otherwise setting an operation or process in motion. Also an instance of such an act.

inject 1. To apply a signal to a circuit or device. 2. To introduce charge carriers into a semiconductor.

injected laser Same as **injection laser diode**.

injection 1. The application of a signal to a circuit or device. Also, the process utilized. Also called **signal injection**. 2. The introduction of charge carriers into a semiconductor. Also, the process utilized. Also called **carrier injection**.

injection efficiency A measure of the efficiency of a pn junction when a forward bias is applied, expressed as the ratio of the current carried by injected current carriers to the total current across said junction.

injection electroluminescence In a semiconductor, light emission resulting from electron-hole recombination as a result of minority carrier injection.

injection laser Same as **injection laser diode**.

injection laser diode A laser in which a forward-biased pn junction diode is used to convert its DC input into a coherent light output. Used, for instance, as a light-pulse generator for transmission of information over fiber-optic lines. Also called **injection laser**, **injected laser**, **diode laser**, **laser diode**, or **semiconductor laser**.

injector That which serves to inject.

injector laser Same as **injection laser diode**.

ink jet cartridge Same as **inkjet cartridge**.

ink jet printer Same as **inkjet printer**.

inkjet cartridge A cartridge containing the ink utilized in an **inkjet printer**. For instance, such a printer may utilize four separate cartridges, one each for cyan, magenta, yellow, and black, for better efficiency and quality, as compared to a single cartridge. Also spelled **ink jet cartridge**.

inkjet printer A non-impact printer which sprays small ink droplets onto the paper or other medium being printed upon. Such printers are characterized by comparatively quiet operation and the ability to print colors, but usually have lower resolution than laser printers and may smudge on certain types of paper. Also spelled **ink jet printer**.

inline code Instructions from a low-level computer programming language, such as assembly language, which are embedded in the source code of a high-level computer programming language, such as C. Also spelled **in-line code**.

inline graphics Graphics which are embedded within an HTML document, or the body of a Web page. Such graphics are usually loaded automatically by the Web browser. Also spelled **in-line graphics**.

inline image An image which is embedded within an HTML document, or the body of a Web page. Such images are usually loaded automatically by the Web browser. Also spelled **in-line image**.

inline tuning Same as **in-line tuning**.

inner conductor In a concentric two-conductor line, such as a coaxial cable, the conductor which is on the inside. This conductor usually carries the signal, while the **outer conductor** serves as a shield. A dielectric separates the two conductors. Also called **inside conductor**, or **center conductor**.

inoculate To store information about a file, piece of code, or program, for later verification of the integrity of said file, piece of code, or program. For instance, a checksum may be performed each time a program is run, and if the checksums do not match, there may be a virus, or other infection, present.

inoculation The process of storing information about a file, piece of code, or program, for later verification of the integrity of said file, piece of code, or program.

input Its abbreviation is **I**, or **in**. 1. That which is applied or otherwise entered into a system, so as to obtain an output or other result. For instance, an applied power to accomplish work. 2. The energy, voltage, current, or other signal applied to a component, circuit, device, piece of equipment, system, or process. Also, the application of such a signal. For example, a voltage input provided to an electronic device. 3. The information which is entered into a computer for processing, storing, displaying, or otherwise handling. Also, the entering of such information. Such information may be entered manually or automatically, and this input may be provided by a user, a scanner, a storage device, and so on. Also called **input data** (1). 4. The terminals of a component, circuit, device, or piece of equipment to which an **input** (2) is delivered. Also called **input terminals**.

input admittance For a circuit, device, or transmission line, the admittance as seen from the input terminals. It is the reciprocal of **input impedance**.

input area Within the memory or storage of a computer, a segment reserved for the input of data. Also called **input block** (1), or **input section**.

input bias current 1. A current which is applied to a component or device to establish a reference level for its operation. For instance, the current applied to the base-emitter junction of a transistor to set its operating point. Also called **bias current**. 2. The current flowing into the inputs of a circuit or device.

