AUTOMATIC POWER SUPPLY CONTROL

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ABSTRACT

Main purpose of the project is to give continuous need of electricity is increasing day by day and the frequent power supply from solar to a load with make an efficiency system. The power cuts of electricity are causing many problems in different area likes banks, colleges/schools, hospital, houses and industries. In order to make frequently generation of electric power. Thus there is requirement for an alternate arrangement of power supply. This arrangement can be designed by using Arduino and relays. When a source, say mains fails the supply automatically shifts to next priority source generator and so on.

KEYWORD: *Arduino UNO, Relay, Solar panel, DC Load*

1. INTRODUCTION:

If we see it at commercial level, then we can estimate that there are so many consumers or customers which have the equipment or machines whose requirements is only uninterruptable power supply [1] [4]. Such as the data base companies whose all work is done on computer then it is required an uninterruptable power supply all the time, otherwise their computer could be off during the time when the load is shifted on another source, similarly the companies which have the data base production machines then it also could be also off during the load shifted then their production can be stop or damage. Concentrating on these above problems we can examine the importance of this auto power supply control system in this modern world [2] [3] [5]. Different peoples and companies are working on these auto power supply control systems which are making this system with the help of magnetic contactors and power relays [7] [12] [14].

2. COMPONENTS USED:

The components used are given below. They are:

Table-1: components and its specification

COMPONENTS	SPECIFICATION
Arduino UNO	12 V DC supply
SPDT Relays	12 V DC, 230 V AC supply
LCD display	5 * 7
Adaptor	12 V DC

2.1 RELAY:

Solid state and electromechanical devices relay are operate with in a input respect of the parameters such that the input parameter may be a voltage current temperature etc. With the help of magnetic field only the Electromagnetic relays are works. They classified into two parts operating coil and switch. In relay operating either normally open or closed. With the help of puse is given core electromagnet produces field Due this action causes slides either normally open close available for DC AC excitation voltages range from 5V- 230V
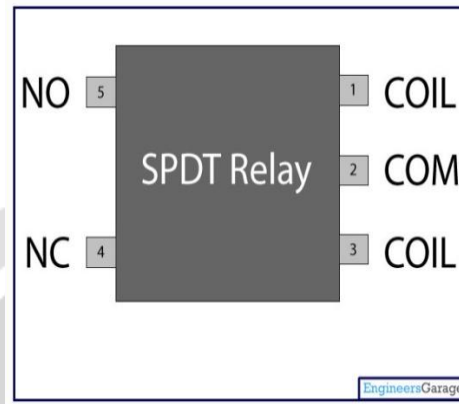

Fig 1: Pin Diagram

2.3 Voltage Regulators:

LM7815 and LM78L05 are given the constant supply of DC as arduino relay requires V we prefer output from this voltage regulators. For the stabilizers purpose we using the voltage regulator to protect with the circuit components from pulsating a stable They have heat sink itself overheating however do not need Both at most current 1A each is fed into comparator LM741 Due configurations it directly used reference relays RLAI RLA2 are feed this terminals microcontroller unit This terminal must be powered all times with dc It may either rectified power or battery because oversees general control whole regulator supplied by joint diodes IN4001 in order prevent flow back acts alternating sources. It will to supply for the relay unit to will operating the input of the comment we will give to the relay driver Ic. It has help to operating the all circuit component to the system with high efficiency and high performance way.

