A

PROJECT REPORT

ON

POWER SAVER FOR INDUSTRIAL AND COMMERCIAL ESTABLISHMENT

Submitted in partial fulfillment of requirements for the degree of

BACHELOR OF ENGINEERING
In
ELECTRICAL
By

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PROJECT REPORT APPROVAL CERTIFICATE

This is to certify that the dissertation work entitled "POWER SAVER FOR INDUSTRIAL AND COMMERCIAL ESTABLISHMENT" for **B.E. (Electrical Engineering)** has been submitted to University of Mumbai by **Ms.Gajangi Divya S. (11EE01), Ms.Ansari Salma K. (12EE01), Ms.Mumbaikar Shraddha A. (12EE02), Ms.Verma Aarti Devi R. (12EE03)** the bonafide students of **Anjuman-I-Islam's Kalsekar Technical Campus, New Panvel.** Their project work has been approved for the award of the degree of Bachelor of Engineering in Electrical Engineering.

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2. _____

Date: _____

Place: _____

DECLARATION

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Ansari Salma K. (12EE01)----------

(Name of Student and Roll No)

DATE:----------

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Ansari Salma K. (12EE01)

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ABSTRACT

Power saver for industrial and commercial establishment can be used in places like where lighting is very important. The industries will be well illuminated with many lamps. When people are not present at a working place the lighting can be made OFF and when they are present, the lighting made ON. All these can be done through by IR sensor and LDR sensor.

If a person entering to the monitored area, the IR sensors activates and sense the person, these sensation are given to the micro controller. The Infrared energy emitted from the living body is focused by a Fresnel lens segment. Then only the IR sensor activates. After sensing the person LDR checks the light intensity of the monitored area, whether it is bright or dark. Depending on the LDR output, the lamp may be ON / OFF.

To display these working we are using LCD display. Our project helps in reducing the electricity bills.

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LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Power Saver For Industrial And Commercial Establishment, the aim of the project is to save the energy. In this project we are using various sensors, controlling and display.

However, in this project we work on the basic signal processing of various parameters which are IR sensor, LDRsensor. For measuring various parameters values, various sensors are used and the output of these sensors are converted to control the parameters. The control circuit is designed using micro-controller. The outputs of all the three parameters are fed to micro-controller. The output of the micro-controller is used to drive the LCD display, so that the value of each parameter can be displayed. In addition to the LCD display micro-controller outputs are also used to drive a relay independently. This relay energizes and de-energizes automatically according to the condition of the parameter.It helps in reducing the electricity bills.

The aim of the project is to save the energy or power, used in places like industries where lighting is very important for the people who come to work there. So, the industries will be well illuminated with many lamps.

At the same time when people are not present at a particular working place the lighting can be made off and when people come to that area, according to the LDR lighting can be made sufficiently brighter.