input block 1. Same as **input area**. 2. Same as **input buffer**. 3. A block of data entered into a computer.

input-bound Same as **input-limited**.

input buffer A segment of computer memory utilized to temporarily store information that awaits transfer or processing. Used, for instance, to compensate for differences in operating speeds. Also called **input block** (2), **buffer** (1), or **buffer memory**.

input capacitance For a circuit or device, the capacitance as seen from the input terminals.

input channel A channel via which an input is conveyed.

input circuit A circuit connected to the input electrodes or terminals of a component or device. For example, an exterior circuit connected to an input electrode of an electron tube.

input conductance For a circuit or device, the conductance as seen from the input terminals.

input current 1. The current flowing through an **input circuit**. 2. The current flowing through an input circuit under specified conditions.

privileged mode An operational state which allows certain operations which are otherwise restricted, such as memory management, to be carried out. The operating system usually operates in this mode. Also called **privileged state**, or **supervisor mode**.

privileged state Same as **privileged mode**.

PRK Abbreviation of **phase-reversal keying**.

PRML Abbreviation of **Partial Response Maximum Likelihood**.

probability 1. The likelihood that something will happen. 2. A statistical calculation to determine the quantitative likelihood that something will happen.

probe 1. A usually slender object or device which is utilized to detect, sample, or measure a phenomenon, by being placed in proximity or in direct contact with an object, material, or area. A probe may consist of an electrode, lead, rod, optic fiber, or the like. Probes can be used to test and quantify any number of phenomena, including voltage, current, resistance, magnetic flux strength, temperature, pressure, electron density in a plasma, logic levels within a logic circuit, and so on. Also, to sample with or otherwise use such a probe. Also called **test probe**. 2. A **probe** (1) which is inserted into a waveguide or cavity resonator, allowing energy to be transferred in or out. Such a probe may be rod, pin, or a wire. Also called **waveguide probe**.

probe coil Same as **pickup coil**.

probe microphone A small or miniature microphone which is utilized to detect sound pressure. Used, for instance, in hard to reach places, or when detection of sound must be obtained with a minimum of effect on the surrounding sound field.

probing The use of a **probe**.

problem-oriented language A computer language which is designed to solve specific problems. FORTRAN, for instance, is especially useful when dealing with problems of a scientific and mathematical nature. Its abbreviation is **POL**.

problem reduction In artificial intelligence, techniques, procedures, and processes utilized to simplify complex problems.

problem solving The ability to assess a given problem or task, and to be able to arrive at an effective solution or manner of completion. In artificial intelligence, problem solving involves proceeding through a series of operations which lead from an initial state to a goal state.

problem space In artificial intelligence, the formulation of a problem into states, such as the initial state, intermediate, and goal states, and the determination of the necessary operations to proceed to completion. Also called **state space**.

procedural language A programming language, such as C or FORTRAN, which requires specific statements, instructions, or subroutines which need to be executed in a specified sequence. Such a language emphasizes how something must be carried out, as opposed to what needs to be done, as would be the case with a **non-procedural language**.

Procedural Language/SQL Same as **PL/SQL**.

procedure 1. A sequence of operations required to perform a given task. 2. Within a computer program, a small group of instructions which perform a given task. Also called **routine** (1), **subroutine** (2), or **function** (3).

procedure call A statement that invokes a specific **procedure** (2).

procedure-driven Pertaining to programs in which users must follow a given sequence of steps, each of which is dictated by said program. This contrasts with **event-driven**, in which programs wait for user actions, such as mouse clicks and key pressings, responds to them, and then returns to waiting for further events. Also called **procedure-oriented**.

