

## Home Automation

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**Abstract**— *Using technology makes everyone life better in many ways. Having an advanced home system definitely make the experience better. Homes with IOT devices helps in many ways like saving time, managing power systems, and making use of least power & saving it and the important thing which matters is security and privacy which can be solved by the IOT system.*

**Keywords**— *Automation, Home Automation, IOT.*

### I. INTRODUCTION

Home Automation System makes the operations of various home appliances more easy and saves electricity. It involves automated controlling of all devices (electrical and electronic) in homes on even thoroughly wireless communication.

The system is mainly implemented by sensors, controlling devices and actuators. The sensors detect temperature, motion, light and other sensing elements and then send that data to the main controlling devices. Controllers may be PC/ laptops, smartphones, etc. which are connected to the programmable logic controllers. Sensors then send information to the controller which controls the actuators. Through various inputs and output modules the programmable controller allows to connect various sensors which can be analog and digital. The final controlling device which control the home equipments are actuators like limit switches, motors and relays. For the remote access of these operations in the home automation system, communication plays an important role.

### II. TYPES OF HOME AUTOMATION SYSTEMS

Three main types of home automation systems:

- 1) POWER LINE BASED HOME AUTOMATION.
- 2) WIRE OR BUS CABLE HOME AUTOMATION.
- 3) WIRELESS HOME AUTOMATION.

#### → POWER LINE BASED HOME AUTOMATION

This type of automation transfer data using existing power lines and does not demand additional cables, hence it makes it inexpensive. This system necessitates additional cables which make it more complex.

#### → WIRED HOME AUTOMATION SYSTEM

In this type of automation, the main controller is connected to all the home appliances by communication cables. The equipment is attached with an actuator to communicate with the main controller. The entire operation are centralized by that computer that continuously communicates with the main controller.

#### → WIRELESS HOME AUTOMATION

This is expansion of the advancement of wire automation which uses wireless technologies like IR, Wi-Fi, ZigBee, GSM, Bluetooth, etc. for achieving remote operation

In our model we are using wireless home automation using Wi-Fi protocol.

### III. COMPONENTS:

- 1) Step-Down transformer
- 2) Bridge wave rectifier
- 3) Regulator
- 4) ESP8266
- 5) Opto-Isolators
- 6) TRIACS

#### → ESP8266

This is a small module which allows micro controllers to connect to a Wi-Fi network and make TCP/IP connections. The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume. It is a low cost Wi-Fi microchip with full TCP/IP stack and micro controller capability produced by manufacturer Espressif systems.

### IV. METHODOLOGY

#### 4.1 WORKING:

Since the module and the application are connected to the same router (same Wi-Fi network), the switches can be controlled directly from the android phone application.

The application sends commands to the ESP module through Wi-Fi protocol. Here router acts as a GATEWAY between the mobile application and the ESP module. The application will have individual buttons for specific switches e.g. Fan, Light Bulb, Air Conditioners, etc. The speed of the fan can also be regulated directly through the sliders in the application.

#### STEP 1: Connecting ESP8266 Micro-controller to the route

While installing for the first time the Module should be connected to a PC for Programming the Wi-Fi NAME & PASSWORD. This will connect the module to the Wi-Fi router.

#### STEP 2: Connecting module to an ANDROID APPLICATION

The android phone should be connected to the same Wi-Fi router. After entering the IP address in the application, the ESP module can be controlled through that application.

#### STEP 3: To assign specific switches to the App buttons.

After completion of STEP 1 & STEP 2, the application will show a dialogue and ask us to allot the buttons for specific switches.

Thus, The Setup of The Home Automation Is Completed and Is Ready To Use.

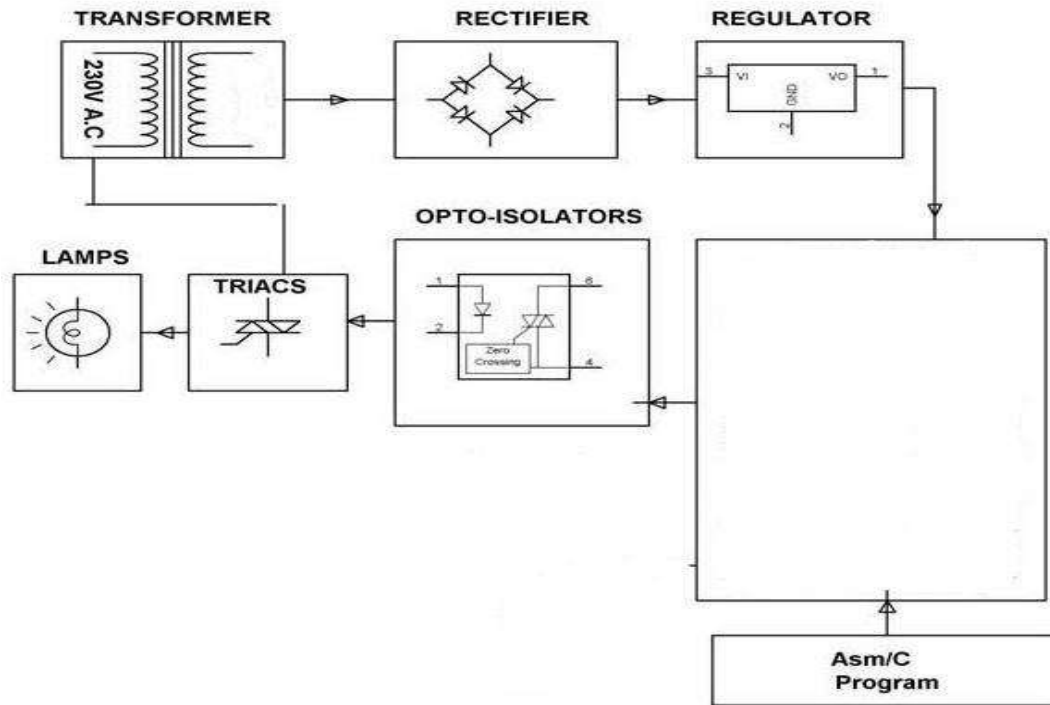


Fig. 1 Circuit Diagram of the Receiver

## V. CONCLUSION

This type of home automation is very easy to install. It is a wireless system so it can be easily used. This model does not require the server, so the cost of the system reduces to an extent. Internet is not required for the working of the system, hence it can work when the router is offline.

## REFERENCES

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