

tyco

Electronics

Energy Division

*Tyco Electronics Corporation
Crompton Instruments
1610 Cobb International Parkway, Unit #4
Kennesaw, GA 30152
Tel. 770-425-8903
Fax. 770-423-7194*

volt

The volt (symbolized V) is the Standard International ([SI](#)) unit of electric potential or electromotive force. A potential of one volt appears across a resistance of one [ohm](#) when a [current](#) of one [ampere](#) flows through that resistance. Reduced to SI base units, $1 \text{ V} = 1 \text{ kg times m}^2 \text{ times s}^{-3} \text{ times A}^{-1}$ (kilogram meter squared per second cubed per ampere).

[voltage](#) can be expressed as an average value over a given time interval, as an instantaneous value at a specific moment in time, or as an effective or root-mean-square ([rms](#)) value. Average and instantaneous voltages are assigned a [polarity](#) either negative (-) or positive (+) with respect to a zero, or ground, reference potential. The rms voltage is a dimensionless quantity, always represented by a non-negative real number.

current

Current is a flow of electrical charge carriers, usually electrons or electron-deficient atoms. The common symbol for current is the uppercase letter I. The standard unit is the [ampere](#), symbolized by A. One ampere of current represents one coulomb of electrical charge (6.24×10^{18} charge carriers) moving past a specific point in one second. Physicists consider current to flow from relatively positive points to relatively negative points; this is called conventional current or Franklin current. Electrons, the most common charge carriers, are negatively charged. They flow from relatively negative points to relatively positive points.

Electric current can be either direct or alternating. Direct current ([DC](#)) flows in the same direction at all points in time, although the instantaneous magnitude of the current might vary. In an alternating current ([AC](#)), the flow of charge carriers reverses direction periodically. The number of complete AC cycles per second is the [frequency](#), which is measured in [hertz](#). An example of pure DC is the current produced by an electrochemical cell. The output of a power-supply rectifier, prior to filtering, is an example of pulsating DC. The output of common utility outlets is AC.

ampere

An ampere is a unit of measure of the rate of [electron](#) flow or [current](#) in an electrical conductor. One ampere of current represents one coulomb of electrical charge (6.24×10^{18} charge carriers) moving past a specific point in one second. Physicists consider current to flow from relatively positive points to relatively negative points; this is called conventional current or Franklin current.