1.2 Block Diagram Of Project

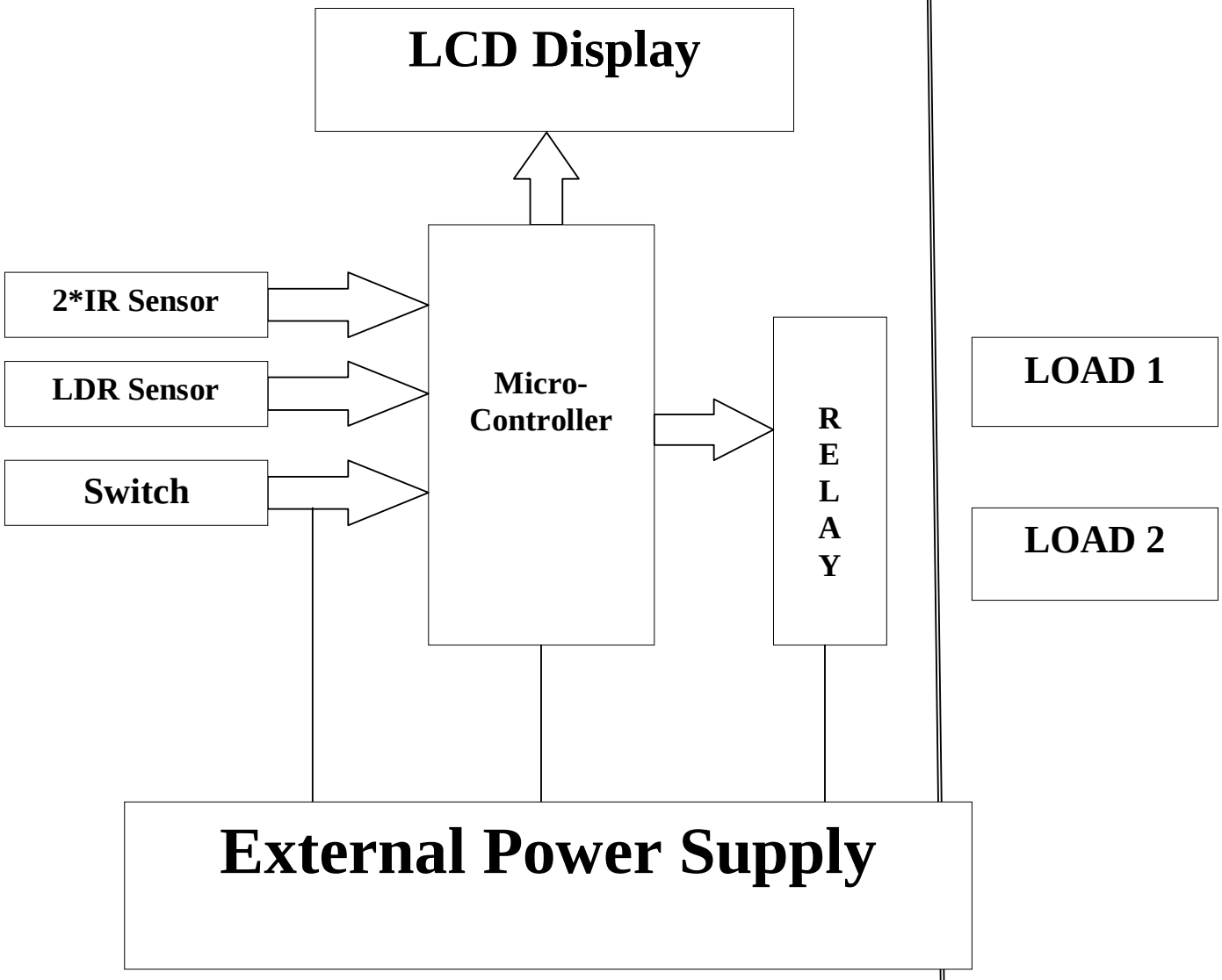


Figure 1.1 Block diagramn of Power Saver

1.3 Principle Of Operation

Consider a particular area in the industry, which is connected with our experimental kit .When a person entering into that place the IR sensor absorbs the black body radiation emitted by that person and activates it. The LCD display will displays the “IR ON”.

After some time delay the light will glows for some time by using the relay channel and with the help of LDR sensor it checks the room lightening , and it takes the condition when the light is sufficient the lamp will be in OFF state and when light is insufficient the lamp will be in ON state.

When a person is leaving that place, the IR sensor will activate again and firstly the lights will be OFF . Now the LCD display is in stand by mode state. And the main supply power will be switched OFF.

A two-way switch enables one circuit to be turned ON or OFF by either of two switches.

CHAPTER 2

HARDWARE REQUIREMENT

LIST OF HARDWARE

1. Step Down Transformer
2. Bridge Rectifier
3. Resistor
4. Capacitor
5. LED
6. Micro-controller AT89S52
7. 4-Channel Relay
8. LCD
9. LDR
10. Two-way Switch
11. IR Sensor
12. Voltage Regulator IC

2.1 Step-Down Transformer

Transformers convert AC electricity from one voltage to another with a little loss of power. Step-up transformers increase voltage, step-down transformers reduce voltage. Most power supplies use a step-down transformer to reduce the dangerously high voltage to a safer low voltage.

Figure 2.1.1. Transformer

2.2 Bridge Rectifier

A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), current that flows in only one direction, a process known as rectification. Rectifiers have many uses including as components of power supplies and as detectors of radio signals.

The output from the transformer is fed to the rectifier. It converts A.C. into pulsatingD.C. The rectifier may be a half wave or a full wave rectifier. In this project, a bridge rectifier is used because of its merits like good stability and full wave rectification.

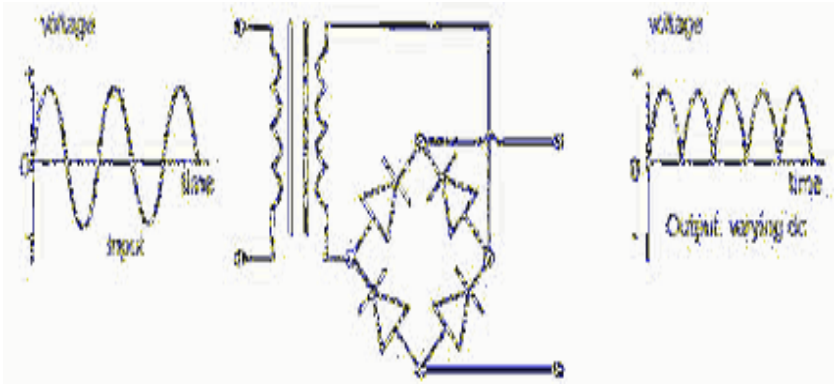


Figure 2.2.1 Bridge Rectifier

2.3 Resistors

Resistors are used as part of electrical networks and electronic circuits. They are extremely commonplace in most electronic equipment.Resistors can be integrated into hybrid and printed circuits, as well as integrated circuits.

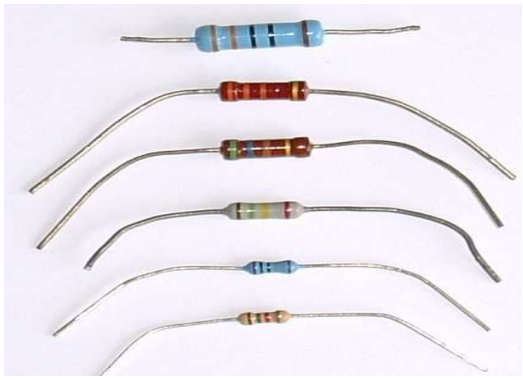


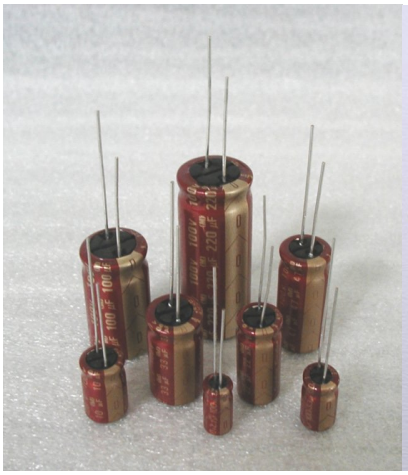
Figure 2.3.1 Resistors

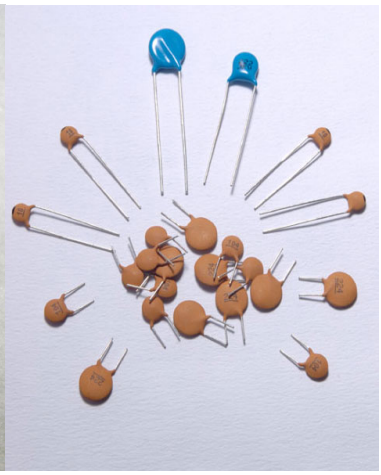
2.4 Capacitors

A capacitor or condenser is a passive electronic component consisting of a pair of conductors

separated by a dielectric. When a voltage potential difference exists between the conductors, an electric field is present in the dielectric. This field stores energy and produces a mechanical force between the plates. The effect is greatest between wide, flat, parallel, narrowly separated conductors.

