

Single Phase Protection and Energy Consumption

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ABSTRACT: The concept, protection of home application in the modern era is inadequate. Energy consumption is a major issue to fetch a reliable solution. There are many methods to solve this issue. This project proposes a method which comes with a solution that provides protection for home application and energy consumption for both industrial and home applications. The system comprises of TRANSFORMER, DIODES, RELAYS, TRANSISTOR, 555 Timer, LM324 COMPARATOR IC, RELAY BOARD, VOLTAGE REGULATOR, ARDUINO UNO, SIM 300 GSM module. The aim of the project is to provide single phase protection by indicating low and high voltage through SMS by using GSM. It also provides energy consumption to the application given to the circuit.

KEYWORDS: SIM 300GSM module, voltage regulator(7805), Indication, IC NE555 TIMER, TRANSFORMER (0-230V).

I. INTRODUCTION

The current scenario in the modern century is to ward the domestic usage which works in analog current. The main aim of the project encompasses to achieve these diminish the guarding level of the peculiar usages by indicating low and high current passing by using GSM. The dominant inaugurates of energy reading of peculiar devices is inevitable. To enhance this chaos a subside remedy for energy consumption of enormous megacorp applications can be over seeded through this proposal. This theme is effectuated through the peripherals declared above. The list of features get enhanced by the project of giving over see to the sumptuous large scale application in a hyper efficient manner.

II. RELATED WORK

2.1. Implementation of single phasing, over voltage, under voltage, protection of three phase appliances without using microcontroller.

In the extant proposal they have used the conception of contingent upon under voltage and over voltage guard out of doors microcontroller. They have moot path for the transputers. The perception in future can be drawn-out to maturate an instrument to send message to the authority via SMS by interfacing GSM modem. They have implemented it for three phase appliances. Achieved over voltage, under voltage, guard of three phase appliances. They have achieved these criteria's without using microcontroller. Paved way for future advancements. [1].

2.2. A review paper on GSM home based automation system.

The home automation system that acquiesce us to enforce and control all the home implements when we are abroad. The proposal can connect conglomerate contraption such as home security system, lighting, access control system, air condition etc. It provides assuagement to home owners and AT89s52 microcontroller is integrated with the GSM to give baud rate of 9600 bits/sec. Through these idea they have achieved the proposal. [2].

III. PROPOSED SYSTEM

The project deals with the single phase protection of household applications by detecting the over voltage and under voltage. The aim is achieved through a GSM module. If the circuit detects the over voltage and under voltage a text message is send to the user with respective of the voltage occurred. This holds good only for the household applications. The next concept is to consume energy for both home applications and industrial equipment's. This factor is achieved by setting a particular time with which the application must run. If the fixed time is reached then the application must stop. This can be operated both automatically and manually.

