

### 4.8.1: Introduction

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The two fundamental circuit connections are series and parallel. The primary relation of any circuit, whether series or parallel, is Ohm's law:

$$V = IR$$

Where  $V$  is the voltage (in volts)

$I$  is the current (in amps)

$R$  is the resistance (in ohms)

A series circuit is denoted by a single loop, that is, the only way to get back to any given starting point in the circuit is by passing through every component in the circuit. Because of this, the current is the same throughout a series circuit. The sum of the voltages across each component must equal the supplied voltage. In contrast, a parallel circuit has only two connection points and each component is connected to these two points, and only these two points. By their very nature, parallel circuits will produce a splitting of current, but the voltage across each component will be the same. The sum of the currents in the various branches must equal the supplied current. Remember, current is always measured in-line while voltage is always measured across a component.

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