

IEEE Std 100-1996

The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition



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Introduction

Since the first edition in 1941 of the American Standard Dictionary of Electrical Terms, the work now known as IEEE Std 100, The IEEE Standard Dictionary of Electrical and Electronics Terms, has evolved into the unique compilation of terms that it is today.

The current edition includes all terms defined in approved IEEE standards through December 1995. Terms are categorized by their technical subject area. They are also cross-referenced with the standards or publications in which they currently appear. In some cases, terms with withdrawn meanings are included when no current terms can be found. Earlier editions of IEEE Std 100 are available from the IEEE Standards Department.

The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

Standards Coordinating Committee 10, Terms and Definitions
Jane Radatz, Chair

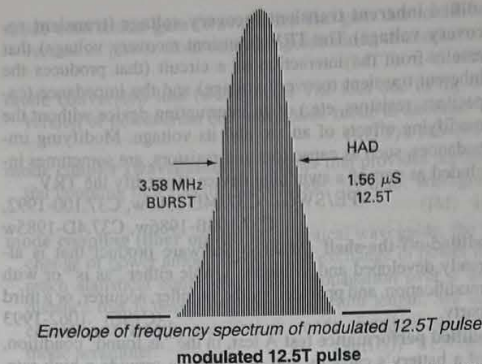
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(BT) 511-1979w
modulation (1) (A) (data transmission) (Carrier). (i) The process by which some characteristic of a carrier is varied in accordance with a modulating wave. (ii) The variation of some characteristic of a carrier. *See also:* angle modulation; modulation index. **(B) (data transmission) (Signal transmission system).** (i) A process whereby certain characteristics of a wave, often called the carrier, are varied or selected in accordance with a modulating function. (ii) The result of such a process. *See also:* angle modulation; modulation index.

(PE) 599-1985w
(2) (diode-type camera tube) The ratio of the difference between the maximum and minimum signal currents divided by the sum. To avoid ambiguity, the optical input image intensity shall be assumed to be sinusoidal in the direction of scan.

(ED) 503-1978w
(3) (fiber optics) A controlled variation with time of any property of a wave for the purpose of transferring information. (Std100) 812-1984w

(4) (overhead-power-line corona and radio noise) The process by which some characteristic of a carrier is varied in accordance with a modulating signal.

(PE/T&D) 539-1990
(5) (broadband local area networks) The method whereby information is superimposed onto a RF carrier to transport signals through a communications channel.

(C/LM) 802.7-1989
(6) The process of changing or regulating the characteristics of a carrier that is vibrating at a certain amplitude and frequency so that the variations represent meaningful information. *Contrast:* demodulation. (C) 610.7-1995

modulation contrast (diode-type camera tube) The ratio of the difference between the peak and the minimum values of irradiance to the sum of the peak and the minimum value of irradiance of an image or specified portion of an image.

(ED) 503-1978w
modulation index (angle modulation with a sinusoidal modulating function) (data transmission) The ratio of the frequency deviation of the modulated wave to the frequency of the modulating function. *Note:* The modulation index is numerically equal to the phase deviation expressed in radians.

(PE) 599-1985w
modulation threshold (illuminating engineering) In the case of a square wave or sine wave grating, manipulation of luminance differences can be specified in terms of modulation and the threshold may be called the modulation threshold.

$$\text{modulation} = \frac{L_{\max} - L_{\min}}{L_{\max} + L_{\min}}$$

Periodic patterns that are not sine wave can be specified in terms of the modulation of the fundamental sine wave component. The number of periods or cycles per degree of visual angle represents the spatial frequency. (EEC/IE) [126]

modulator A device that converts a signal into a modulated signal that is suitable for transmission. (C) 610.7-1995

modulation transfer function (diode-type camera tube) $R_o(N)$, the modulus of the optical transfer function (OTF), is

synonymous with the sine amplitude response. That is, the response of the imaging sensor to sinewave images. When the modulation transfer functions or MTFs of a linear sensor's components are known, the overall system MTF can be found by multiplying the individual component MTFs together. (ED) 503-1978w

modulator-demodulator *See:* modem.

module (1) (nuclear power generating station) Any assembly of interconnected components that constitutes an identifiable device, instrument, or piece of equipment. A module can be disconnected, removed as a unit, and replaced with a spare. It has definable performance characteristics that permit it to be tested as a unit. A module could be a card, a drawout circuit breaker, or other subassembly of a larger device, provided it meets the requirements of this definition.

