



WI-FI BASED HOME APPLIANCES CONTROL USING GOOGLE ASSISTANCE AS WELL AS CONVENTIONAL METHOD

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ABSTRACT :- The objective of the project is to have control on appliances through mobile, using convention method, online strategy and Google Assistant. The control by means of versatile is acquire when microcontroller gets associated with web through any Hotspot. Then, at that point by utilizing Blynk application we can handle apparatus. In the ordinary manner, the WIFI module isn't being used rather touch button is only used for controlling appliances. Therefore we can use the appliances even when WIFI/hotspot devices are not available. Keywords—component, microcontroller, relay

I. INTRODUCTION

Nowadays automation systems have become widespread in several areas by playing vital role in dominating many process related activity. Home robotization frameworks progressing towards motorization measures where less human endeavors are needed by the hardware gear to control various frameworks in home. These days, we have controllers for our TV and other electronic frameworks, which made our life simple. Yet, we don't have controller for electrical machines control. Time is a very valuable thing. Everybody wants to save time as much as they can. So to save time we also have included time based control of appliance.

1.1 OBJECTIVE

A. *To control appliance using offline method a Template.*

In this method we want to control appliances using capacitive touch buttons which will send digital HIGH or LOW signal to microcontroller.

B. *To control appliance using online method.*

In this method we need to connect Wi-Fi of Microcontroller to Hotspot which has a internet connection, so through this hotspot microcontroller will get connected to client (Blynk) server and through that to mobile app. Using this we can control and monitor the appliance are on or off. Also we can turn on and off appliance through it.

C. To controll appliances through google asistant.

In this method we have to interconnect Google assistant with blynk. So to do this we need to use IFTTT (If This Then That). The google assistant will send command to IFTTT and IFTTT will send this command to Blynk Server. Form Blynk server the signal of turning appliance on or off will be given to micro controller and it will do the rest of the task.

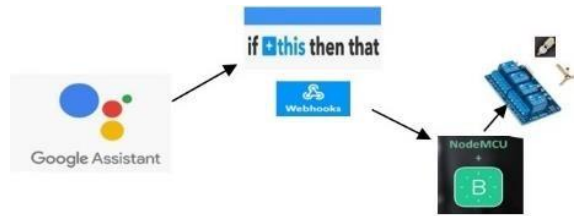


Fig No: 1. IFTTT Integration

1.2 Need of Automation

Automation leads to faster processing of valuable tasks and increase human comfort.

A reduction in enterprise costs and the time involved in executing operational activities leads to improved workflow efficiencies. With the help of automation Accuracy and Consistency in Operations is increase.

II. BLOCK DIAGRAM

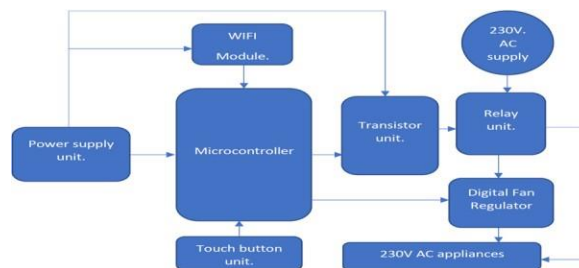


Fig No:- 2 Block Diagram

A. Main Microcontroller (ESP8266).

Main microcontroller does almost all necessary work. It has WiFi builtin every Touch button is connected to main microcontroller, every relay module is connected to main microcontroller. Power measurement data is transfered from sub-microcontroller to main microcontroller using Serial communication.

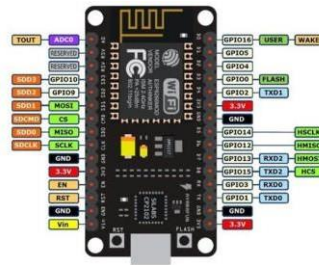


Fig No:- 3 ESP(8266).

B. Sub-Microcontroller (ATMEGA 328P-u).

Function of sub-microcontroller is to measure power from its built-in 10 bit ADC pins and then the measured voltage and current from CT and PT is calibrated on $10^2 = 1024$ scale. Then this data is being processed by “emon” library and we get directly the measured voltage, current, active power and reactive power. This data is sent to main microcontroller through serial communication.

ARDUINO PINS	ATMEGA328P PIN DETAILS WITH ARDUINO FUNCTIONS				ARDUINO PINS
Reset	(PCINT14/RESET) PC6	Pin1	Pin28	PC5 (ADCS/SCL/PCINT13)	Analog Input 5
Digital Pin 0 (RX)	(PCINT16/RXD) PD0	Pin2	Pin27	PD4 (ADC4/SDA/PCINT12)	Analog Input 4
Digital Pin 1 (RX)	(PCINT17/TXD) PD1	Pin3	Pin26	PD3 (ADC3/PCINT11)	Analog Input 3
Digital Pin 2	(PCINT18/INT0) PD2	Pin4	Pin25	PC2 (ADC2/PCINT10)	Analog Input 2
Digital Pin 3 (PWM)	(PCINT19/OC2B/INT1) PD3	Pin5	Pin24	PC1 (ADC1/PCINT9)	Analog Input 1
Digital Pin 4	PD4	Pin6	Pin23	PC0 (ADCO/PCINT8)	Analog Input 0
Vcc	Vcc	Pin7	Pin22	GND	GND
GND	GND	Pin8	Pin21	AREF	Analog Reference
Crystal	(PCINT6/XTAL1/TOSC1) PB6	Pin9	Pin20	AVCC	Vcc
Crystal	(PCINT7/XTAL2/TOSC2) PB7	Pin10	Pin19	PB5 (SCK/PCINT5)	Digital Pin 13
Digital Pin 5 (PWM)	(PCINT21/OC0B/T1) PD5	Pin11	Pin18	PB4 (MISO/PCINT4)	Digital Pin 12
Digital Pin 6 (PWM)	(PCINT22/OC0A/AIN0) PD6	Pin12	Pin17	PB3 (MOSI/OC2A/PCINT3)	Digital Pin 11(PWM)
Digital Pin 7	(PCINT23/AIN1) PD7	Pin13	Pin16	PB2 (SS/OC1B/PCINT2)	Digital Pin 10(PWM)
Digital Pin 8	(PCINT0/CLKO/ICP1) PB0	Pin14	Pin15	PB1 (OC1A/PCINT1)	Digital Pin 9(PWM)

