

## ▶ What Is Direct Current (DC)? What Is Alternating Current (AC)?

Electric current can be **direct current (DC)** or **alternating current (AC)**. Direct current such as the power from dry cells is characterized by a uniform direction of flow and amount (voltage) of electricity. Alternating current is characterized by direction of flow and amount of electricity that changes cyclically over time.

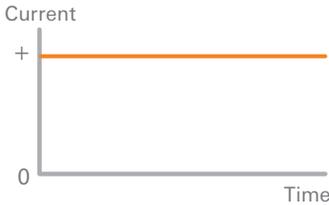
Long ago, static electricity was the only type of electricity known, but when batteries were invented, it became possible to use DC electricity. Generators were later invented, and it became possible to use AC as well.

**DC is an abbreviation for direct current.**

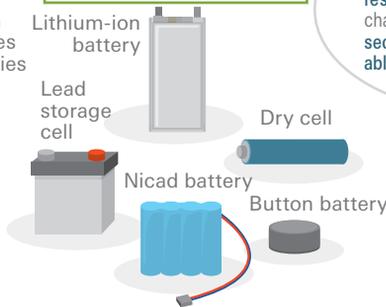
### Direct Current

Direct current has uniform direction of flow and amount (voltage) of electricity.

The symbols used in diagrams for batteries and DC power supplies

### Primary Batteries and Secondary Batteries



Batteries that are used up such as dry cells are **primary batteries**. Batteries that can be recharged and used repeatedly are **secondary batteries (rechargeable batteries)**.

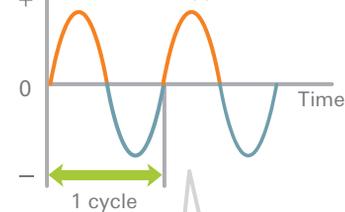


**AC is an abbreviation for alternating current.**

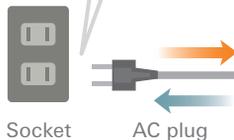
### Alternating Current

Alternating current has direction of flow and amount (voltage) of electricity that change cyclically.

The symbol used in diagrams for AC power supplies

The direction of the electric current that comes from the two holes of the electric socket alternates.



### AC Frequency

How many times the direction of AC changes each second is called the frequency. The unit of frequency is Hertz (Hz). The frequency of commercial AC is **50 Hz in eastern Japan** and **60 Hz in western Japan**.

### Low Frequency and High Frequency

AC with a relatively low frequency is referred to as low frequency, and that with a high frequency, and that with a high frequency, but generally, high frequency means **AC with a frequency in the kilo-Hertz, mega-Hertz, or higher range**.

The waveform of the **commercial AC power** supplied by electric power companies is called a sine wave.

\* Not all AC electric power has a sine wave. There is also AC with a pulse waveform.