(PE) 308-1991, 497-1981w, 603-1991, 622B-1988r

(2) (cable penetration fire stop qualification test) An opening in a fire resistive barrier so located and spaced from adjacent modules (openings) that its respective cable penetration fire stop's performance will not affect the performance of cable penetration fire stops in any adjacent module. A module may take on any shape to permit the passage of cables from one or any number of raceways. (ED) 581-1978w

(3) (A) (software) A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading; for example, the input to, or output from, an assembler, compiler, linkage editor, or executive routine.

(B) (software) A logically separable part of a program. *Note:* The terms "module," "component," and "unit" are often used interchangeably or defined to be sub-elements of one another in different ways depending upon the context. The relationship of these terms is not yet standardized. (C) 610.12-1990

(4) (STEBus) A plug-in unit consisting of one or more boards that contains at least one bus interface conforming to IEEE Std 1000-1987, which plugs into the backplane. (C/MM) 1000-1987r

(5) Collection of circuitry designed to perform specific functions that includes an interface to Futurebus+. (BA/C) 10857-1994, 896.3-1993, 896.4-1993

(6) (MULTIBUS) A basic functional unit within an agent. (C/MM) 1296-1987s

(7) (NuBus) *See also:* board. (C/MM) 1196-1987

(8) A board or board set that comprises a single physical unit. It provides mechanical mounting and protection of electronic components, thermal transfer of heat away from the components to an external heat sink, and electrical and fiber-optic connections. A module is removable and replaceable. (BA/C) 14536-1995

(9) A plug-in unit per IEC 50. (BA/C) 1101.3-1993, 1101.4-1993

(10) A board, or board set, consisting of one or more nodes, that share a physical interface to SCI. If a module has multiple boards with backplane-mating connectors, it only uses one for the logical connection to the node. The others may provide additional power or I/O for their associated boards, but otherwise merely pass the input link signals through to the output link to provide continuity in case the module is plugged into a ring-connected backplane. (C/MM) 1596-1992

(11) Typically a board assembly and its associated mechanical parts, front panel, optional shields, etc., which contains everything required to occupy a slot in a mainframe. A module may occupy one or more slots. (C/MM) 1155-1992

(12) A collection of circuitry that is designed to perform a specific operation. This is standard terminology for Futurebus+, while VME64 uses board synonymously. (BA/C) 1014.1-1994

(13) A board, or board set, consisting of one or more nodes that share a physical interface. Although only one board in a module connects to bus signals, each board connector could provide power from the bus. (C/MM) 1212-1991s

(14) An electronic circuit assembly that connects to one or more slots on the backplane. It is removable from and re-

placeable in a backplane assembly via connectors.

(BA/C) 896.2-1991

(15) An addressable unit or interconnected set of units attached to the MTM-Bus and fully supporting the MTM-Bus protocols. The boundary of an MTM-Bus module may correspond to the physical partitioning of the system, but is not required to do so. For the purposes of this document, a module is comprised of an MTM-Bus interface and module application logic, as shown in the figure below.

(C/TT) 1149.5-1995

(16) (FASTBUS module) Any FASTBUS Device that can be housed in a FASTBUS crate, that can connect to a crate segment and that conforms with the mandatory specifications for a FASTBUS module. 960-1993

(17) A packaged functional hardware unit designed for use with other components. (C) 610.10-1994

(18) The smallest component of physical management; i.e., a replaceable device. (C/MM) 1394-1995

(19) Multiple cells/units in a single assembly.