Fig No:- 4 ATMEGA 328P Pinout

C. Touch Button.

This button sends the digital signal whenever they are in influence of human touch. So main microcontroller process the signal and turns respective appliance on or off.



Fig No:- 5 Capacitive Touch Sensor.

D. Relay Unit.

Relay units are basically used for switching 230 V AC appliances. Relay used are having 5V DC actuating voltage. When 5 volt DC is given from supply to relay then the contacts of relay changes from NC (Normally Closed) to NO (Normally Open). So appliances are connected at NO contacts and AC supply is given to common terminal of relay.

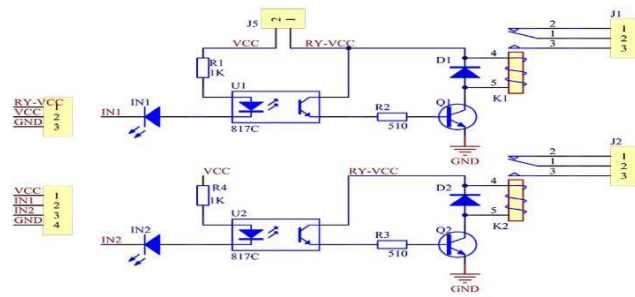
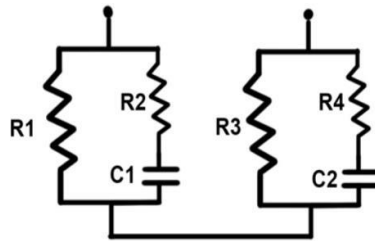


Fig No:- 6 Internal Circuit Diagram of Relay Circuit.

E. Speed regulation.

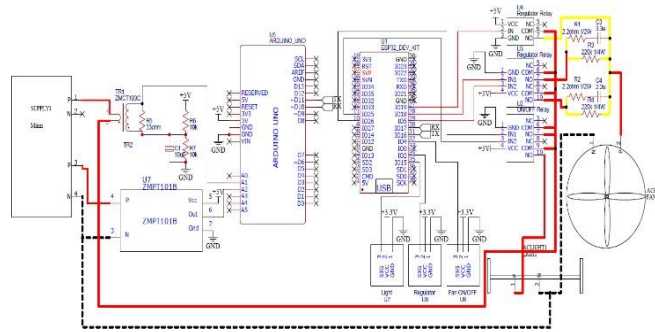


R1,R3 = 220k,1/4W
 R2,R4 = 2.2E,1/2W
 C1 = 2.2uF,250V
 C2 = 3.3uF,250V

Fig No:- 7 Regulator.

Above unit is the 4 speed regulation for fan. This is also switched using the relays at 230v AC. The value of the each components is found by studying the fan regulator.

III. CIRCUIT DIAGRAM



Above shown is circuit diagram and the major components used are:-

- Microcontroller:

1. Arduino Uno. 2. Operating voltage:-5v.

- Wi-Fi module:-

1. ESP32 DevKit V1
2. Operating voltage:-3.3v.

- Press button:-

1. Capacitive touch button.
2. Operating voltage:-5v.

- Relay Module:-

1. Voltage 5V.
2. 2 channel and 1 channel.

IV. BLYNK APP WIDGETS USED

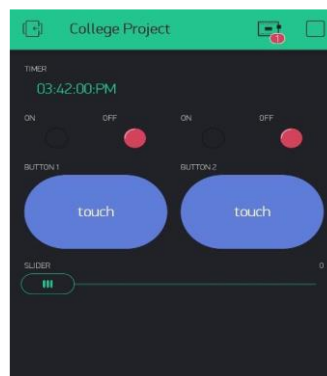


Fig No:- 9 Blynk app GUI.



A. *Timer Widget.*

The timer widget is used to switch load on or off depending on specific time. User need to set on time and off time from 24 hrs clock.

B. *LED Widget.*

LED widget is used to indicate the status of appliance whether the appliance is on or off. For every appliance 2 LED widget is needed the green and the red. Red indicates appliance is off where as green indicates appliance is on.

C. *Button Widget.*

This widget has 2 mode of operation PUSH and SWITCH:-

a) *Push mode:-*

In this mode mode the micro controller receives HIGH pulse for the time button is pressed.

b) *Switch mode:-*

In this mode the button acts as switch i.e. for odd number of press the appliance will be turned on and for odd number of presses the appliance will get turned off.

D. *Slider Widget.*

Sider widget can give values from 0 to any desired value that has been set in its setting. But there we have used 4 speed fan regulator so we have set values from 0 to 4.

VI. CONCLUSION

- We accomplished the objective to control home apparatuses distantly utilizing the WiFi innovation to interfaces framework parts, fulfilling client needs and prerequisites.
- Wi-Fi innovation able arrangement has end up being controlled distantly, give home security and is practical when contrasted with the already existing frameworks.
- Hence we can reason that the necessary objectives and goals of home mechanization framework have been accomplished.

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