

Access Control Power Basics

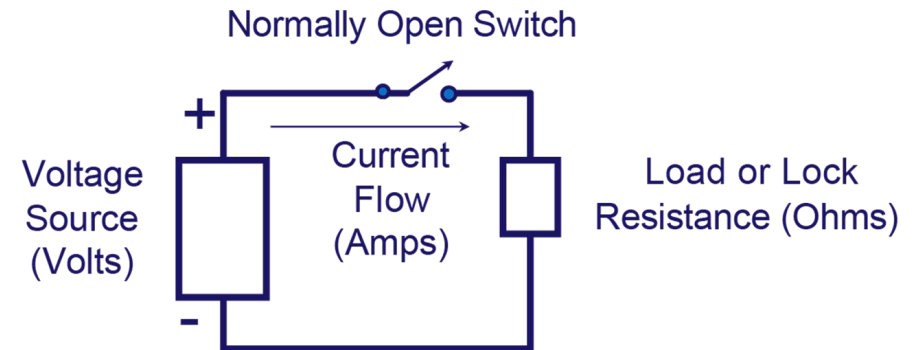


the lock behind the system



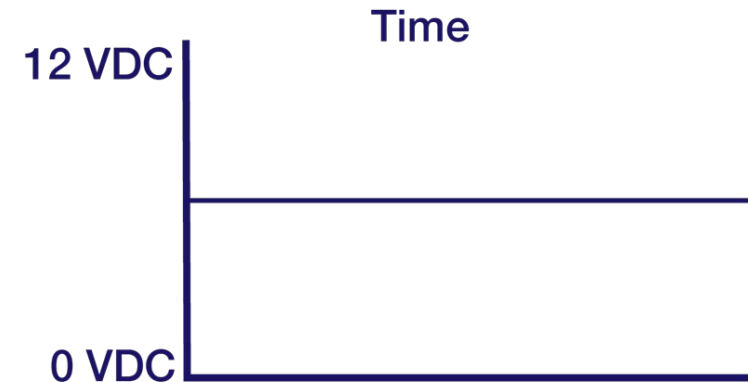
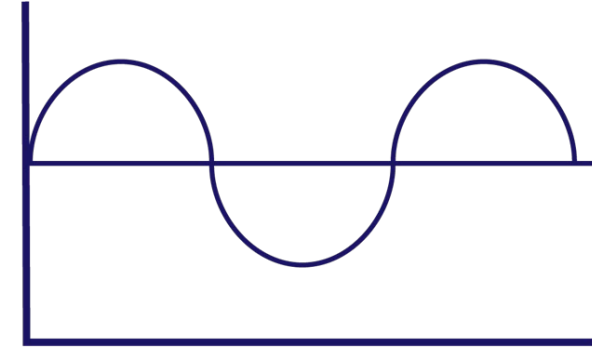
Electronic System Terms

- **Voltage, (Volts, V or E)** - Potential difference that exists between two points. A force that is capable of producing a flow of current when a closed circuit is connected between the two points.
- **Current, (Amps, A, mA or I)** - A measurement of the electrical current flowing in a closed circuit. The amount of current is determined by the voltage and the resistance. Milliamp (mA) is 1/1000 of an Amp. {500 mA = 0.5 Amp}
- **Resistance, (Ohms, R, Ω)** - The opposition to current flow in a closed circuit. Similar to friction in a mechanical system.