IV. CIRCUIT DIAGRAM

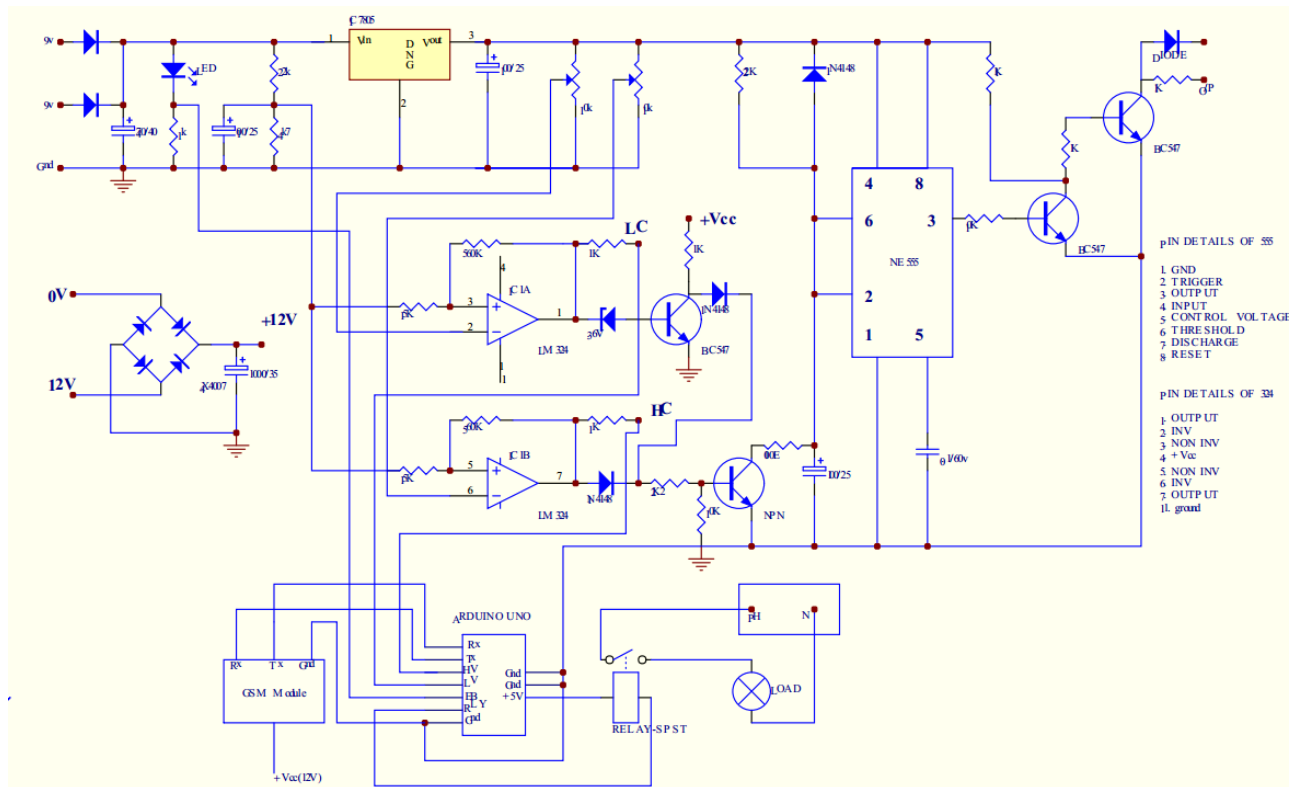


Fig.1

V. WORKING PRINCIPLE

If 220V Alternating Current input is applied to step-down transformer and that will diminish voltage to 12volt. Using Bridge rectifier circuit 12volt direct current output is obtained. Using IC LM7812, we get regulaed DC supply. Regulator Input at pin 1 and pin 2 and from pin 3 and pin 4 output is taken. IC LM324 serve as heart of guard circuit. It has 4 comparator in it and 4th pin is connected to Vcc and 11th pin is grounded. Two zener diode of 6volt and 6.8volt are used.6.8 volt zener diode is connected to pin 2 of ICLM324 (comparator no.1).6 volt zener diode is connected to pin 5 of IC LM324. IC2/1 of comparator IC used for overvoltage protection and IC2/2 of comparator IC used for under voltage protection. When supply voltage raise beyond or fall rated voltage proportional DC voltage will change and relay driver IC will command to relay driver to relay and relay will get tripped[7]. Now if high voltage is detected a text message is send to the user and vice versa via GSM module and the secondary concept of the project is to provide energy consumption to home or industrial applications. The application that is needed to be consumed is connected to the relay. The power supply for the

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relay is given by Arduino UNO. From Arduino UNO the application is being programmed for energy consumption. If the condition satisfies the application works according to the program.

VI. EXPERIMENTAL RESULTS

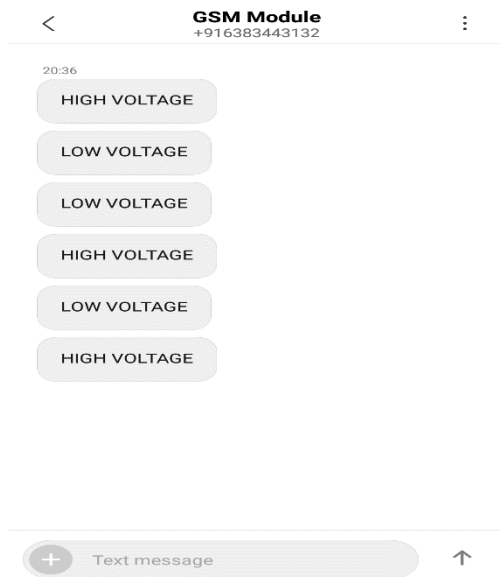


Fig.2

The output is received at the user's end by GSM module.

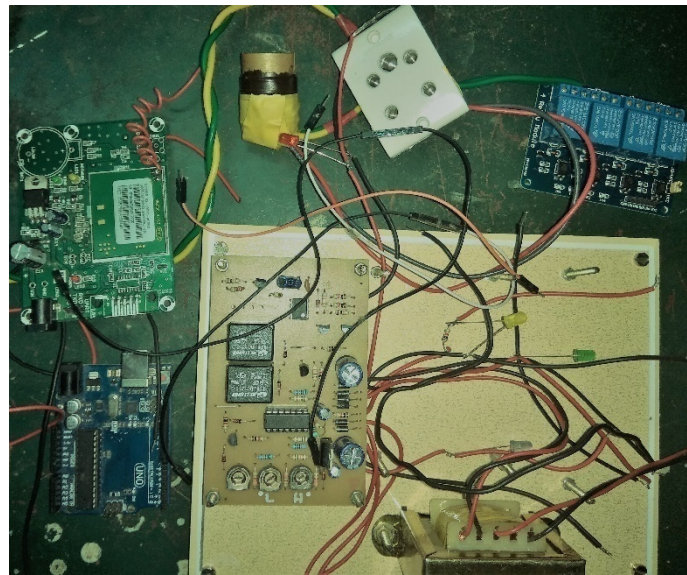


Fig.3

VII. CONCLUSION AND FUTURE ENHANCEMENTS

The over voltage and under voltage is disclosed and the text message is sent to the user via GSM. The energy consumption of the given implementation is enacted. The future enhancements are IOT can be used instead of GSM and a computer application can be developed for energy consumption that can be operated via mobile.

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