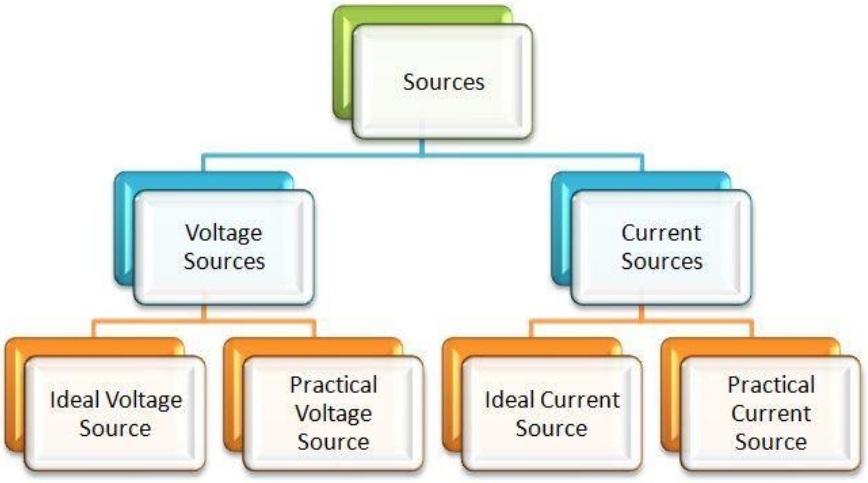
Voltage Source and Current Source

A **Source** is a device which converts mechanical, chemical, thermal or some other form of energy into electrical energy. In other words, the source is an active network element meant for generating electrical energy.

The various types of sources available in the electrical network are voltage source and current sources. A voltage source has a forcing function of emf whereas the current source has a forcing function of current.

Contents:



The **current and voltage sources** are further categorised as an ideal source or practical source.

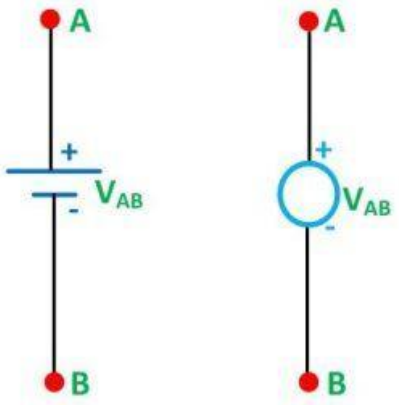
Voltage Source

A **voltage source** is a two-terminal device whose voltage at any instant of time is constant and is independent of the current drawn from it. Such a voltage source is called an **Ideal Voltage Source** and have zero internal resistance.

Practically an ideal voltage source cannot be obtained.

Sources having some amount of internal resistances are known as **Practical Voltage Source**. Due to this internal resistance; voltage drop takes place, and it causes the terminal voltage to reduce. The smaller is the internal resistance (r) of a voltage source, the more closer it is to an Ideal Source.

The symbolic representation of the ideal and practical voltage source is shown below.



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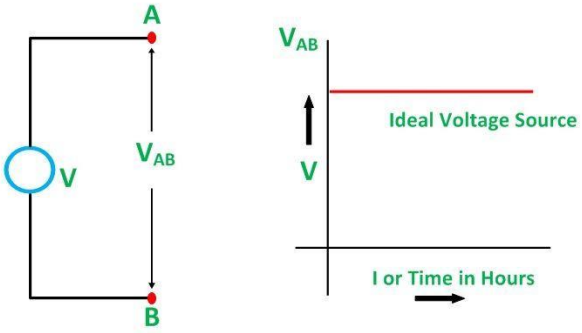
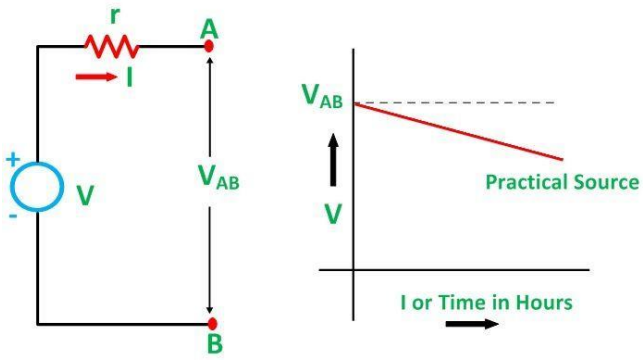


Figure shown below gives the circuit diagram and characteristics of Practical Voltage Source:



The example of voltage sources is batteries and alternators.

Current Source

The current sources are further categorised as Ideal and Practical current source.

An **ideal current source** is a two-terminal circuit element which supplies the same current to any load resistance connected across its terminals. It is important to keep in mind that the current supplied by the current source is independent of the voltage of source terminals. It has infinite resistance.

Figure shown below, show its characteristics.

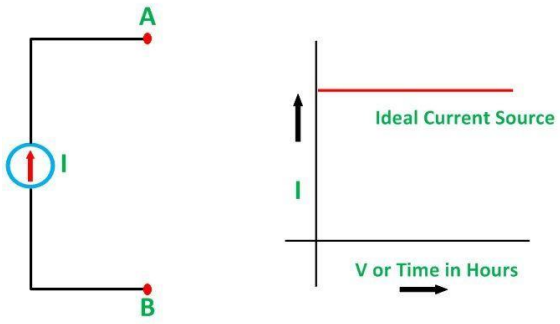


Figure shown below shows the characteristics of Practical Current Source.