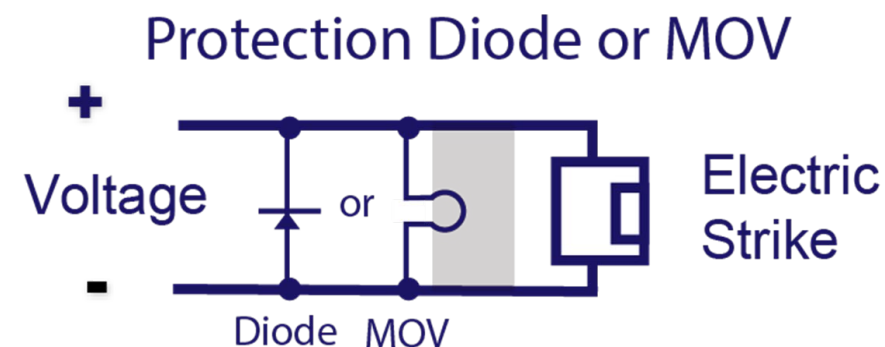
Electronic System Terms

- **Alternating Voltage or Current (AC)** - Voltage or current that starts at zero and increases to peak and returns to zero and then decreases to a negative peak and returns to zero. Time rate of variation is expressed in "cycles per second" (CPS) or "hertz" (Hz). House voltage is: 110VAC, 60Hz.
- **Direct Voltage or Current (DC)** - Voltage or current that flows in one direction. Source has positive (+) and negative polarity (-). A car battery is: 12 VDC.



Electronic System Terms

- **Fail-Safe** - Any lock that requires power to lock it. Without power the lock is unlocked.
- **Fail-Secure** – Any lock that requires power to Unlock it. Without power the lock is Locked and cannot be opened.
- **Diode** – A component that allows current to flow in one direction. Also used for spike protection. Can be used across electric strikes, never EmLocks.
- **MOV (Metal Oxide Varistor)** - Component used for surge protection. Used to protect EmLocks, strikes, card access controllers and sensitive electronic components (TV, VCR, Computers)



Electronic System Terms

Ohm's Law - Basic equation defining the relationship between:
voltage, current, and resistance.

$$E \text{ (Volts)} = I \text{ (Amps)} \times R \text{ (Ohms)} = 10 \text{ Amps} \times 10 \text{ Ohms} = 100\text{V Volts}$$

$$I \text{ (Amps)} = E \text{ (Volts)} \div R \text{ (Ohms)} = 100 \text{ Volts} \div 10 \text{ Ohms} = 10\text{A Amps}$$

$$R \text{ (Ohms)} = E \text{ (Volts)} \div I \text{ (Amps)} = 100 \text{ Volts} \div 10 \text{ Amps} = 10\Omega \text{ Ohms}$$

Power, (Watts, W or P) - The total of the current multiplied by the voltage.

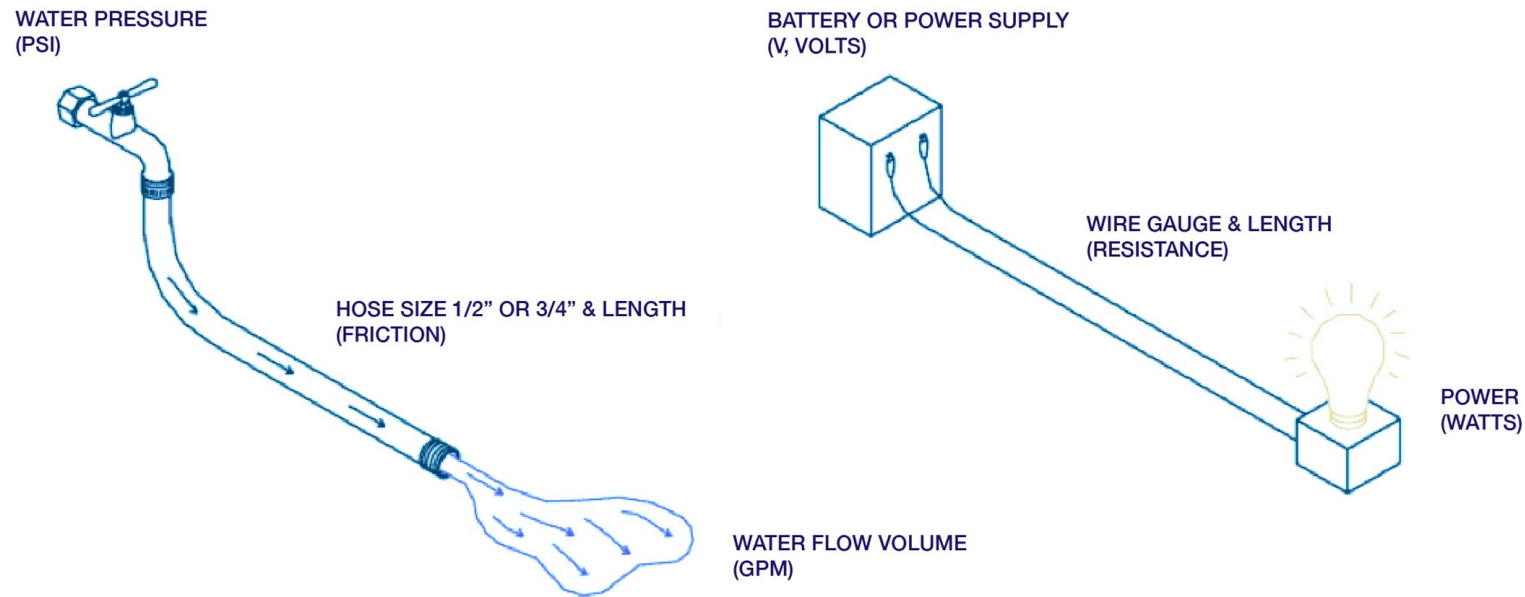
$$P = I \times E, P \text{ (Watts)} = I \text{ (Amps)} \times E \text{ (Volts)} = 10 \text{ Amps} \times 100 \text{ Volts} = 1000\text{W}$$