2.4 ARDUINO UNO

The Arduino will sensing the very fine value of the analogy input and to compare with other input values. It will Atmega 328 and AVR RISC based Atmel bit microcontroller. It will combines memory of KB ISP flash memory. It will capabilities of write and read of EEPROM SRAM. The timer/counter are using I/O device line in general work registers it will flexible of internal and external mode of the three register has to be done with the internal and external interrupts of the serial USART programmable bytes. In this USART byte will interface with SPI port channel with the help of wire oriented interface. In this channel will get converter of A/D converter in the package of TQFP QFN/MLF channel. It will operating at the volts between MIPS per MHz to achieves throughput approaching. The arduino will made of single board microcontroller or microcontrollers. The arduino have licensed by under the (LGPL) GNU Lesser General Public License or (GPL) GNU General Public License. The CPU of the arduino will be 8 bit Atmel AVR, 32 bit ARM Cortex-M0+, 32 bit ARM Cortex-M3, 32 bit Intel Quark. It will interface the board of communication is (USB) Universal Serial Bus.
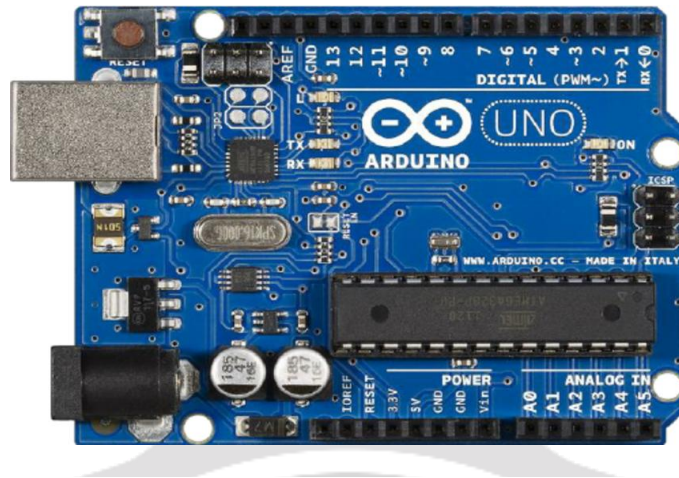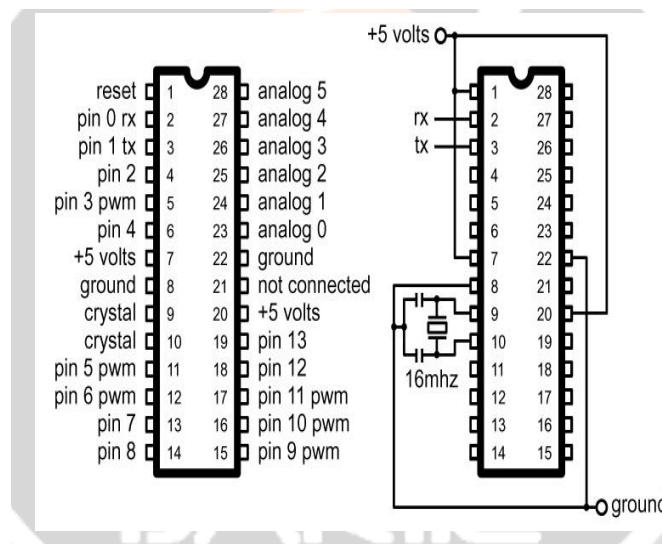
Fig 2: Arduino UNO

Fig 3: Pin diagram Arduino Atmega 32

2.5 CURRENT SENSING PRINCIPLES

A current sensor is a device that detects and converts current to an easily measured output voltage, which is proportional to the current through the measured path.
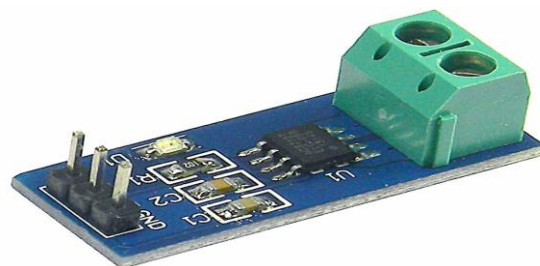

Fig 4: Current sensor

3. WORKING PRINCIPLE

In order to make frequently generation of electric power. There is requirement for an alternate arrangement supply this can be designed by using arduino and relays. Initially we have given high input signal the so as a result controller generates low output activate first relay driver which will in being energized lamp glows While push button solar pressed that represents failure provided from next source receive second Now process project three inputs like Solar UPS United Power Supply Electrical these supplies are controlled These simultaneously operated different this use variable load operation And also rectifier liquid crystal diode Integrated Circuit IC After giving the connection, first the load will be operating on solar energy. After few minutes, the load will be greater than the solar energy automatically the input supply will be connected for the other source. The source will be efficiency for that load power. The different source will be connect be using relay driver. In this operation, we will avoid power losses, equipment damage, low voltage power supply and etc.In this project we are using three phase power supply. So it essential for that power supply. The arduino is used to control the all the components that are used in these project. The load input will be DC supply.