The properties of capacitors in a circuit may determine the resonant frequency and quality factor of a resonant circuit, power dissipation and operating frequency in a digital logic circuit, energy capacity in a high-power system, and many other important aspects.



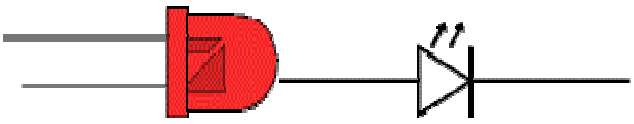


2.4.1 Electrolytic capacitor 2.4.2 Ceramic Capacitor

2.5 LED

LEDs are semiconductor devices. Like transistors, and other diodes, LEDs are made out of silicon. What makes an LED give off light are the small amounts of chemical impurities that are added to the silicon, such as gallium, arsenide, indium, and nitride.

When current passes through the LED, it emits photons as a byproduct. Normal light bulbs produce light by heating a metal filament until it is white hot. LEDs produce photons directly and not via heat, they are far more efficient than incandescent bulbs.



2.5.1 Typical LED 2.5.2 circuit symbol of LED

Not long ago LED's were only bright enough to be used as indicators on dashboards or electronic equipment. But recent advances have made LED's bright enough to rival traditional lighting technologies. Modern LED's can replace incandescent bulbs in almost any application.

2.6 Micro-controller AT89S52

The AT89S52 is a low-power, high-performance CMOS 8-bit micro-controller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel’s high-density non volatile memory technology and is compatible with the industry standard 80C51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non volatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful micro-controller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, three 16-bit timer/counters, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. .

Features:

• 8K Bytes of In-System Programmable (ISP) Flash Memory
• 4.0V to 5.5V Operating Range
• Fully Static Operation: 0 Hz to 33 MHz
• Three-level Program Memory Lock
• 256 x 8-bit Internal RAM
• 32 Programmable I/O Lines
• Three 16-bit Timer/Counters
• Fast Programming Time
• Flexible ISP Programming (Byte and Page Mode)

