MODERN DICTIONARY of ELECTRONICS

SEVENTH EDITION

REVISED AND UPDATED

Rudolf F. Graf

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class O insulating material — An unimpregnated material or combination of materials, such as cotton, silk, or paper. Other materials or combinations of materials may be included if shown to be capable of satisfactory operation at 90°C.

class S amplifier — A pulse-width-modulated audio amplifier in which the active elements are switched by a control frequency several times higher than the signal frequency being amplified. Class S offers an ideal efficiency of 90 percent.

clavier — Any keyboard, either hand or foot operated.

clean room — A confined area in which the humidity, temperature, and particulate matter are precisely controlled within specified units. The class designation of the clean room defines the maximum number of particles of 0.3-micron size or larger that may exist in one cubic foot of space anywhere in the designated area. For example, in a Class 1 clean room, only one particle of any kind may exist in one cubic foot of space. Newer clean rooms are typically Class 1 to 10, and are needed for manufacturing ICs with feature size close to 1 micron.

clear — 1. Also called reset. To restore a storage or memory device to a prescribed or nonprogrammed state, usually to zero or off (empty). 2. Remove all components of a calculation in a calculator. 3. In a calculator, to erase the contents of a display, memory, or storage register. 4. As used in security work, the term *clear* is synonymous with *reset*, meaning that a latched circuit is restored to normal state. 5. Signal to reset or set all signals to an initial known state (usually zero). 6. The process of setting the contents of a register, flag, or memory location to zero. 7. To erase the contents of a display or a memory or storage register.

clearance — The shortest distance through space between two live parts, between live parts and supports or other objects, or between any live part and grounded part.

clear channel — In the standard broadcast band, a channel such that the station assigned to it is free of objectionable interference through all of its primary service area and most of its secondary service area.

clear entry — Remove only the last number, not the entire calculation, in a calculator.

clear entry/clear all — In a calculator, a key used to clear the last entry or to clear the machine completely.

clearing — 1. Removal of a flaw or weak spot in the dielectric of a metallized capacitor by the electrical vaporization of the metallized electrode at the flaw. 2. The ability of a lightning protector to interrupt follow current before the operation of circuit fuses or breakers. In the case of a simple gap, clearing frequently requires some external assistance.

clearing ends — The operation of removing the sheath from the end of a cable, eliminating all moisture, and checking for crosses, shorts, and grounds in preparation for testing.

clearing-out drop — A drop signal associated with a cord or trunk circuit and operated by ringing current to attract the operator's attention.

clear input — An asynchronous input to a flip-flop used to set the Q output to logic zero.

clear memory key — Removes what is stored in a memory register of a calculator.

clear raster — A raster free of snow such as would be obtained in the absence of a video signal on either the cathodes or the grids of the three guns in the color CRT (mostly a function of bias conditions).

clear terminal — *See* reset terminal.

clear to send — *See* CTS.

click — To point a mouse pointer at a word or icon on a monitor, press a mouse button, and then release it quickly. Clicking is usually performed to select or deselect an item or to activate a program or a program feature.

click and pop suppressor — An audio-signal-processing accessory. It removes or greatly reduces the audible transient sounds resulting from scratches and blemishes on the surface of a phonograph record.

click filter — A capacitor and resistor connected across the contacts of a switch or relay to prevent a surge from being introduced into an adjacent circuit. *See also* key-click filter.

click-noise modulation — A clipping action performed to increase the bandwidth of a jamming signal. Results in more energy in the sidebands, correspondingly less energy in the carrier, and an increase in the ratio of average power to peak power.

client — A software program or computer that requests information from another computer.

client-server network — A network that uses a central computer (server) to store data that is accessed from other computers on the network (clients).

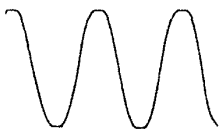
clipboard — A temporary storage place in a computer where text or graphics are stored.

clipper — A device whose output is zero or a fixed value for instantaneous input amplitudes up to a certain value, but is a function of the input for amplitudes exceeding the critical value.

clipper amplifier — An amplifier designed to limit the instantaneous value of its output to a predetermined maximum.

clipper-limiter — Also called slicer. A device whose output is a function of the instantaneous input amplitude for a range of values lying between two predetermined limits, but is approximately constant at another level for input values above the range.

clipping — 1. The loss of initial or final parts of words or syllables due to less than ideal operation of voice-operated devices. 2. Term used to express the clipping of the peaks of a waveform when an amplifier is driven beyond its power capacity. The flattening of the tips of the sine wave due to clipping. 3. Severe distortion caused by overloading the input of an amplifier. A sine-wave signal waveform has a flat top and bottom at the peaks when clipping occurs. 4. The deforming and distortion of speech signals due to limiting the maximum amplitude of the signals. 5. The shearing off of the peaks of a signal. For a picture signal, this may affect either the positive (white) or negative (black) peaks. For a composite video signal, the sync signal may be affected. 6. Removing parts of display elements that lie outside defined bounds. Also called scissoring. 7. The loss of one or more bits at the beginning of a transmission, typically caused by a delay in line turnaround or echo suppression. (May also occur in voice communication, with the loss of the beginning of an initial syllable.)