4. BLOCK DIAGRAM
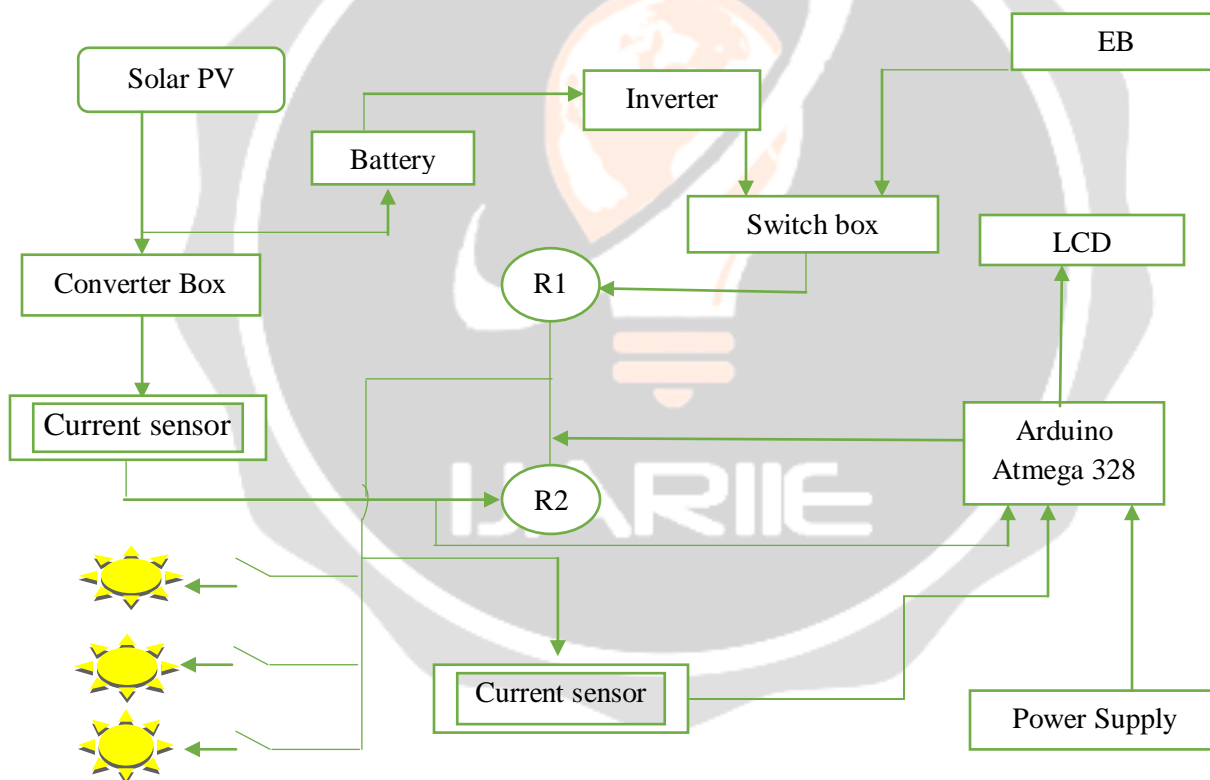
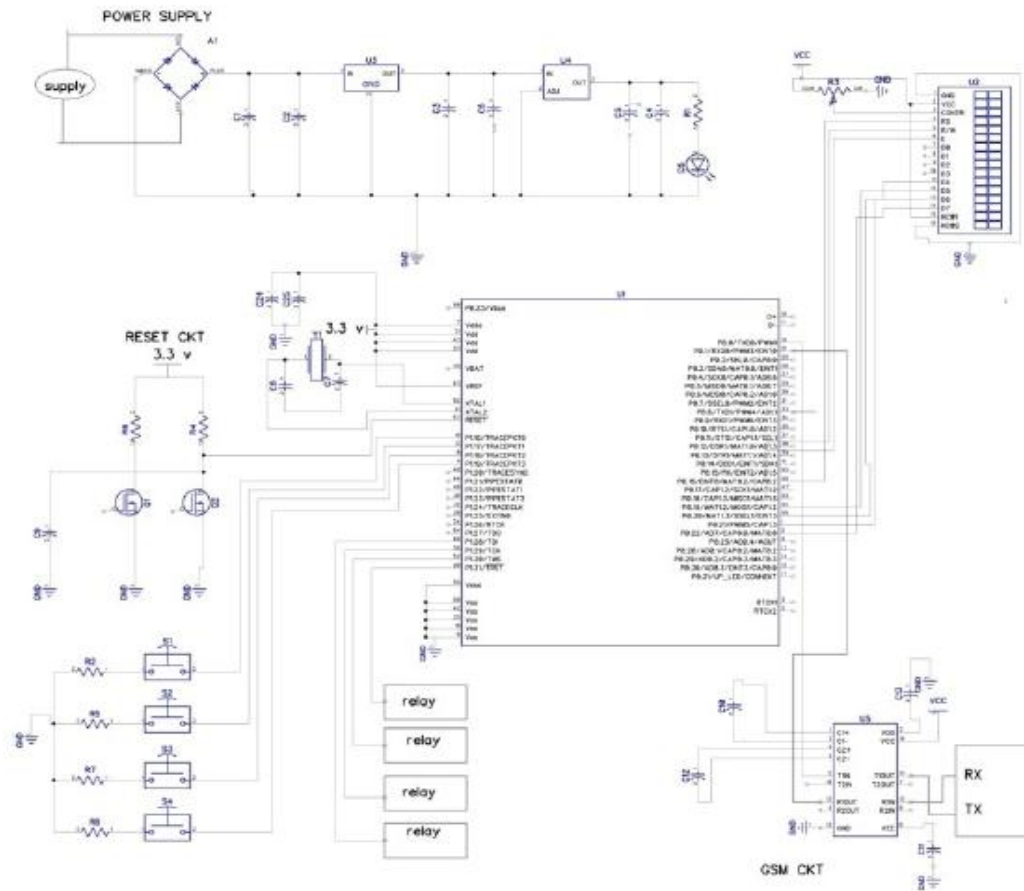AC LOAD   **Fig 5:** Block