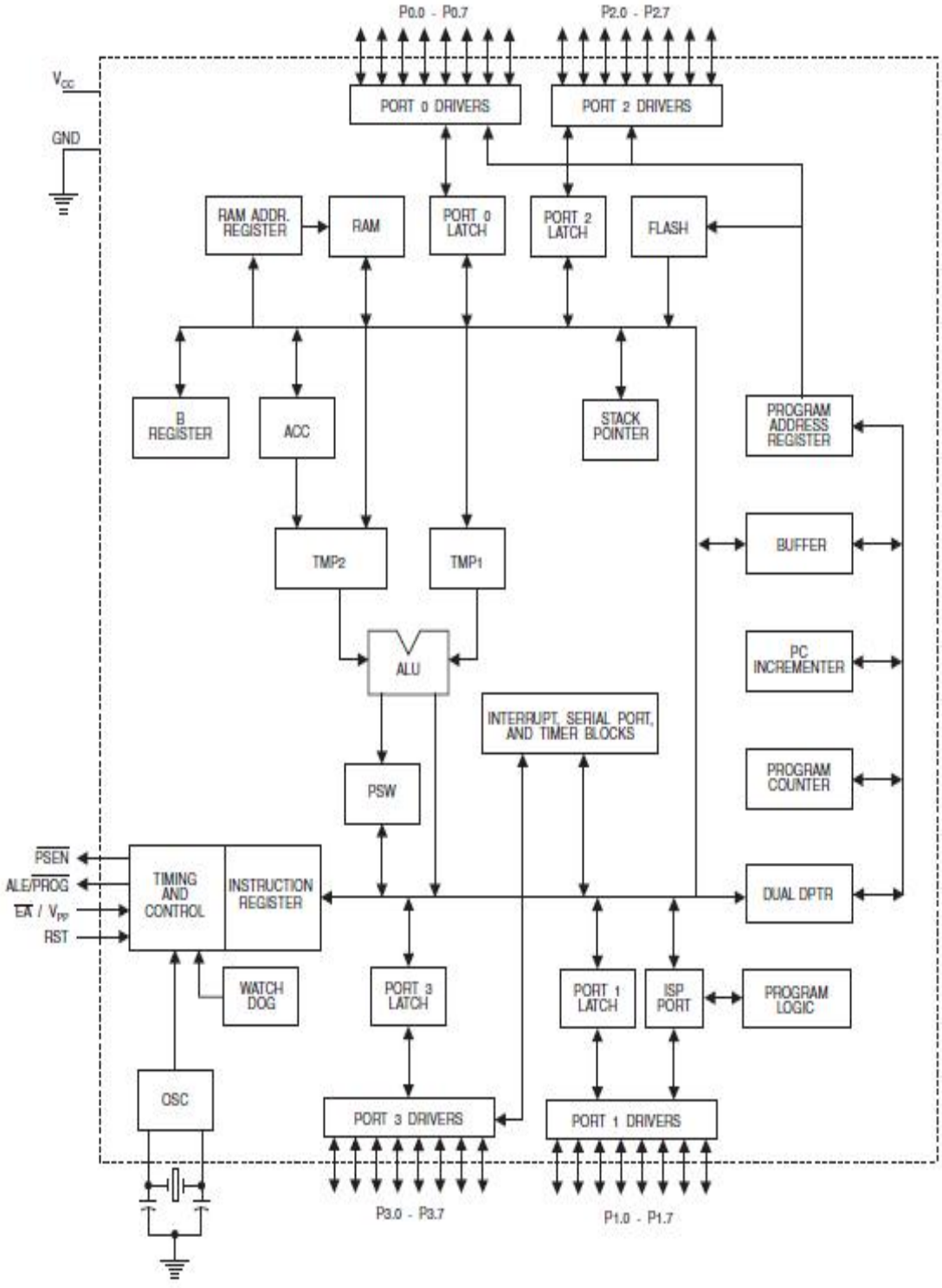


Figure 2.6.1 Block Diagram Of AT89S52

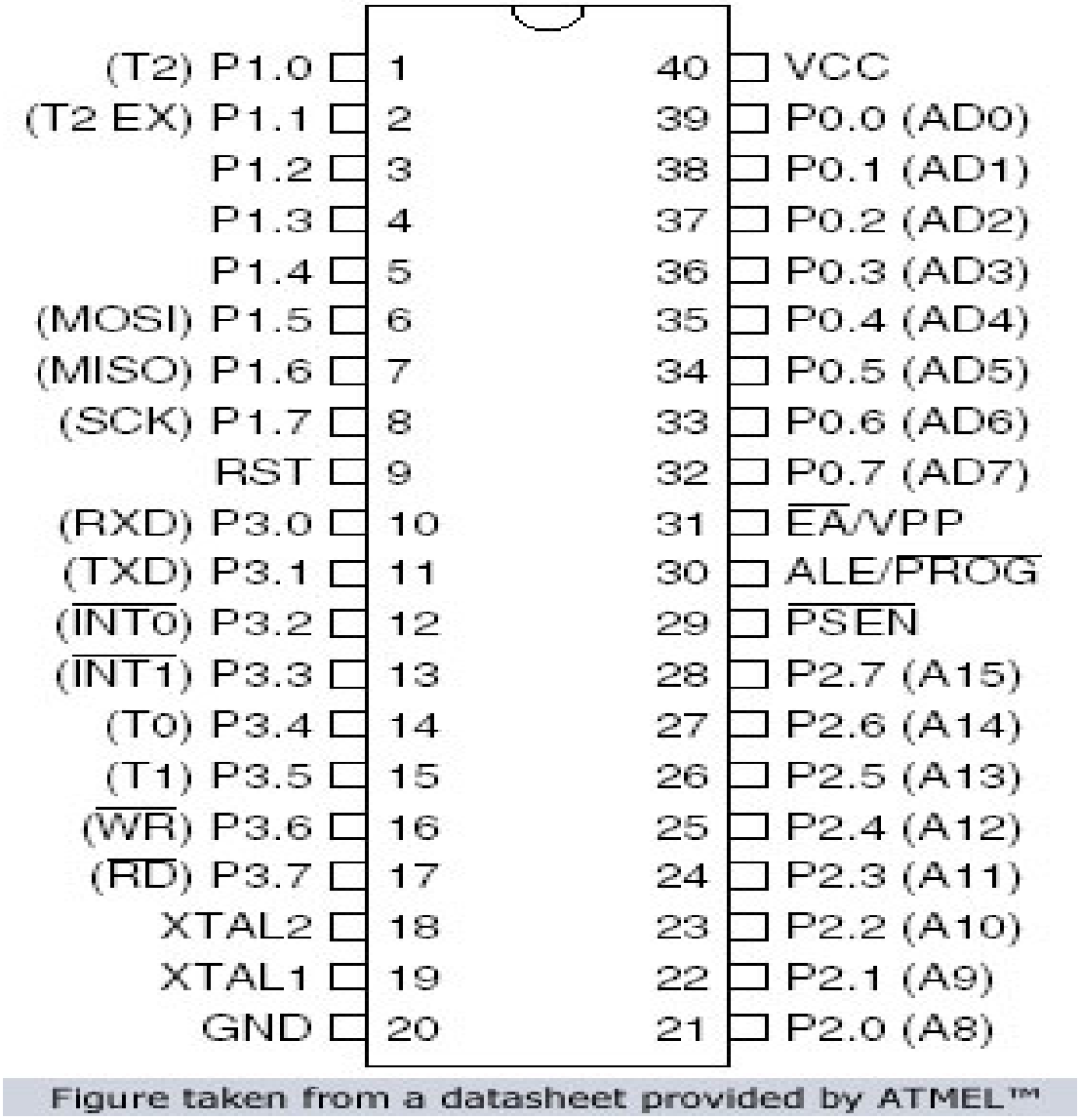


Figure taken from a datasheet provided by ATMEL™

Figure 2.6.2 PIN Diagram Of AT89S52

Pin Description:

VCC:

Supply voltage.

GND:

Ground.

Port 0:

Port 0 is an 8-bit open drain bidirectional I/O port. As an output port, each pin can sink eight TTL inputs. When 1s are written to port 0 pins, the pins can be used as high-impedance inputs. Port 0 can also be configured to be the multiplexed low-order address/data bus during accesses to external program and data memory. In this mode, P0 has internal pull-ups. Port 0 also receives the code bytes during Flash programming and outputs the code bytes during program verification. External pull-ups are required during program verification.

Port 1:

Port 1 is an 8-bit bidirectional I/O port with internal pull-ups. The Port 1 output buffers can sink/source four TTL inputs. When 1s are written to Port 1 pins, they are pulled high by the internal pull-ups and can be used as inputs. As inputs, Port 1 pins that are externally being pulled low will source current (IIL) because of the internal pull-ups. In addition, P1.0 and P1.1 can be configured to be the timer/counter 2 external count input (P1.0/T2) and the timer/counter 2 trigger input (P1.1/T2EX).

