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DICTIONARY  
OF IEEE STANDARDS TERMS

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together may be controlled from any one of a number of points on the units by means of a master controller.

(EEC/PE) [119]

**multiple-unit electric car** An electric car arranged either for independent operation or for simultaneous operation with other similar cars (when connected to form a train of such cars) from a single control station. *Note:* A prefix diesel-electric, gas-electric, etc., may replace the word electric. *See also:* electric motor car. (EEC/PE) [119]

**multiple-unit electric locomotive** A locomotive composed of two or more multiple-unit electric motive-power units connected for simultaneous operation of all such units from a single control station. *Note:* A prefix diesel-electric, turbine-electric, etc., may replace the word electric. *See also:* electric locomotive. (EEC/PE) [119]

**multiple-unit electric motive-power unit** An electric motive-power unit arranged either for independent operation or for simultaneous operation with other similar units (when connected to form a single locomotive) from a single control station. *Note:* A prefix diesel-electric, gas-electric, turbine-electric, etc., may replace the word electric. *See also:* electric locomotive. (EEC/PE) [119]

**multiple-unit electric train** A train composed of multiple-unit electric cars. *See also:* electric motor car. (EEC/PE) [119]

**multiple-unit tube** *See:* multiple tube.

**multiple valve** *See:* multiple tube.

**multiple-valve unit (MVU)** A single structure comprising more than one valve. (SUB/PE) 857-1996

**multiplex** To interleave or simultaneously transmit two or more messages on a signal channel.

(C/PE) 610.10-1994w, 599-1985w

**multiplex equipment, asynchronous** A transmission interconnection device that interleaves nonsynchronous low bit-rate digital signals to form a single high bit-rate digital signal. It also performs the reverse function of dividing a high bit-rate digital signal into multiple nonsynchronous low bit-rate signals. The two processes are referred to in this document as multiplexing (combining signals) and demultiplexing (separating signals). Similarly, the mechanisms used to perform these functions are referred to as multiplex equipment. (COM/TA) 1007-1991r

**multiplex equipment, digital** The equipment for combining digital signals from one digital level to a higher digital level. (COM/TA) 1007-1991r

**multiplex equipment, primary** The equipment for combining analog (vf) signals, or digital data signals, to a primary rate digital signal and vice versa. (COM/TA) 1007-1991r

**multiplexer (A) (supervisory control, data acquisition, and automatic control)** A device that allows the interleaving of two or more signals to a single line or terminal. **(B) (supervisory control, data acquisition, and automatic control)** A device for selecting one of a number of inputs and switching its information to the output. (SWG/PE/SUB) C37.1-1987, C37.100-1992

(2) (A) A device that allows the transmission of a number of different signals simultaneously over a single channel or transmission facility. *Synonym:* multiplexor. (B) A device capable of interleaving the events of two or more activities or of distributing the events of an interleaved sequence to their respective activities. *Contrast:* demultiplexer. (C) 610.7-1995

**multiplexing (1) (modulation systems) (data transmission)** The combining of two or more signals into a single wave (the multiplex wave) from which the signals can be individually recovered. (PE) 599-1985w

(2) The division of a transmission facility into two or more channels, either by splitting the frequency band transmitted by the channel into narrower bands, each of which is used to constitute a distinct channel (frequency division multiplexing) or by allotting this common channel to several different information channels one at a time (time-division multiplexing). (SUB/PE) 999-1992w

(3) Subdivision of a common channel to make two or more channels by splitting the frequency band transmitted by the common channel into narrower bands, by allotting this common channel to several different information channels, or by other means, one at a time. *Contrast:* demultiplexing. *See also:* time compression multiplexing; frequency-division multiplexing; time-division multiplexing; synchronous time division multiplexing; time multiplexed switching. (C) 610.7-1995

**multiplex lap winding (rotating machinery)** A lap winding in which the number of parallel circuits is equal to a multiple of the number of poles. (PE) [9]

**multiplexor (hybrid computer linkage components)** An electronic multiposition switch under the control of a digital computer, generally used in conjunction with an analog-to-digital converter (ADC), that allows for the selection of any one of a number of analog signals (up to the maximum capacity of the multiplexor), as the input to the ADC. A device that allows the interleaving of two or more signals to a single line or terminus. (C) 166-1977w

**multiplex printing telegraphy** That form of printing telegraphy in which a line circuit is employed to transmit in turn one character (or one or more pulses of a character) for each of two or more independent channels. *See also:* time-division multiplexing; telegraphy; frequency-division multiplexing. (EEC/PE) [119]

**multiplex radio transmission** The simultaneous transmission of two or more signals using a common carrier wave. *See also:* radio transmission. (AP/ANT) 145-1983s

**multiplex wave winding (rotating machinery)** A wave winding in which the number of parallel circuits is equal to a multiple of two, whatever the number of poles. (BT) 204-1961w

**multiplicand** A number to be multiplied by another number (the multiplier) to produce a result (the product). (C) 1084-1986w

**multiplication factor (1) (power operations)** A measure of the change in the neutron population in a reactor core from one generation to the subsequent generation. *See also:* effective multiplication factor; infinite multiplication factor. (PE/PSE) 858-1987s

(2) (multiplier type of valve or tube) (thermionics) The ratio of the output current to the primary emission current. *See also:* electron emission. (ED) [45], [84]

**multiplication time** *See:* multiply time.

**multiplication transformation function** In hashing, a hash function that returns the original key multiplied by some value. For example, in the function below, the original key is multiplied by the length of the record in which it is found.

Original Record	Calculation	Hash Value
35 Bob White	$35 \times 13 = 448$	448
41 Richard Doe	$41 \times 17 = 697$	697

*See also:* mid-square function. (C) 610.5-1990w

**multiplicative array antenna system** A signal-processing antenna system consisting of two or more receiving antennas and circuitry in which the effective angular response of the output of the system is related to the product of the radiation patterns of the separate antennas. (AP/ANT) 145-1993

**multiplier (1) (general)** A device that has two or more inputs and whose output is a representation of the product of the quantities represented by the input signals. (Std100) 270-1966w

(2) (analog computer) In an analog computer, a device capable of multiplying one variable by another. (C) 165-1977w

(3) (mathematics of computing) A number by which another number (the multiplicand) is multiplied to produce a result (the product). (C) 1084-1986w

(4) A device capable of multiplying one variable by another. *Contrast:* divider. *See also:* two-quadrant multiplier; one-quadrant multiplier; analog multiplier; four-quadrant multiplier. (C) 610.10-1994w

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