(SB) 1188-1996

module accelerated aging (advanced life conditioning) (nuclear power generating station) The acceleration process designed to achieve an advanced life condition in a short period of time. It is the process of subjecting a module or component to stress conditions in accordance with known measurable physical or chemical laws of degradation in order to render its physical and electrical properties similar to those it would have at an advanced age operating under expected service conditions. In addition, when operations of a device are cyclical, acceleration is achieved by subjecting the device to the number of cycles anticipated during its qualified life.

(PE) 381-1977w

module accuracy (nuclear power generating station) Conformity of a measurement value to an accepted standard value or true value. *Note:* For further information, see Process Measurement and Control Terminology SAMA PMC-20.1-1973.

(PE) 381-1977w

module address (MA) (1) (FASTBUS acquisition and control) The group of bits assigned in the device address field of a FASTBUS address which identifies the module on its segment. The module address may partially overlap the group address. 960-1993

(2) An eight-bit value uniquely identifying an MTM-Bus module. (C/TT) 1149.5-1995

module aging (natural) (nuclear power generating station) The change with passage of time of physical chemical, or electrical properties of a component or module under design range operating conditions which may result in degradation of significant performance characteristics.

(PE) 381-1977w

module auxiliary connector (FASTBUS acquisition and control) The standard connector that mounts above the module segment connector on a module circuit board. 960-1993

module calibration (nuclear power generating station) Adjustment of a device, to bring the module's output to a desired

value or series of values, within a specified tolerance, for a particular value or series of values of the input or measurements used to establish the input-output function of the module. (PE) 381-1977w

module circuit board The printed board that is the circuit part of a FASTBUS module on which the module segment connector is mounted for mating with the crate segment connector. 960-1993

module common-mode rejection (nuclear power generating station) The ability of a module with a differential input stage to cancel or reject a signal applied equally to both inputs.

(PE) 381-1977w

module components (nuclear power generating station) Items from which the module is assembled (for example, resistors, capacitors, wires, connectors, transistors, springs, etc.) (PE) 381-1977w

module conformity (nuclear power generating station) The closeness with which the curve of a function approximates a specified curve. (PE) 381-1977w

module contact rating (nuclear power generating station) The electrical power-handling capability of relay or switch contacts. This should be specified as continuous or interrupting, resistive or inductive, ac or dc. (PE) 381-1977w

module counter A counter that reverts to zero in the counting sequence after reaching a value of $n - 1$.

(C) 1084-1986w

module design range operating conditions (nuclear power generating station) The range of environmental and energy supply operating conditions within which a module is designed to operate. (PE) 381-1977w

module drift (nuclear power generating station) A change in output-input relationship over a period of time, normally determined as the change in output over a specified period of time for one or more input values which are held constant under specified reference operating conditions.

(PE) 381-1977w

module electromagnetic interference (nuclear power generating station) Any unwanted electromagnetically transmitted energy appearing in the circuitry of a module.

(PE) 381-1977w

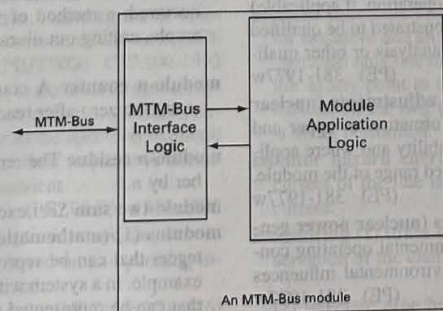
module energy supply (nuclear power generating station) Electrical energy, compressed fluid, manual force or other such input to the module that will establish the power for its operation. (PE) 381-1977w

Module Fail Status (MFS) bit A bit in the Slave Status register of every S-module that is set by the S-module when the module's built-in test has failed or is currently executing.

(C/TT) 1149.5-1995

module failure trending (nuclear power generating station) Systematic documentation and analysis of the frequency of a particular failure mode. (PE) 381-1977w

module frequency response (nuclear power generating station) The frequency-dependent relation, in both amplitude



NOTE—An MTM-Bus module consists of MTM-Bus interface logic and module application logic.

MTM-Bus module