diagram for proposed system
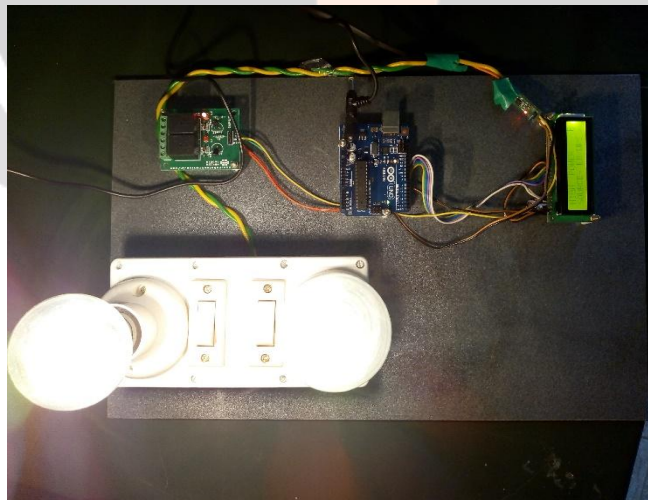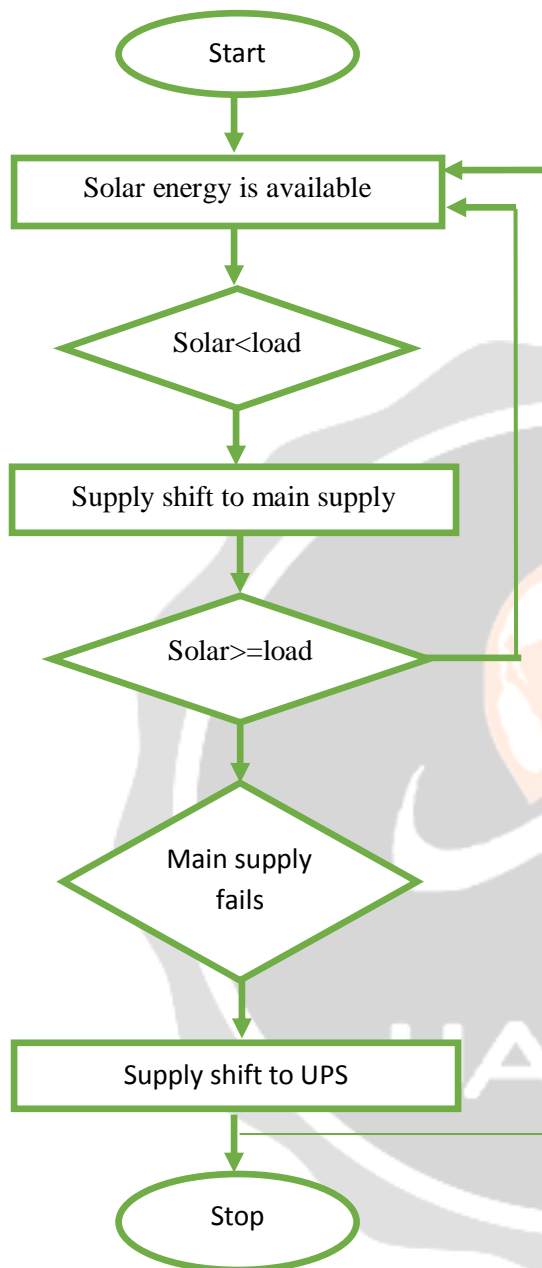
Fig 6: Circuit diagram

