

The Illustrated Dictionary of Electronics

Sixth Edition

Stan Gibilisco

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lodestone A natural magnet; a form of the mineral magnetite. Also spelled LOADSTONE.

Loftin White circuit An early two-stage direct-coupled audio amplifier circuit employing a voltage-amplifying triode or pentode in the input stage and a heavy-duty triode, pentode, or beam-power tube in the output stage.

log 1. Abbreviation of LOGARITHM. 2. A continuous record of communications kept by a station, or a record of the operation of an equipment.

log₁₀ Abbreviation of *logarithm to the base 10* (common logarithm). Also called BRIGGSIAN LOGARITHM.

logarithm Abbreviation, log. The power to which a number, called the base (see BASE, 3), must be raised to equal a given number. Thus, if the given number is designated n and the base a , then $\log_a n$ equals x , because a^x equals n (example: $\log_{10} 100 = 2$, since the base 10 must be raised to the second power to equal 100). The two bases used most often are 10 (common logarithms) and 2.718 28; the base in natural, or Napierian, logarithms. Also see ANTILOGARITHM, COLOGARITHM, COMMON LOGARITHM, NATURAL LOGARITHM, NAPIERIAN LOGARITHM.

logarithmic amplifier An amplifier whose output-signal amplitude is proportional to the logarithm of the input-signal amplitude.

logarithmic curve A graphical representation of a logarithmic function, having the form $y = a \log x$. The logarithmic base may be any positive real number.

logarithmic decrement See DECREMENT.

logarithmic graph A graph in which the x and y axes are incremented logarithmically. Compare SEMILOGARITHMIC GRAPH.

logarithmic horn A horn whose diameter varies directly as the logarithm of the length. See HORN.

logarithmic mean See GEOMETRIC MEAN.

logarithmic meter A current meter or voltmeter whose deflection is proportional to the logarithm of the quantity under measurement. The increments on the scale of such an instrument are closer together in the upper portion.

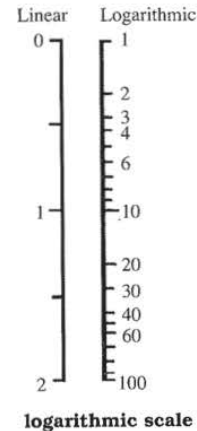
logarithmic rate of decay See EXPONENTIAL DECREASE.

logarithmic rate of growth See EXPONENTIAL INCREASE.

logarithmic response 1. Response in which the value of a dependent variable is at every point equal to the logarithm of the independent variable: y equals $\log x$. 2. A type of response in which a quantity (such as current) varies directly with the logarithm of another quantity (such as voltage).

logarithmic scale A graduated scale in which the coordinates are positioned according to the logarithm of the actual distance from the origin.

logarithmic series A mathematical series which is the expansion of the expression $\log_e (1 + x)$ in ascending powers of x . Thus, $\log_e (1 + x) = x - x^2/2 + x^3/3 - x^4/4 + \dots - x^n/n$.



logarithmic voltmeter See LOGARITHMIC METER.

logarithmic vtvm A vacuum-tube voltmeter having a logarithmic scale. Also see LOGARITHMIC METER.

log_e Abbreviation of *logarithm to the base e*, a (natural logarithm). Also written ln. Also see NAPIERIAN LOGARITHM.

logic 1. In digital-computer practice, the mathematics dealing with the truth or falsity of indicated relationships and their combinations. Also see SYMBOLIC LOGIC. 2. Collectively, the switching circuits and associated hardware for implementing logic functions (see 1, above), such as AND, NAND, NOR, OR, etc.

logical decision During a computer program run, a choice between alternatives based on specified conditions. For example, one alternative path in a routine might be selected because an intermediate result was negative.

logical diagram A schematic diagram showing the interconnection between gates of a logic circuit.

logical equivalence The condition in which two logical statements have identical truth value for all possible combinations of truth value of their constituents.

logical file A data set comprising one or several logical records.

logical implication For logical statements x and y , the condition that y is true whenever x is true: If x , then y .

logical operation 1. An operation using logical operators: AND, NOR, OR, NAND. 2. A processing operation in which arithmetic is not involved (e.g., a shift).

logical operator A word or symbol representing a logic function operating on one or more operands.

logical shift A shift operation in which digits in a word are moved left or right in circular fashion; digits displaced at one end of the word are