Port 2:

Port 2 is an 8-bit bidirectional I/O port with internal pull-ups. The Port 2 output buffers can sink/source four TTL inputs. When 1s are written to Port 2 pins, they are pulled high by the internal pull-ups and can be used as inputs. As inputs, Port 2 pins that are externally being pulled low will source current (IIL) because of the internal pull-ups. Port 2 emits the high-order address byte during fetches from external program memory and during accesses to external data memory that use 16-bit addresses (MOVX @ DPTR). In this application, Port 2 uses strong internal pull-ups when emitting 1s. During accesses to external data memory that use 8-bit addresses (MOVX @ RI), Port 2 emits the contents of the P2 Special Function Register.

Port 3:

Port 3 is an 8-bit bidirectional I/O port with internal pull-ups. The Port 3 output buffers can sink/source four TTL inputs. When 1s are written to Port 3 pins, they are pulled high by the internal pull-ups and can be used as inputs.

RST:

Reset input. A high on this pin for two machine cycles while the oscillator is running resets the device. This pin drives high for 98 oscillator periods after the Watchdog times out. The DISRTO bit in SFR AUXR (address 8EH) can be used to disable this feature. In the default state of bit DISRTO, the RESET HIGH out feature is enabled.

ALE/PROG:

Address Latch Enable (ALE) is an output pulse for latching the low byte of the address during accesses to external memory. This pin is also the program pulse input (PROG) during Flash programming.

In normal operation, ALE is emitted at a constant rate of 1/6 the oscillator frequency and may be used for external timing or clocking purposes. Note, however, that one ALE pulse is skipped during each access to external data memory.

PSEN:

Program Store Enable (PSEN) is the read strobe to external program memory. When the AT89S52 is executing code from external program memory, PSEN is activated twice each machine cycle, except that two PSEN activations are skipped during each access to external data memory.

EA/VPP:

External Access Enable. EA must be strapped to GND in order to enable the device to fetch code from external program memory locations starting at 0000H up to FFFFH. Note, however, that if lock bit 1 is programmed, EA will be internally latched on reset. EA should be strapped to VCC for internal program executions. This pin also receives the 12-volt programming enable voltage (VPP) during Flash programming.

2.7 4-Channel Relay

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism mechanically.

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and most have double throw (changeover) switch contacts as shown in the diagram.

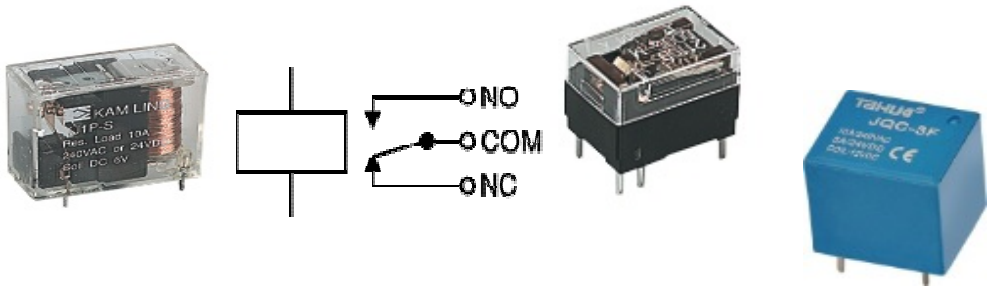


figure2.7.1Relay showing coil and switch contacts

Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical.

Relays are usually SPDT or DPDT but they can have many more sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available. For further information about switch contacts and the terms used to describe them please see the page on switches.

Applications of relays

Relays are used to and for:

Control a high-voltage circuit with a low-voltage signal, as in some types of modems or audio amplifiers.

Control a high-current circuit with a low-current signal, as in the starter solenoid of an automobile.

Detect and isolate faults on transmission and distribution lines by opening and closing circuit breakers.

2.8 Liquid Crystal Display

These LCD Modules are very common these days, and are quite simple to work with, as all the logic required running them is on board.

LCD Background:

Frequently, an 8051 program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an 8051 is an LCD display. Some of the most common LCDs connected to the 8051 are 16x2 . This means 16 characters per line by 2 lines.

Fortunately, a very popular standard exists which allows us to communicate with the vast majority of LCDs regardless of their manufacturer.

Figure 2.8.1 LCD

The three control lines are referred to as **EN**, **RS**, and **RW**.The **EN** line is called "Enable." This control line is used to tell the LCD that you are sending it data. To send data to the LCD, your program should make sure this line is low (0) and then set the other two control lines and/or put data on the data bus. When the other lines are completely ready, bring **EN** high (1) and wait for the minimum amount of time required by the LCD datasheet (this varies from LCD to LCD), and end by bringing it low (0) again.

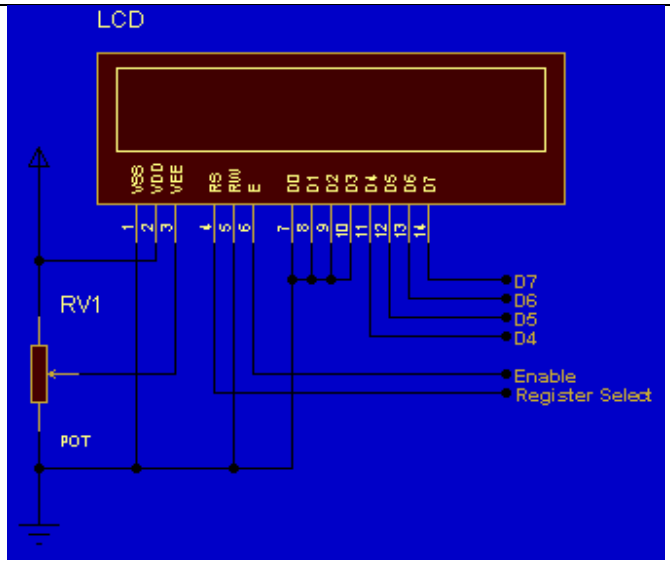


Figure 2.8.2 Pin Diagram of LCD

The **RS** line is the "Register Select" line. When RS is low (0), the data is to be treated as a command or special instruction (such as clear screen, position cursor, etc.). When RS is high (1), the data being sent is text data which should be displayed on the screen. For example, to display the letter "T" on the screen you would set RS high.

