

SEVENTH EDITION

M O D E R N
DICTIONARY
of
ELECTRONICS

RUDOLF F. GRAF



Xu Peicheng Ex. 1012, p. 1

**MODERN
DICTIONARY
of
ELECTRONICS**

SEVENTH EDITION

REVISED AND UPDATED



Rudolf F. Graf is an author whose name is well-known to engineers, technicians, and hobbyists around the world. He graduated as an electronics engineer from Brooklyn Polytechnic Institute and did his graduate work New York University. Mr. Graf has been active in the electronics industry for more than fifty years in capacities ranging from design and consulting engineer, chief engineer, chief instructor at electronics and television schools, and consulting editor. He also held various sales and marketing positions. Mr. Graf is the author or co-author of more than 150 technical articles published by major magazines. He has written about 50 books on electricity and electronics, with more than 2 million copies in print, including the best-selling *Video Scrambling & Descrambling for Satellite & Cable TV, Second Edition* and the *Circuits* series of books, both published by Newnes. A number of his books have been translated into several European languages as well as Chinese, Japanese, and Russian.

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conductor-to-hole spacing—The distance between a conductor edge and the edge of a component hole.

conduit—1. A tubular raceway designed for holding wires or cables designed and used expressly for this purpose. It may be a solid or flexible tube in which insulated electrical wires are run. 2. Metal sleeve through which electrical wires pass.

conduit wiring—Wiring carried in conduits and conduit fittings.

cone—The diaphragm that sets the air in motion to create a sound wave in a direct-radiator loudspeaker. Usually it is conical in shape.

cone breakup—The inability of a speaker cone to work as a piston at high frequencies, the effect being that the cone is not under the complete control of the voice coil, certain parts of it moving in opposition to other parts like a rippled rope. Responsible for uneven frequency response.

cone of nulls—A conical surface formed by directions of negligible radiation.

cone of silence—An inverted cone-shaped space directly over the aerial towers of some radio beacons. Within the cone, signals cannot be heard or will be greatly reduced in volume.

conference call—A telephone call that interconnects three or more telephones and permits all parties to converse at random.

confetti—Flecks or streaks of color caused by tube noise in the chrominance amplifier. Because of its colors, confetti is much more noticeable than snow in a black-and-white picture. The chrominance amplifier is therefore cut off during a monochrome program.

confidence—1. The likelihood, expressed as a percentage, that a measurement or statement is true. 2. The degree of assurance that the stated failure rate has not been exceeded.

confidence factor—The percentage figure expressing confidence level.

confidence interval—A range of values believed to include, with a preassigned degree of confidence, the true characteristic of the lot.

confidence level—1. The probability (expressed as a percentage) that a given assertion is true or that it lies within certain limits calculated from the data. 2. A degree of certainty.

confidence limits—Extremes of a confidence interval within which there is a designated chance that the true value is included.

configuration—1. The relative arrangement of parts (or components) in a circuit. 2. A listing of the names and/or serial numbers of the assemblies that make up an equipment. 3. The hardware and/or software making up a system. 4. Combination of computer and peripheral devices at a single installation. 5. A general-purpose computer term that can refer to the way a computer is set up. It is also used to describe the total combination of hardware components that make up a computer system and the software settings that allow various hardware components of a computer system to communicate with one another.

configuration file—A file that contains information on the way a system is set up.

configure—The act of changing software or hardware actions by changing the settings in a computer.

confocal resonator—A wavemeter for millimeter wavelengths. It consists of two spherical mirrors that face each other; a change in the spacing between the mirrors affects the propagation of electromagnetic energy between them, making possible direct measurement of free-space wavelengths.

conformal coating—1. A thin nonconductive coating, either plastic or inorganic, applied to a circuit for environmental and/or mechanical protection. 2. A protective coating applied to completed printed circuit boards that conforms to the shape of the components and provides complete electrical as well as environmental insulation.

conformance error—The deviation of a calibration curve from a specified curve line.

confusion jamming—An electronic countermeasure by means of which a radar may detect a target, but the radar operator is denied accurate data regarding range, azimuth, and velocity of the target. This result is accomplished through amplification and retransmission of an incident radar signal with distortion to create a false echo. Also called deception jamming.