Fig 7: Hard ware connection

5. FLOW CHART:

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                    ┌─────────────┐
                    │    Start    │
                    └──────┬──────┘
                           ▼
          ┌──────────────────────────┐◄────┐
          │  Solar energy is available │◄─┐  │
          └────────────┬─────────────┘  │  │
                       ▼                 │  │
                  ◇ Solar<load ◇         │  │
                       │                 │  │
                       ▼                 │  │
          ┌──────────────────────────┐  │  │
          │ Supply shift to main supply│  │  │
          └────────────┬─────────────┘  │  │
                       ▼                 │  │
                 ◇ Solar>=load ◇─────────┘  │
                       │                    │
                       ▼                    │
                 ◇ Main supply ◇            │
                 ◇    fails    ◇            │
                       │                    │
                       ▼                    │
          ┌──────────────────────────┐     │
          │    Supply shift to UPS    │     │
          └────────────┬─────────────┘     │
                       │──────────────────┘
                       ▼
                 ┌──────────┐
                 │   Stop   │
                 └──────────┘
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6. CONCLUSION:

In the power supply from four different sources: Solar, Inverter, Main and Generator have been explained in this project with all its features and details. It has been developed by integrating Colleges/Schools, etc. To make the hardware components of this project has been developed by integrating features. In the module Presence system has been reasoned placed carefully and out of this contributing to the best working of the unit. Now, I completed my project with 85%. This project is going on electronics side. My idea will be on electrical side like as semiconductor. This is my final year project design and process.

7. FUTURE SCOPE:

The project can be further enhanced by using other sources like wind power also and then taking into consideration for using the best possible power whose tariff remains lowest at that moment.

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