The **RW** line is the "Read/Write" control line. When RW is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively querying (or reading) the LCD. Only one instruction ("Get LCD status") is a read command. All others are write commands--so RW will almost always be low .Finally, the data bus consists of 4 or 8 lines (depending on the mode of operation selected by the user). In the case of an 8-bit data bus, the lines are referred to as DB0, DB1, DB2, DB3, DB4, DB5, DB6, and DB7.

2.9 Light Dependent Resistor

LDRs or Light Dependent Resistors are very useful especially in light/dark sensor circuits. Normally the resistance of an LDR is very high, sometimes as high as 1000 000 ohms, but when they are illuminated with light resistance drops dramatically.

Electronic opto sensors are the devices that alter their electrical characteristics, in the presences of visible or invisible light. The best-known devices of this type are the light dependent resistor (LDR), the photo diode and the phototransistors.

Light dependent resistor as the name suggests depends on light for the variation of resistance.
LDR are made by depositing a film of cadmium sulphide or cadmium selenide on a substrate of ceramic containing no or very few free electrons when not illuminated. The film is deposited in a zig zag fashion in the form of a strip. The longer the strip the more the value of resistance.
When light falls on the strip, the resistance decreases. In the absence of light the resistance can be in the order of 10K ohm to 15K ohm and is called the dark resistance.
Depending on the exposure of light the resistance can fall down to value of 500 ohms. The power ratings are usually smaller and are in the range 50mw to .5w. Though very sensitive to light, the switching time is very high and hence cannot be used for high frequency applications. They are used in chopper amplifiers.
Light dependent resistors are available as discs 0.5cm to 2.5cm. The resistance rises to several Mega ohms under dark conditions.
The below figure shoes that when the torch is turned on, the resistance of the LDR falls, allowing current to pass through it is shown in figure.

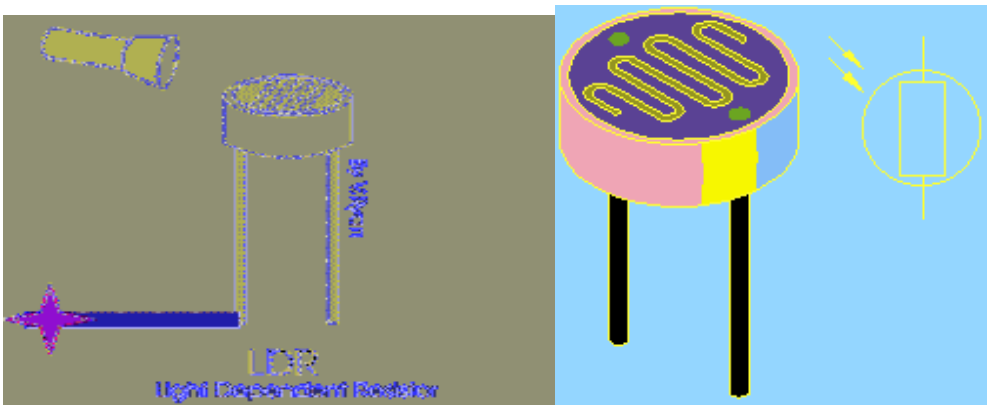


Figure 2.9.1 LDR

The basic construction and symbol for LDR are shown in above figures respectively. The device consists of a pair of metal film contacts. Separated by a snakelike track of cadmium sulphide film, designed to provide the maximum possible contact area with the two metal films. The structure is housed in a clear plastic or resin case, to provide free access to external light. Practical LDRs are available in variety of sizes and packages styles, the most popular size having a face diameter of

roughly 10mm. practical LDR is shown in below figure.

Applications``

- Smoke detection
- Automatic lighting control
- Burglar alarm systems
- Camera (electronic shutter)
- Strobe (color temperature reading)