2. A specific program which is **procedure-driven** (1). Also called **procedure-driven program**.

procedure-driven program Same as **procedure-driven** (2).

procedure-oriented Same as **procedure-driven**.

process 1. A sequence of steps, events, operations, functions, or the like, which leads to a given result. Also, the following of such a sequence. 2. In computers, handling, manipulating, or otherwise operating on data, as occurs, for instance, when compiling, calculating, converting, generating, displaying, or transmitting. Also, the steps involved in such operations.

process-bound A circumstance in which a CPU is overloaded with calculations, which impairs its ability to process. May occur, for example, while recalculating a spreadsheet. Also called **compute-bound**, or **CPU-bound**.

process control The monitoring and management of any given process.

process-control monitor A circuit, device, mechanism, or system which effects **process control**. For instance, a testing device placed at various locations of a semiconductor wafer to check performance characteristics of the surrounding components. Its abbreviation is **PCM**.

process-control system A system, such as a control system, which monitors and manages a given process, or which maintains a variable as close as possible to a desired value. Its abbreviation is **PCS**.

process technology The processes undertaken to convert blank wafers of silicon, or another semiconductor material, into finished wafers composed of hundreds or thousands of chips.

processing The function and procedures of a **processor**.

processing-limited Same as **processor-limited**.

processor 1. The portion of a computer which has the necessary circuits to interpret and execute instructions, and to control all other parts of the computer. The processor consists of the control unit and the arithmetic-logic unit, both usually contained on a single chip, in which case it is also called **microprocessor**. Also called **CPU** (1), or **central processor** (1). 2. Software or hardware that in any manner processes data. For instance, a word processor, a language translation program, or a **processor** (1). 3. A component, circuit, device, unit, piece of equipment, system, or mechanism which is utilized in the completion of a given **process** (1).

processor core frequency Same as **processor core speed**.

processor core speed The clock rate of a CPU. Also called **processor core frequency**, **core speed**, or **CPU core speed**.

processor-limited A computing process which can proceed only as fast as the CPU speed allows. This contrasts with **input-limited**, in which the limiting factor is the rate at which input is entered. Also called **processing-limited**.

prod A point, tip, prong, or terminal, such as that of a probe, which facilitates testing or otherwise monitoring. Also called **test prod**.

Product Data Management Within an enterprise, an information system which manages, organizes, and controls the data pertaining to a product throughout all its stages, from planning and design, all the way through its useful life. Its abbreviation is **PDM**.

product demodulator Same as **product detector**.

product detector A demodulator whose output is the product of two signals. It may consist, for instance, of the product of the input signal of a radio receiver and the signal of a local oscillator. Also called **product demodulator**.

product modulator A modulator whose output is the product of two signals. It may consist, for instance, of the product of

a rear-projection TV the projector and any viewers are on opposite sides of the screen.

projector 1. A device which transmits a beam of light, especially that conveying images, onto a surface, such as a translucent screen. An overhead projector is an example. 2. A device or object, such as a horn, which serves to direct and intensify sound.

Prolog Acronym for programming logic. A high-level programming language which is frequently used for artificial intelligence applications, such as expert systems.

PROM Acronym for programmable read-only memory. A chip which may be programmed once, usually by a customer. This contrasts with EEPROM chips, which can be reprogrammed, and with ROM chips, which are programmed when manufactured. Also called **PROM chip**.

PROM burner A device utilized to program PROMs. To write code or data onto a PROM chip is referred to as burning, as connections are melted when programming. Also called **PROM programmer**.

PROM chip Same as **PROM**.

PROM programmer Same as **PROM burner**.

promethium A radioactive metallic chemical element whose atomic number is 61. It has about 30 known isotopes, all unstable, and is used in nuclear-powered batteries, semiconductors, and as an x-ray source. Its chemical symbol is **Pm**.

promiscuous mode 1. In a communications network, a mode of operation in which all data packets can be received by all nodes. This can lead to security problems, such as the interception of passwords, email, account names, and so on. 2. In a communications network, a node engaged in packet sniffing.

prompt A symbol or message which is displayed on a monitor, especially that of a computer, indicating that input is awaited, and when provided will be entered there.

prong Same as **pin**.

propagate 1. To spread or extend from a smaller to a larger area. 2. For a wave move through a medium, such as the atmosphere, a vacuum, or a transmission line. For example, an electromagnetic wave traveling via a transmission line, or an acoustic wave traveling through water. 3. To move through a medium.

