

The IDEA:

We want to make our homes smart so, we implement a circuit that control Light and temperature in our home. First, we put a motion sensor (PIR) that detect the motion and when the motion detected it sends a signal that Turns on the LED. second, we put another heat sensor that sends a signal to the motor (like a fan) when the temperature is higher than 30 degrees so, simply the led turns on when there is a motion and the motor turns on when the temp>30

Component:

- 1) PIR (motion sensor) <https://ram-e-shop.com/product/kit-pir-module/>
- 2) LM35dz (Temperature sensor) <https://ram-e-shop.com/product/lm35dz/>
- 3) LED <https://ram-e-shop.com/product/led-yy/>
- 4) 8 Channel Logic Level Converter Bi-Directional
<https://ram-e-shop.com/product/txs0108e-8-channel-logic-level-converter-bi-directional-3-3v-5v/>
- 5) Carbon Resistor 360.0 ohm 1/4W – 5x Resistors
<https://ram-e-shop.com/product/fixed-resistances-50/>
- 6) ULN2003 <https://ram-e-shop.com/product/uln2003/>
- 7) Bread Board <https://ram-e-shop.com/product/bb601-green/>
- 8) Mini DC Gearbox Motors Pair <https://ram-e-shop.com/product/ro-wheel-motor-dg01d/>
- 9) PHcr- 20Cm Female to Male 40 Jumper Set Connecting Wire
<https://ram-e-shop.com/product/ph60-mf-20cm/>
- 10) Arduino
- 11) Altera
- 12) 8650 Battery Holder 3 Cell <https://ram-e-shop.com/product/battery-holder-18650x3/>

How the circuit works:

The circuit could be divided into two parts the first part the arduino and the second the altera, We simply connect the arduino to the altera via (8 Channel Logic Level Converter Bi-Directional) As the arduino works in 5V and the altera works on 3.3V

Arduino:

The two sensors are connected to arduino and the battery that is supplying the circuit
And when the sensors are active it sends signal to the arduino and the arduino sends it to
The altera but not directly as the arduino works on 5V and altera works on 3.3V

8 channel logic level converter:

The TXS0108E 8-Ch Logic Level Converter Module is a bi-directional device for converting signals between 3.3V(altera) and 5V(arduino).

ULN2003:

Motor driver ic, it is used to drive high current loads to the motor as the motor cannot run on Arduino I/O hence we use this IC to source enough current and voltage for the load

Altera (Controller):

It acts like the controller of the whole circuit as when the sensors send signals to arduino and these signals come to altera via (converter) it sends a signal to the led when there is motion and signal to the ULN2003(after converting the signal it goes to motor) when the temperature is high.

Note: i will attach with the files of the code and this file a photo that show how we assign the pins