Clipping, 3.

clipping level — The signal level at which clipping (distortion) just begins to occur.

clock — 1. A pulse generator or signal waveform used to achieve synchronization of the timing of switching

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It determines the
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of timing pulses.
timing pulses to
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certain sequence
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circuits and the memory in a digital computer system. It determines the speed of the CPU. 2. A timing device in a system: usually it provides a continuous series of timing pulses. 3. An electronic circuit that generates timing pulses to synchronize the operation of a computer as well as keep time. 4. A strobe signal that activates a certain sequence of operations. 5. An electronic circuit or device for producing precisely timed, repetitive voltage pulses of fixed frequency and amplitude.

clock cable — Cable of specific impedance and electrical characteristics used to distribute the clock (master) frequency where needed in digital computers.

clocked — Pertaining to the type of operation in which gating is added to a basic flip-flop to permit the flip-flop to change state only when there is a change in the clocking input or an enabling level of the clocking input is present.

clocked flip-flop — A flip-flop circuit designed so that it is triggered only if trigger and clock pulses are present at the same time.

clocked R-S flip-flop — A flip-flop in which two conditioning inputs control the state the flip-flop assumes upon arrival of the clock pulse. If the S (set) input is enabled, the flip-flop assumes the logic 1 condition when clocked; if the R (reset) input is enabled, the flip-flop assumes the logic 0 condition when clocked. A clock pulse must be applied to change the state of the flip-flop.

clock frequency — In digital computers, the master frequency of periodic pulses that are used to schedule the operation of the computer.

clock generator — A test-signal generator that supplies a chain of pulses identical with those supplied by the clock circuit of a digital computer.

clocking — Time-synchronizing communication information.

clock input — That flip-flop terminal whose condition or change of conditions controls the admission of data through the synchronous inputs and thereby controls the output state of the flip-flop. The clock signal permits data signals to enter the flip-flop and, after entry, directs the flip-flop to change state accordingly.

clock pulse — 1. The synchronization signal produced by a clock. 2. A pulse used to gate information into a flip-flop operated in the synchronous mode. (In JK flip-flops, the clock pulse causes counting if the data inputs are both held in logic 1.)

clock rate — 1. The rate at which a word or characters of a word (bits) are transferred from one internal computer element to another. Clock rate is expressed in cycles (in a parallel-operation machine, in words; in a serial-operation machine, in bits) per second. 2. The speed (frequency) at which a processor operates, as determined by the rate at which words or bits are transferred through internal logic sequences. 3. The minimum or maximum pulse rate at which adc counters may be driven. There is a fixed relationship between the minimum conversion rate and the clock rate, depending on the converter accuracy and type. All factors that affect conversion rate of an adc limit the clock rate. 4. The time rate at which pulses are emitted from a clock.

clock skew — 1. Phase shift in a single clock distribution system in a digital circuit. It results from different delays in clock driving elements and/or different distribution paths. 2. Unintentional time difference between clock edges; can exist between clock phases or between clock signals in different parts of a circuit.

clock slips — The relative shift of a system clock with respect to data in synchronous systems. Clock slips can cause modems to lose synchronization.

clock stagger — 1. Time separation of clock pulses in a multiphase clock system. 2. Voltage separation between the clock thresholds in a flip-flop.

clockwise-polarized wave — *See* right-handed polarized wave.

clone — 1. A PC designed to duplicate the behavior and performance of another personal computer, usually an IBM PC. 2. A copy that performs the same as the hardware, software, cellular phone, or computer on which it was based.

close-captioned TV — A text service for the hard-of-hearing TV audience that decodes a text subcarrier and displays it at the bottom of the TV frame on the accompanying video picture. It does not interfere with the standard audio FM subcarrier.

close coupling — 1. Coupling between two circuits so that (*a*) most of the power flowing in one is transferred to the other and (*b*) impedance changes in one circuit greatly affect the other. 2. Also called tight coupling. Any degree of coupling greater than critical coupling.

closed architecture — 1. A system whose characteristics are proprietary and therefore cannot be readily connected with other systems (compare with *open architecture*). 2. Equipment designed to work only with peripherals and accessories made by the same company.

closed array — An array that cannot be extended at either end.

closed circuit — 1. A complete electric circuit through which current may flow when a voltage is applied. 2. A program source, audio or video, that is not broadcast for general consumption, but is fed to remote monitored units by wire.

closed-circuit communication systems — Certain communication systems that are entirely self-contained and do not exchange intelligence with other facilities and systems.

closed-circuit jack — A jack that has its through circuits normally closed. Circuits are opened by inserting a mating plug.

closed-circuit signaling — Signaling in which current flows in the idle conditions and a signal is initiated by increasing or decreasing the current.

closed-circuit system — An intrusion alarm system in which the sensors of each zone are connected in series so that the same current exists in each sensor. When an activated sensor breaks the circuit or the connecting wire is cut, an alarm is transmitted for that zone.

closed-circuit television — Abbreviated CCTV. 1. A television system in which the television signals are not broadcast, but are transmitted over a closed circuit and received only by interconnected receivers. 2. Transmission and reception of video signals via wire carriers.

closed entry — A design that places a limit on the size of a mating part.

closed-entry contact — A female contact designed to prevent the entry of a device that has a cross-sectional dimension greater than that of a mating pin.

close-differential relay — A relay whose dropout value is specified close to its pickup value.

closed loop — 1. A circuit in which the output is continuously fed back to the input for constant comparison. 2. In a computer, a group of indefinitely repeated instructions. 3. A system with feedback control in which the output is used to control the input. 4. An automatic control system in which feedback is used to link a controlled process back to the original command signal. The feedback mechanism compares the actual controlled value with the desired value; if there is any difference, an error signal is created that helps correct the variation. In automation, feedback closes the loop. 5. A control arrangement in

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