confusion reflector—A device that reflects electromagnetic radiation to create echoes for purposes of causing confusion of radar, guided missiles, and proximity fuses.

congestion—A condition in which the number of calls arriving at the various inputs of a communications network are too many for the network to handle at once and are subject to delay or loss. (The concept applies in an analogous way to any system in which arriving traffic can exceed the number of servers.)

conical horn—A horn whose cross-sectional area increases as the square of the axial length.

conical scanning—A form of scanning in which the beam of a radar unit describes a cone, the axis of which coincides with that of the reflector.

conjugate—Either of a pair of complex numbers that are mutually related in that their real parts are identical and the imaginary part of one is the negative of the imaginary part of the other, that is, if $a = x + iy$, then $a = x - iy$ is its conjugate.

conjugate branches—Any two branches of a network in which a driving force impressed on one branch does not produce a response in the other.

conjugate bridge—A bridge in which the detector circuit and the supply circuits are interchanged, compared with a normal bridge.

conjugate impedance—An impedance whose value is the conjugate of a given impedance. For an impedance associated with an electric network, the conjugate is an impedance with the same resistance component as the original and a negative reactive component.

conjugate matching—A condition of source- and loading-impedance matching in which the source impedance and the load impedance have equal resistive parts and equal reactance values with opposite signs. This results in maximum power transfer.

connected—A network is connected if, between every pair of nodes of the network, there exists at least one path composed of branches of the network.

connecting block—A cable-termination block in which access to circuit connections is available.

connection—1. The attachment of two or more component parts so that conduction can take place between them. 2. The point of such attachment.

connection diagram—1. A diagram showing the electrical connections between the parts that make up an apparatus. 2. A pattern illustrating the connections needed to place an electronic system in operation when such a system includes one or more assemblies, power supplies, and devices being controlled.

connector—1. A coupling device that provides an electrical and/or mechanical junction between two cables, or between a cable and a chassis or enclosure. 2. A device that provides rapid connection and disconnection of electrical cables and wire terminations. 3. A

of channels. In one such system, channel capacity is allocated only when appropriate hardware detects that a subscriber is actively speaking. 2. Transfer of data by means of addressed packets, whereby interim point-to-point channels are available only during the transmission of one packet. The channel then becomes available for the transfer of packets from the same or other messages. (Contrast with circuit switching, where the data network determines the end-to-end routing before the entire message transfer.) 3. The transmission of data by means of addressing packets, whereby a transmission channel is occupied for the duration of transmission of the packet only. The channel is then available for use by packets being transferred between different data-terminal equipment. 4. A method of digital communication in which messages are divided into packets of bit size determined by the needs of the transmission network, and are transferred to their destination in a store-and-forward manner over multiple virtual circuits, which are dedicated to the connection only for the duration of the packet's transmission. 5. A method of transmitting units of data (called packets) through a mesh network. There is no physical circuit established between end points; instead, each packet is individually relayed from one switching node to the next. Individual packets may take different routes through the switching network. 6. The use of software to route messages dynamically from source to destination within a communications network. 7. Data transmission method that divides messages into standard-sized packets for greater efficiency of routing and transport through a network.

packing—Excessive crowding of carbon particles in a carbon microphone. The abnormal pressure of the particles lowers their resistance. As a result, the current increases excessively and fuses some of the particles together, further lowering the resistance and raising the current. Packing causes the sensitivity of the microphone to decrease.

packing density—1. In a digital computer, the number of units of desired information contained within a storage or recording medium. 2. The amount of digital information recorded along the length of a tape measured in bits per inch (bpi).

packing factor—The number of pulses or bits of information that can be written on a given length of magnetic surface.

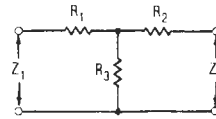
packing fraction—1. The fraction of total cross-sectional area composed of the fiber cores in a fiber-bundle assembly. 2. The ratio of the active core area of a fiber bundle to the total area at its light-emitting or receiving end.

pack unit—A term applied to a compact combination radio transmitter/receiver that can be carried or strapped on the back. Some pack units are popularly known as walkie-talkies.

