

EXHIBIT I

**MODERN
DICTIONARY
of
ELECTRONICS**

SEVENTH EDITION

REVISED AND UPDATED

Rudolf F. Graf




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For information, please contact:

Manager of Special Sales

Butterworth-Heinemann

225 Wildwood Avenue

Woburn, MA 01801-2041

Tel: 781-904-2500

Fax: 781-904-2620

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pull curves—The characteristics relating force to displacement in the actuating system of a relay.

pull-down resistor—1. A resistor connected across the output of a device or circuit to hold the output equal to or less than the zero input level of the following digital device. Also used to lower the output impedance of a device. 2. A resistor connected to a negative voltage or to ground.

pull-in current (or voltage)—The maximum current (or voltage) required to operate a relay. *See also* pickup current.

pulling—1. In an oscillator, the undesired change from the desired frequency. It is caused either by coupling from another source of frequency or by the influence of the load impedance. 2. In television, partial loss of synchronization.

pulling figure—The difference between the maximum and minimum frequencies of an oscillator whenever the phase angle of the load-impedance reflection coefficient varied through 360°. The absolute value of this coefficient is constant and equal to 0.20.

pull-in rate—The maximum stepping rate at which a stepper motor can start its load without missing a step.

pull-in torque—1. Torque that a synchronous motor can exert to bring its driven load into synchronous speed. There is no corresponding term for induction motors. 2. A measure of the maximum torque that can be applied to the shaft of a stepper motor without causing it to miss a step when starting.

pull-out force—The tensile force required to separate a conductor from a contact or terminal, or to separate a contact from a connector.

pull-out rate—The maximum stepping rate at which a stepper motor can move its load without losing synchronism with the field.

pull-out torque—Also called breakdown torque, or maximum torque. 1. The maximum torque a motor can deliver without stalling. 2. *See* running torque. 3. The maximum torque that a synchronous motor develops at synchronous speed at rated frequency and normal excitation. 4. A measure of the maximum torque that can be applied to the shaft of a stepper motor running at a constant speed within its pull-out ratings before the motor loses synchronism with the field.

pull strength—The values of the pressure achieved in a test in which a pulling stress is applied to determine breaking strength of a lead or bond.

pull test—A test for bond strength of a lead, interconnecting wire, or a conductor.

pull the plug—CB radio term for shut off the radio.

pull-up—1. The placing of the output voltage of a logic circuit at the high level by means of an internal current sink or source. 2. A dc voltage imposed on the input of an amplifier to move the amplifier's operating point out of the offset range. Pull-up is usually accomplished by means of a voltage divider network.

pull-up resistor—1. A resistor connected to the positive supply voltage of a transistor circuit, as from the collector supply to the output collector. 2. A resistor connected across the output of a device or circuit to hold the output voltage equal to or greater than the input transition level of a digital device. It is usually connected to a positive voltage or to the plus supply.

pull-up torque—1. The minimum torque developed by an alternating-current motor during the period of acceleration from rest to the speed at which breakdown torque occurs. For motors that do not have a definite breakdown torque, the pull-up torque is the minimum torque developed up to rated speed. 2. Lowest value of torque produced by a motor between zero speed and full-load speed.

pulsating current—Current that varies in amplitude but does not change polarity.

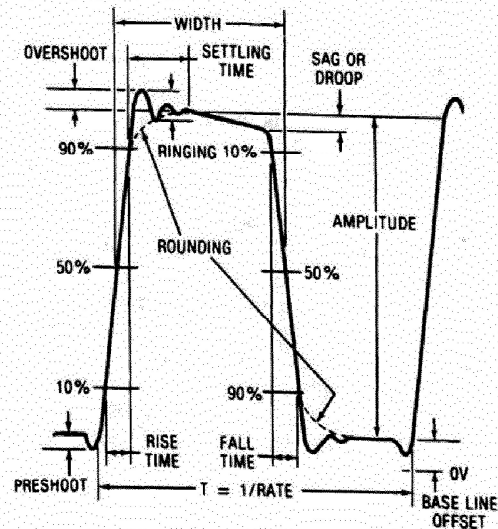
pulsating direct current—A direct current that changes its value at regular or irregular intervals but flows in the same direction at all times.

pulsating electromotive force—A direct electromotive force and an alternating electromotive force combined.

pulsating quantity—A periodic quantity that can be considered the sum of a continuous component and an alternating component in the quantity.

pulsation welding—A form of resistance welding in which the power is alternately applied and removed.

pulse—1. A variation of a quantity whose value is normally constant; this variation is characterized by a rise and a decay and has finite amplitude and duration. 2. An abrupt change in voltage, either positive or negative, that conveys information to a circuit. *See also* impulse. 3. A brief excursion of a quantity from normal. 4. Signal characterized by the rise and decay in time of a quantity whose value is normally constant. 5. Voltage level, typically 5 volts of very short duration, used in computers to represent a bit. 6. Single impulse of a telephone dial. Generally transmitted in groups of one to ten to represent dialed digits or unique tones to represent digits. 7. A sudden and abrupt jump in an electrical quantity from its usual level to a higher or lower value, quickly followed by an equally abrupt return. 8. A voltage or current that lasts for a short period and is square or Gaussian in shape.



Pulse, 1.

pulse amplification—The compression and intensification of a laser pulse of a specific width into a smaller pulse width. A spherical cavity, in conjunction with a beam compressor, is efficient for pulse amplification. Cones and flats are highly effective when used in conjunction with swept-line foci.

pulse amplifier—A wideband amplifier used to amplify square waves without appreciably changing their shape.

pulse amplitude—A general term for the magnitude of a pulse. For more specific designation, adjectives such as average, instantaneous, peak, rms (effective), etc., should also be used.