

1.2.1 Capacitive:

Capacitive sensors are devices that detect changes in capacitance to measure various physical phenomena such as position, proximity, or displacement. Here's a brief overview:

How They Work

- **Principle:** They operate based on the principle of capacitance, which is the ability of a system to store an electric charge. A capacitive sensor typically consists of two conductive plates (electrodes) separated by a dielectric. When an object, typically a conductor or dielectric, comes near the sensor, it changes the capacitance between the plates.
- **Detection:** The change in capacitance is then measured and converted into an electrical signal that can be interpreted by the system.

Applications

- **Touch Screens:** Widely used in smartphones and tablets to detect touch by measuring the change in capacitance caused by a finger.
- **Proximity Sensing:** Used in industrial applications for non-contact detection of objects.
- **Level Sensing:** Used to measure the level of liquids or granular materials in a container.

Advantages

- **Non-contact Measurement:** They can detect objects without physical contact, which reduces wear and tear.
- **High Sensitivity:** Capable of detecting very small changes in position or proximity.

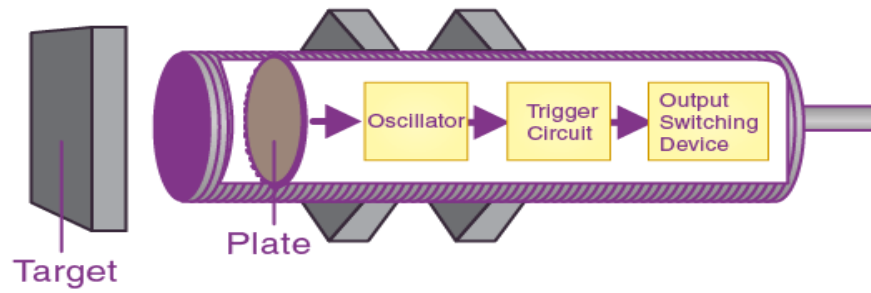
Disadvantages

- **Environmental Sensitivity:** Their performance can be affected by environmental factors such as humidity and temperature.
- **Limited Range:** Typically, they have a shorter detection range compared to other types of sensors like ultrasonic sensors.

Capacitive sensors are versatile and widely used in various fields, offering reliable performance for detecting changes in position or presence.

Example:

A common example of a capacitive sensor is the capacitive touch sensor used in touchscreens of smartphones and tablets. These sensors detect the touch of a finger by measuring the change in capacitance caused by the conductive properties of the human body.



Capacitive Sensor

