

OPERATION OF THE CAPACITIVE PROXIMITY SENSOR

A capacitor consists of two metal plates separated by a insulator (called a *dielectric*). The operation of this type of sensor is based on dielectric *capacitance*, which is the ability of a dielectric to store an electrical charge.

The distance between the plates determines the ability of the capacitor to store a charge.

Measuring the change in capacitance as an object enters the electrical field can be used as an ON/OFF switching function.

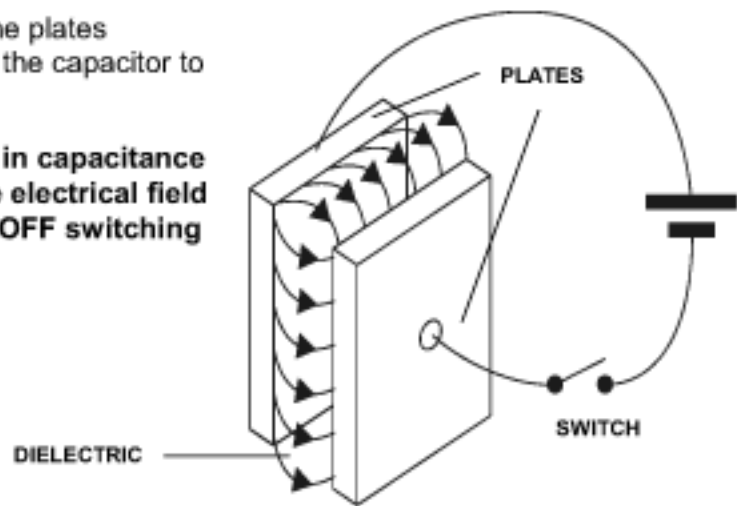


FIGURE 63: CAPACITOR OPERATION

When this principle is applied to the capacitive proximity sensor, **one capacitive plate is part of the switch**, the enclosure (the sensor face) is the insulator. The target is the other "plate." Ground is the common path.

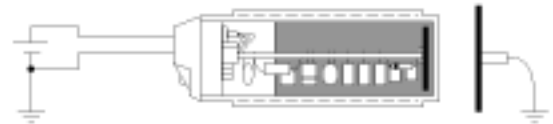


FIGURE 64: CAPACITIVE PROXIMITY SENSOR OPERATION

Capacitive proximity sensors can detect any target that has a dielectric constant greater than air. Liquids have high dielectric constants. Metal also makes a good target.

The capacitive proximity sensor has four basic elements: a sensor (which is a dielectric), an oscillator circuit, a detector circuit and an output circuit.