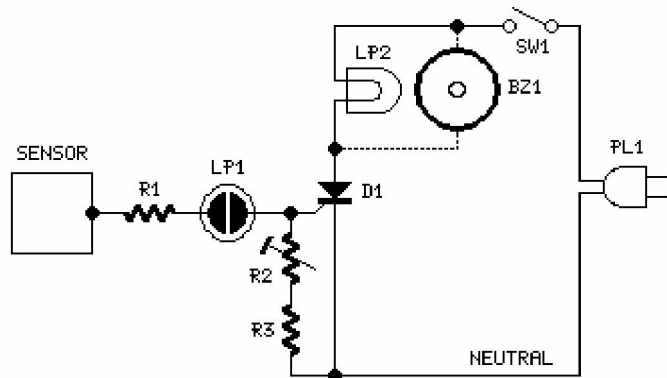


Capacitive Sensor

Parts:

R1 _____ 220K 1/4W Resistor
(See Notes)
R2 _____ 47K 1/2W Trimmer
or Potentiometer (See Notes)
R3 _____ 1K 1/4W Resistor
D1 _____ TIC106M 600V 5A SCR
LP1 _____ Any small Neon Bulb
LP2 _____ 230V Lamp (Any
wattage up to 500W) (Optional)
BZ1 _____ 230V Buzzer
(Optional)
SW1 _____ SPST Mains Switch
(Optional)
PL1 _____ Male Mains plug & cable
Sensor _____ (See Notes)



Device purpose:

This very simple circuit acts as a high sensitivity capacitive sensor. Lamps and/or Buzzers are operated at half the mains supply voltage when a part of the human body comes in contact with the sensor or approaches it at a close distance.

The circuit can be used as an alternative to the Door Alarm or Capacitive Sensor circuits, already available on this website.

When used as a Door Alarm, the Lamp and/or the Buzzer are activated when someone touches the door-handle from the outside. The alarm is not self-latching, therefore the Lamp or Buzzer will switch-off as soon as the hand will be taken off.

The wide-range sensitivity control (R2) allows the use of the circuit over a wide variety of door types, handles and locks. The device had proven reliable even when part of the lock comes in contact with the wall (bricks, stones, reinforced concrete), but does not work with all-metal doors.

The circuit can be used as a simple touch control as it will operate when the left-side lead of R1 will be touched. In this case you can do without the sensor plate.

On the other hand, using e.g. a thin copper or aluminum sheet measuring 30 x 20cm for the sensor, a part of the human body can be detected at a distance of about 20cm.

Notes:

The circuit was designed for 230V ac operation. If 110-120V ac operation is needed, R1 value should be changed to 100K.

If the circuit does not work, try to reverse the mains plug into the socket, as the neutral wire of the mains must be connected to D1 Cathode.

For most purposes, R2 can be substituted with a 1/4W fixed resistor, thus omitting R3. Use a 33K value for high sensitivity and a 10K value for low/medium sensitivity.

When the circuit is used as a Door-handle Alarm, a better setup will be done using for R2 a trimmer or potentiometer in the 5K - 10K range.

For the sensor you can choose from any thin metal sheet having the dimensions more suited to your needs.

Please note that the load will be driven with half the mains voltage supply available. This should cause no problems, as the Lamp will produce sufficient light for signalling purposes and mains operated Buzzers should work, only producing a bit less noise.

Warning! The circuit is connected to 230Vac mains, then some parts in the circuit board are subjected to lethal potential!. Avoid touching the circuit when plugged and enclose it in a plastic box.