2.10 Two-way Switch

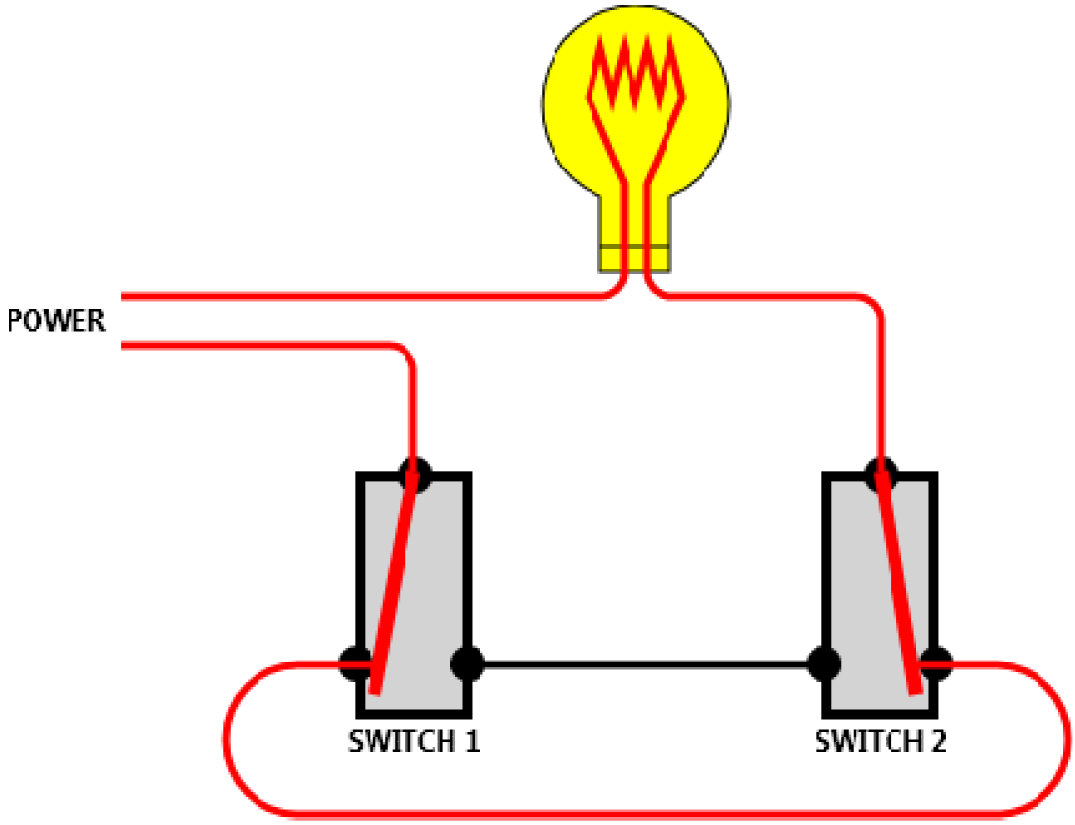


Figure 2.10.1 Two-way Switch

A two-way switch enables one circuit to be turned ON or OFF by either of two switches. These two-way switches have a Single Pole Double Throw configuration.
In the above figure L1 of both the switches are connected to each other, ac source is connected to the common of switch1 and other side of load is connected to common of switch2 and the other side of load is connected to the neutral of ac source. With this configuration the lamp will be turned ON when one switch is ON and other switch is also ON. If both the switches are in different position the lamp will be OFF.

2.11 IR SENSOR

A IR detector is a motion detector that senses the heat emitted by a living body. These are often fitted to security lights so that they will switch on automatically if approached. They are very effective in enhancing home security systems.
The sensor is passive because, instead of emitting a beam of light or microwave energy that must be interrupted by a passing person in order to “sense” that person, the IR is simply sensitive to the infrared energy emitted by every living thing. When an intruder walks into the detector’s field of vision, the detector “sees” a sharp increase in infrared energy.

2.12 Voltage Regulator 7805

Features

• Output Current up to 1A.

• Output Voltages of 5, 6, 8, 9, 10, 12, 15, 18, 24V.

• Thermal Overload Protection.

• Short Circuit Protection.

• Output Transistor Safe Operating Area Protection.

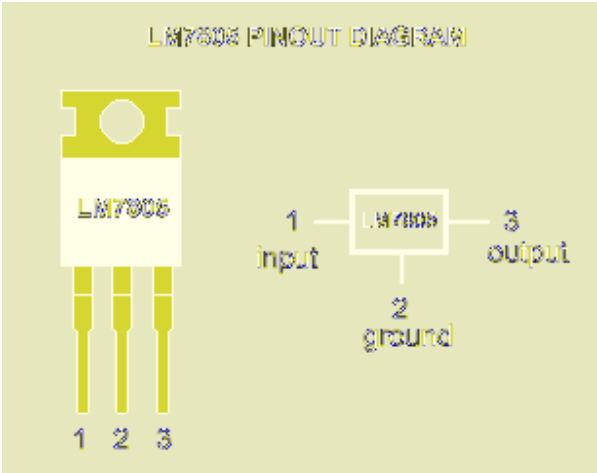


Figure 2.12.1 Voltage Regulator 7805

CHAPTER 3

SOFTWARE REQUIREMENTS

Compiler:-Keil Compiler

Language:-Embedded C

3.1 Introduction To Keil Micro-Vision (IDE)

Keil an ARM Company makes C compilers, macro assemblers, real-time kernels, debuggers, simulators, integrated environments, evaluation boards, and emulators for ARM7/ARM9/Cortex-M3, XC16x/C16x/ST10, 251, and 8051 MCU families.

Keil development tools for the 8051 Microcontroller Architecture support every level of software developer from the professional applications engineer to the student just learning about embedded software development. When starting a new project, simply select the microcontroller you use from the Device Database and the µVision IDE sets all compiler, assembler, linker, and memory options for you.

Keil is a cross compiler. So first we have to understand the concept of compilers and cross compilers. After then we shall learn how to work with keil.

3.2 CONCEPT OF COMPILER

The compiler derives its name from the way it works, looking at the entire piece of source code and collecting and reorganizing the instruction. See there is a bit little difference between compiler and an inCompilers are programs used to convert a High Level Language to object code. Desktop compilers produce an output object code for the underlying microprocessor, but not for other microprocessors. I.E the programs written in one of the HLL like ‘C’ will compile the code to run on the system for a particular processor like x86 (underlying microprocessor in the computer). For example compilers for Dos platform is different from the Compilers for Unix platform So if one wants to define a compiler then compiler is a program that translates source code into object code.

Interpreter just interprets whole program at a time while compiler analyses and execute each line of source code in succession, without looking at the entire program.
The advantage of interpreters is that they can execute a program immediately. Secondly programs produced by compilers run much faster than the same programs executed by an interpreter. However compilers require some time before an executable program emerges. Now as compilers translate source code into object code, which is unique for each type of computer, many compilers are available for the same language.

3.3 Embedded C

Use of embedded processors in passenger cars, mobile phones, medical equipment, aerospace systems and defense systems is widespread, and even everyday domestic appliances such as dish washers, televisions, washing machines and video recorders now include at least one such device. Because most embedded projects have severe cost constraints, they tend to use low-cost processors like the 8051 family of devices considered in this book. These popular chips have very limited resources available most such devices have around 256 bytes (not megabytes!) of RAM, and the available processor power is around 1000 times less than that of a desktop processor. As a result, developing embedded software presents significant new challenges, even for experienced desktop programmers. If you have some programming experience - in C, C++ or Java - then this book and its accompanying CD will help make your move to the embedded world as quick and painless as possible.

