

# Introduction to Resistor, Capacitor, Led

Lesson : 2

## RESISTOR

### Contents

1. What is Resistance
2. What is Resistor
3. Application of Resistor
4. Types of Resistor
5. Advantages and Disadvantages

### Resistance

let's see the definition of **resistance** then we will understand what is a resistor,

Definition:

Restricting the flow of electrons or electric current to a certain level is called resistance.

Now if we understand the meaning of resistance by ohm's law.

We can find out that the current is in the resistor by using Ohm's Law

Resistance increase then-current decrease

$$R = \frac{V}{I}$$

### Resistor

The resistor is a passive electrical component to create resistance in the flow of electric current. In simple words, it means the resistor will stop the current.

To explain the definition more clearly, we use the example of water that flows through a tube, the flow of water is similar to the electrical current in an electrical circuit, the pressure difference that causes the water to flow can be compared to a voltage difference which causes the flow of electrical current.

if we create a resistance in the flow of water the current will reduce. we can do this for example by making the tube more narrow at a certain place. a resistor is pretty much the same the resistor has a higher resistance than the connecting leads and causes a reduced electrical current. we can see in the water pipe that a pressure drop is created because of the narrow part in the middle. the pressure on the left is bigger than on the right the resistor has a similar effect here a voltage drop has created the relation between the electrical current voltage and resistance.



## Symbols of Resistor

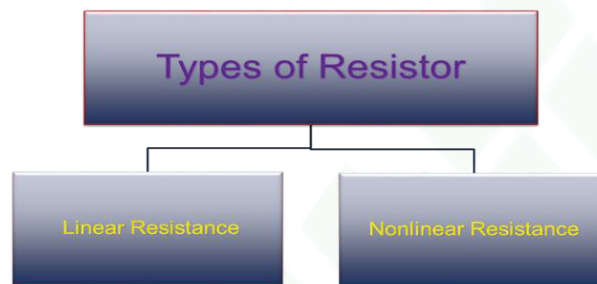


## Applications of resistor

Appliances such as electric heaters, electric ovens, and toasters all use resistors to turn current into heat, then use the heat lost from this resistor to warm the surrounding area.

Resistors also have applications in electrical devices like computers and cell phones to damp out unwanted electrical signals.

## Types of Resistor



### Linear resistance

**A component with linear resistance will always provide the same resistance.**

### Nonlinear resistance

**Nonlinear resistance will be some function of the voltage drop across the component.**

## Advantages of Resistor

Resistors are very small. Hence, it is very easy to carry them from one place to another place.

Resistors are very cheap. Hence, it is easy to replace them.

Resistors do not depend on the external source of voltage. Hence, external voltage or energy is not needed for operating the resistors.

**Control system:**

Under every robot, there is a control system that takes data from the input and gives the output according to the processing of the input.

Example

Arduino board etc.

**Types of robots(Based on control)**

First of all, we see Wired and Wireless in

**Manual type**

Humans are controlled by manual-type robots and completely humans are involved in its control.

**Semi-autonomous**

This robot can take its own decision but works without direction.

**Autonomous**

This robot can take its own decision but works with direction.

Pre-Programmed

Self Learning

Both are working as autonomous.

**Applications of robotics**

There are many applications of robotics like

**Applications**

- Military - For surveillance, attack, etc.
- Manufacturing industry - For automating things
- Mining industry - For exploration and excavation
- Laboratories - For Science and Engineering research
- Space exploration - For research and testing

- Automobile industry - For assembly and testing
- Agriculture - For crop harvesting, monitoring, and animal grooming

### **Advantages of Robots**

- Robots are much faster than human beings.
- They work without the interference of human beings.
- We can use them where humans cannot go.
- They can get more information than human beings.

### **Disadvantages of Robots**

- Huge investment would be required.
- They need a continuous power supply.
- People lose their jobs because of the automation of Robots.
- They should be maintained regularly.