Watts. Power can also be expressed as: $P = I^2 \times R$ or $P = E^2 \div R$

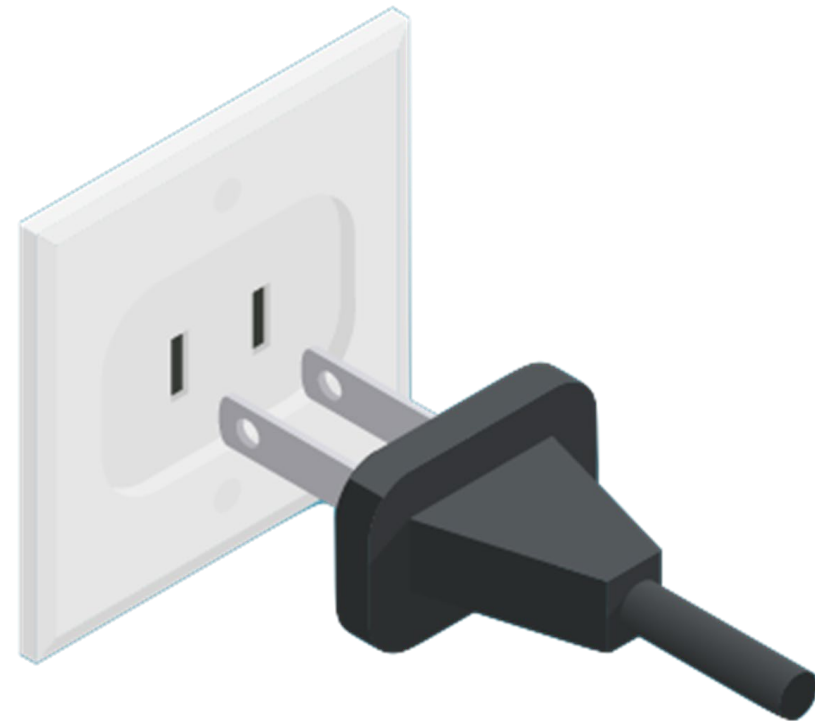
Voltage Drop: Water Flow & Electricity Analogy

Voltage Drop is defined as the amount of **voltage** loss that occurs through all or part of a circuit due to impedance. A common analogy used to explain **voltage**, current and **voltage drop** is a garden hose.

This condition causes the load to work harder with less **voltage** pushing the current.



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Thank You for Attending



the lock behind the system