ADVANTAGES

- It works on automatic mode
- Can detect any object can avoid obstacle
- Due to use of IR modules higher range can be obtained
- Line of sight communication

CHAPTER 4

SOFTWARE DESCRIPTION

4.1 FLOW CHART

4.2 SOURCE CODE

```
    #include <REGX51.H>        // standard 8051 defines
    #include <stdio.h> // printf
// -=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=
    // -=-=-=-=-  Include files  -=-=-=-=-=-=-=-=
    // -=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=
sbit IR_SENSOR1=P0^0;
    sbit IR_
    sbit IR_SENSOR3=P0^2;
    sbit IR_
    sbit BUZZER=P1^3;
    sbit relay1=P3^0;
    sbit relay2=      ;
    sbit relay3=P3^2;
    sbit relay4=P3^3;
    // -=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=
    // -=-=-=-=-  Main Program    -=-=-=-=-=-=-=-=
    // -=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=
    void main()
    {
relay1 = 0;
```

```
        relay2 = 0;
        relay3 = 0;
        relay4 = 0;
        BUZZER = 0;
        lcdInit();
// -=-=- Welcome LCD Message -=-=-=
        lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"

        lcdPrint("ENERGY SAVER");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("SYSTEM");
        delayms(5000); // 5 sec
        lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("A.I.K.T.C.");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("YEAR 2015-16");
        delayms(5000); // 5 sec

        // -=-=- Program Loop -=-=-=
        while(1)
        {
        if(IR_SENSOR1==0) // active low
        {
//      BUZZER = 1;
        lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"
```

```
        lcdPrint("LIGHTS ON");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("-------");
        relay1 = 1;
        relay2 = 1;

        delayms(100); //ms delay
}

        else if(IR_SENSOR2==0) // active low
        {
relay3 = 1;
        relay4 = 1;
BUZZER = 0;
        lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("LIGHTS ON");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("--------");
        delayms(100); //ms delay
} else if (IR_SENSOR3==1) // active low
        {
lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("LOW LIGHT DET.");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("LIGHTS ON");
        relay1 = 0;
```

```
        relay2 = 1;
        relay3 = 0;
        relay4 = 1;
delayms(100); //ms delay
        }
        //----------
} else if  (IR_SENSOR4==0) // active low
        {


        //        BUZZER = 1;
        lcdClear();
        lcdGotoXY(0,0);         // 1st Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("all relay");
        lcdGotoXY(0,1);         // 2nd Line of LCD
        //      "xxxxxxxxxxxxxxxx"
        lcdPrint("ON");
        relay1 = 1;
        relay2 = 1;
        relay3 = 1;
        relay4 = 1;
delayms(1000); //ms delay
}
else
{
        relay1 = 0;
        relay2 = 0;
        relay3 = 0;
        relay4 = 0;
        BUZZER = 0;
        lcdClear();
        //      "xxxxxxxxxxxxxxxx"
```

```
        lcdPrint("WAITING DATA");
        delayms(1000);
}
}
}
```

CHAPTER 5

CONCLUSION

Power Saver For Industrial And Commercial Establishment is not limited for any particular application, it can be used any where in a process industries with little modifications in software coding according to the requirements. This concept not only ensures that our work will be usable in the future but also provides the flexibility to adapt and extend, as needs change.

In this project work we have studied and implemented a complete working model using a PIC micro-controller. The programming and interfering of PIC micro-controller has been mastered during the implementation. This work includes the study of energy saving system in many applications.It helps in reducing the electricity bills.

CHAPTER 6

FUTURE SCOPE

We except that our next generation will develop this energy saving system with wire less network.

In our project we connected all the sensors to micro controller with the wires. This can be developed with wire less such that we can place different sensors in different places. This sensor will activate the micro controller with the signals instead of using wires.

This system can also be applicable to various loads like pressure, force and etc. by increasing the number of ports of the micro controller.

CHAPTER 7

COMPONENT LIST

8.1 Receiver Board

- R1, 4, 5 - 470E [yellow, violet, brown]
- R2, 3 - 6K8 [blue, gray, red]
- R6 - 47K [yellow, violet, orange]
- C1 - 47UF / 16V ELECTROLYTIC
- C2 - 100UF / 16V
- C3, 4 - 10UF / 16V
- C5 - 1UF / 16V
- D1, 2 - IN4007 DIODE
- D3 - 5.1V ZENER DIODE
- D4 - 5 mm RED LED
- D5, 6 - IN4148 DIODE
- U1 - IR RECEIVER MODULE
- Q1 - BC557 - PNP TRANSISTOR
- Q2 - BC547 – NPN TRANSISTOR
- RL1 - 12V / 1CO PCB MOUNT RELAY
- J1 - PCB MOUNT DC JACK

- J2 - PCB MOUNT POWER CONNECTOR

8.2 Transmitter Board

- R1, 6 - 47K [yellow, violet, orange]
- R2 - 22E [red, red, black]
- R3 - 1K [brown, black, red]
- R4 - 6K8 [blue, gray, red]
- R5 - 1K8 [brown, gray, red]
- C1 - 47UF / 25V ELECTROLYTIC
- C2 - 0.1UF DISC (100nf / 104)
- C3 - 0.001UF DISC (1nf / 102)
- D1 - 5.1V / ½ W ZENER DIODE
- D2 - IN4007 DIODE
- D3 - 5mm IR LED
- U1 - CD4093 CMOS IC
- Q1 - BC557 PNP TRANSISTOR
- J2 - PCB MOUNT DC JACK
- 1nos - 14 PIN IC SOCKET
- SENSOR: 1250
- MICROCONTROLLER – 90
- RELAY = 20
- LCD DISPLAY = 200
- COPPER CLAD = 100
- Miscellaneous = 1000

CHAPTER 8

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