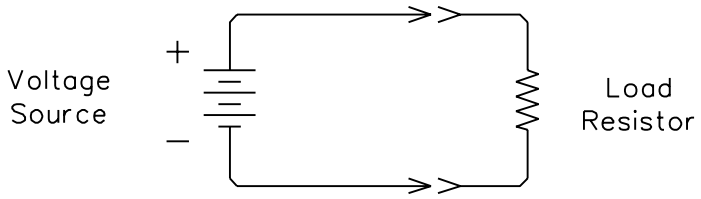
Voltage Source vs Current Source

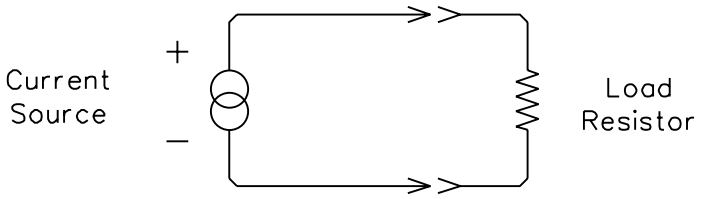
Ideal Voltage Source



Its internal resistance is zero.

It will output as much current as required in order to force a fixed voltage across the load resistor.

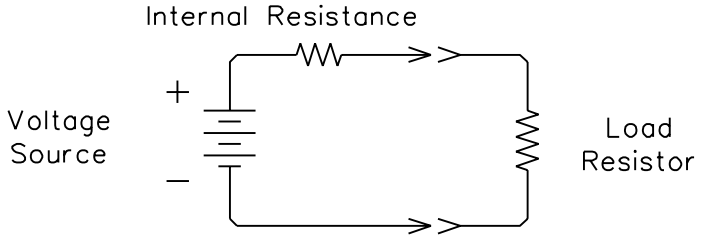
Ideal Current Source



Its internal resistance is infinite.

It will output as much voltage as required in order to force a fixed current through the load resistor.

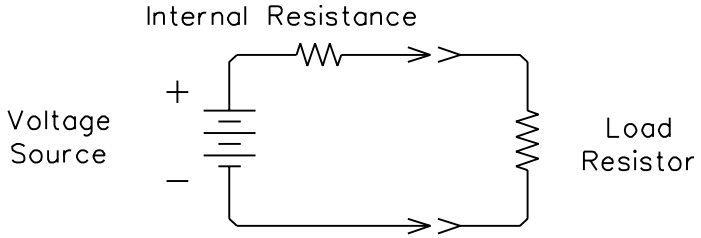
Real Voltage Source



Its internal resistance is small compared to the load.

E.G. your 12 V car battery - it is a 12.6 V ideal voltage source in series with about a 10 mOhm internal resistor. It can force a fixed voltage (within 1%) across any load from 1 Ohm up to an open circuit.

Real Current Source



Its internal resistance is large compared to the load.

E.G. a 1.5 V battery and a 1 Meg Ohm series resistor will make a 1.5 microamp current source (within 1%) for any load resistor between 0 Ohms and 10,000 Ohms.

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