propagation 1. The process of spreading or extending from a smaller to a larger area. 2. The movement of a wave through a medium, such as the atmosphere, a vacuum, or a transmission line. For example, an electromagnetic wave traveling via a transmission line, or an acoustic wave traveling through water. Also, the process by which this occurs. Also called **wave propagation**, or **wave motion**. 3. Movement through a medium.

propagation coefficient Same as **propagation constant**.

propagation constant A complex quantity whose real number component is the **attenuation constant**, and whose imaginary number component is the **phase constant**. It describes the effect a transmission medium or line has on a wave traveling through or along it. Also called **propagation coefficient**.

propagation delay Also called **propagation time**, or **propagation time delay**. 1. The time interval required for a signal to move from one point to another. 2. The time interval required for a signal to move through a component, circuit, stage, unit, device, system, or medium.

propagation direction In a homogeneous isotropic medium, the direction of energy flow at any given point. For instance, the direction of propagation in a uniform waveguide is considered to be along its axis. Also called **direction of propagation**.

propagation loss Also called **propagation losses**. 1. Any losses in the strength of a signal traveling from one point to

another. Such losses may be due to absorption, scattering, dispersion, or the like. 2. **Propagation loss (1)** occurring in a signal traveling from a transmitting antenna to a receiving antenna.

propagation losses Same as **propagation loss**.

propagation medium Also called **medium of propagation**. 1. The medium through which a wave or other phenomenon propagates. This can be the atmosphere, a vacuum, a waveguide, a crystal, water, and so on. 2. The **propagation medium (1)** through which an electromagnetic wave travels.

propagation mode For a guided electromagnetic wave, one of the possible manners of propagation. Such waves can propagate in one of three principal modes, which are as transverse electric waves, transverse magnetic waves, or transverse electromagnetic waves. Also called **waveguide mode**.

propagation path The path, such as that between a transmitter and a receiver, a wave follows.

propagation speed The speed at which a wave propagates through a given medium. It is the speed at which given points within it, such as crests and troughs, travel. In a vacuum it is equal to the product of the frequency and wavelength. In a dispersive medium the propagation speed of electromagnetic waves varies as a function of the frequency, while in a non-dispersive medium the propagation speed is independent of the frequency. Also called **wave speed**, **wave celerity**, or **celerity**.

propagation time Same as **propagation delay**.

propagation time delay Same as **propagation delay**.

propagation velocity The propagation speed in a given direction. Also called **wave velocity**.

property 1. An attribute or characteristic that helps describe, distinguish, and define a component, circuit, device, system, material, and so on. 2. A **property (1)** which is possessed by all members of a given class.

proportional 1. Having, establishing, or maintaining a relationship with one or more entities or values. For instance, the force between two charged particles is directly proportional to the product of their magnitudes, and inversely proportional to the square of their distance. 2. A relationship between two or more quantities, in which the variation in one causes a change in the other. For example, a transducer whose input is a DC, and whose output is a proportional AC.

proportional action An action, such as a corrective action in a control system, which is proportional to a given process, state, or variable.

proportional band A frequency band whose values are equally distributed along the stated interval of frequencies. For example, the first 10% of such a band comprises the same interval of hertz as any other equally-sized segment, such as the middle or last 10%.

proportional control Control in which the corrective action is proportional to a given process, state, or variable.

proportional counter 1. A radiation counter which incorporates a **proportional counter tube**. 2. Same as **proportional counter tube (1)**.

proportional counter tube 1. A counter tube whose output is proportional to the number of detected ionized particles. Also called **proportional counter (2)**. 2. A counter tube whose output is proportional to the number of detected pulses or events.

proprietary Private, only used by a single or few groups, exclusively owned, or otherwise not utilizing a common or standardized format, composition, mechanism, or the like. For instance, proprietary software, or a proprietary file format.

proprietary file format A file format which is used by a single organization or entity, and which is not compatible with other formats.