PACSAT—Abbreviation for *packet satellite*. Satellite used to store and forward amateur digital (packet radio) messages.

pad—1. A transducer capable of reducing the amplitude of a wave without introducing appreciable distortion. 2. A device inserted into a circuit to introduce transmission loss or to match impedances. 3. A metal electrode that is connected to the output of a diathermy machine and placed on the body over the region being treated. 4. In integrated circuit technology, the bonding area. 5. Also called land. The portion of the conductive pattern on printed circuits designated for mounting or attachment of components. 6. A metallized area on the surface of an active substrate as an integral portion of the conductive interconnection pattern to which bonds or test probes may be applied. 7. A passive resistor network that reduces the

power level of a signal. A pad may be utilized to match unequal input and output impedances for proper interface.



Pads, 2.

PAD—Abbreviation for packet assembler/disassembler. Equipment providing packet assembly and disassembly facilities.

pad character—A character introduced to consume time while a function (usually mechanical, such as carriage return, form eject, etc.) is being accomplished.

padder—Also called padder capacitor or padding capacitor. A relatively high-capacitance trimmer capacitor in the oscillator circuit of a superheterodyne receiver that permits calibration of the low-frequency end of the tuning range so that it tracks with the tuning dial markings.

padder capacitor—*See* padder.

padding—A technique used in digital information systems whereby an information block that is only partially filled is completed by the insertion of dummy data.

padding capacitor—*See* padder.

page—1. A natural grouping of memory locations by higher-order address bits. In an 8-bit microprocessor, $2^8 = 256$ consecutive bytes often may constitute a page. The words on the same page only differ in the lower-order 8 address bits. 2. A full screen of information.

page printer—A high-speed unit that prints characters one at a time to full page format.

pager—Pocket-sized radio receiver that generates audible or physical signals when the user is paged.

page scrolling—The ability of the system to “flip” through the pages of a document, usually in both forward and backward directions, allowing access to all text of a multipage document.

pagination—The electronic makeup of complete page images, including all graphics, for automatic imaging onto photographic paper, negatives, or offset printing plates.

paging—1. Methods for locating and exchanging segments to and from the main computer memory. 2. To summon a particular person over a public address system, or by selectively calling him or her on a pocket radio receiver that emits an alerting signal. 3. In the case of a CRT, switching from one page of information to the next. 4. In the case of a memory, a logical block of storage used for memory management (for example, 1 K words). An address is then specified by a page address (number) and a displacement (address within the page).

paging receiver—Small, lightweight FM radio receiver carried by persons who need to be paged when they are away from their phones.

paging system—Communications system for summoning individuals (doctors, nurses, hospital personnel, etc.) or making public announcements.

paint—1. Vernacular for a target image on a radar-scope. 2. To draw vectors when the beam is unblanked. 3. To shade the interior of a closed graphical image with diagonal lines, cross hatch, points, etc.

pair—In electric transmission, two like conductors employed to form an electric circuit.

pairing—In electric transmission, all of the conductors are arranged in the form of twisted pairs, none

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"How do you improve on a classic? Rudy Graf has done just that in the fully updated seventh edition of his **Modern Dictionary of Electronics**. In his elegantly practical style he defines over 28,000 terms drawn from a broad range of fields. In a world where electronics technology is growing so rapidly, this authoritative book belongs on everyone's reference shelf!"

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For easy reference, the author has provided definitions for standard abbreviations and equations as well as tables of SI (International System of Units) units, measurements, and schematic symbols.

Rudolf F. Graf is an author whose name is familiar to electronics professionals and hobbyists alike. Mr. Graf graduated from Brooklyn Polytechnic Institute as an electronics engineer, and did his graduate work at New York University. He has been active in the electronics industry for more than fifty years in capacities ranging from design and consulting engineer to chief instructor at electronics and television schools, as well as in sales and marketing. He currently lives in New York. His many books offer a practical and enjoyable approach to often complex material. Other Newnes titles by Mr. Graf include **Video Scrambling and Descrambling, Second Edition**, and his full five-book series on electronics circuits.

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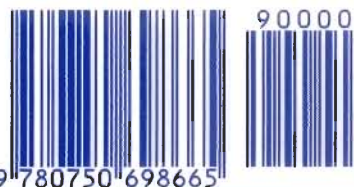


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