Intelligent Illumination Control for Larger Lighting Area

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Abstract- *For lighting larger areas bulk amount of lighting fixtures are installed. Their brightness are fixed and cannot be varied. It produces over-illumination which causes glare effect. Our project uses photo-sensors which senses the level of light and determines the exact value of illumination required. According to the intensity required, the lamp brightness is controlled. Microcontroller sends the pulses for the illumination control unit to vary the brightness or the turn on or off the lighting system. This provides a huge application for design work and industrial places. Also the intelligent power control system is equipment with the circuit.*

Keywords- LED, Photo sensors, Microcontrollers, illumination, ADC

I. INTRODUCTION

In recent years , people have been concerned about Green IT and how It relates to environmental pollution and the regulation of carbon emissions as well as with the energy crisis. Although, in the past, Green IT had focused on decreasing hazardous substances and curtailing the use of obsolete electronic devices, nowadays Green IT has changed its direction to the management of efficient energy usage and decreased power consumption. Therefore, many studies for efficient power reduction have been done in various fields. Because they are a kind of electronic devices, it is possible to control them in various ways to save on power consumption Through their passive advantage substitution of existing fluorescent lights. However, due to their architectural limitations, the recent systems are not flexible with respect to LED light control for power reduction. We need to consider efficient autonomous power control based on intelligent device and the power-aware service prediction in networked environments. In this project, we propose a power-aware LED light enabler with light sensor, motion sensor and network interfaces. However, this approach is in efficient and consumes more energy. However, these lights are often very big and expensive since they are comprised of a number of low-power LEDs.

II. BLOCK DIAGRAM

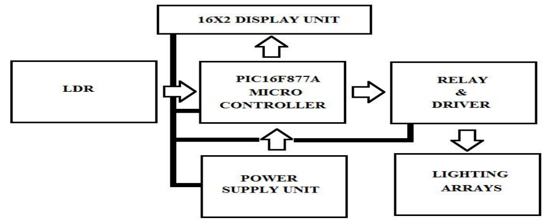

Figure 1. Block diagram of the system

III. CIRCUIT DIAGRAM

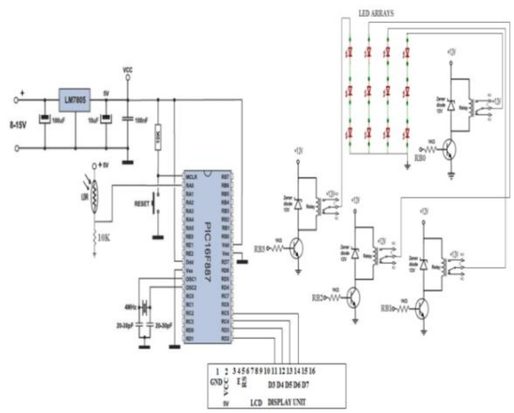

Figure 2. Circuit diagram of the system

The resistance value of the LDR is varied accordance with their input of the incident light. The output of the LDR is applied to the ADC input of the PIC16F877A microcontroller. The PORT A of the controller act as a ADC port which is used to converts the analog signal into digital signal. The predesigned program in the controller can executes the light intensity calculation when it receives the digital value from port conversion. The calculated values are compared with reference value stored in controller memory. According to the comparison the relays are activated by the controller through PORT B. The calculated light intensity information's are displayed on LCD unit. The power supply unit is used to supplies the +5V and +12V to all the units.

Parts of power supply

A block diagram of the power supply system which converts a 230V AC mains supply into a regulated DC power supply of 5V

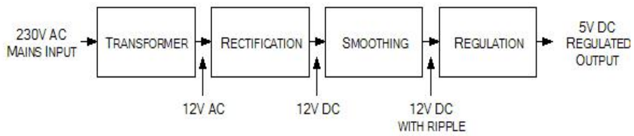

Figure 3. Block diagram of power supply unit

The transformer used here is the step-down transformer which converts 230v AC into 12v AC.A full wave bridge rectifier made around the diodes converts the ac supply into a pulsating dc supply. The bridge consists of four IN4001 of silicon diodes which are capable of delivering power up to 1 amps. The ripple content in the rectifier output smoothened by adding a capacitor filter in the parallel to output. The value of a capacitor may be from 100 to 4700 microfarads. Higher then chosen value more is the filtering. The 12v dc is regulated to 5v dc using a 3-terminal series passes regulator with the input pin (pin1) to output rectifier, output pin (pin3) to the supply output. The common pin (pin2) it is connected to the supply ground. The output of the regulator will be 5volts

III. METHODOLOGY

LCD interfacing with Microcontrollers tutorial - 4-bit Mode:

It actually depends on the LCD module you are using. if you feel any problem running the LCD(liquid crystal display), simply try to increase in the delay. It is usually works For me about 400uS works perfect.

- LCD connections in 4-bit Modes

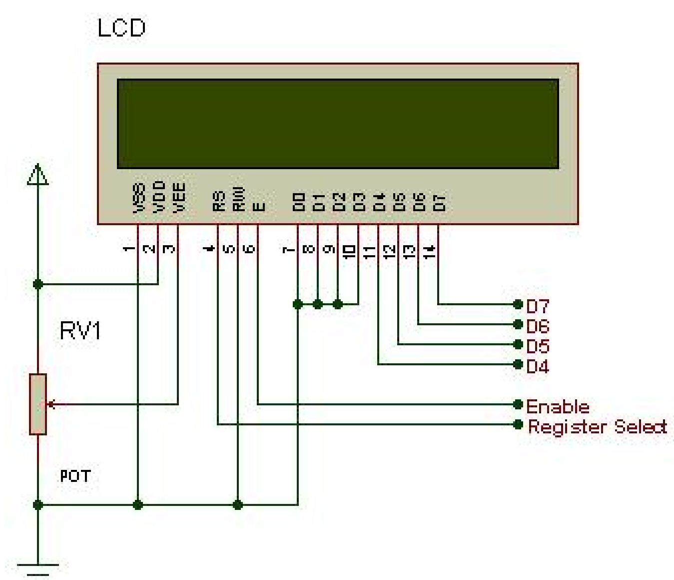

Figure 4. LCD connections in 4-bit Mode

Figure 5. Environment shown 1

Figure 6. illumination has shown 2.

IV. APPLICATIONS

Photo resistors come in many different types. Inexpensive cadmium sulphiede cells can be found in many consumer items such as camera light meters, street lights, clock radios, alarm devices, outdoor Clock, solar, street lamps and solar road studs etc. They are also used in some dynamic compressors together with a small incandescent lamp or light emitting diode in to control gain reduction and are also used in bed lamps etc .Lead sulphide (PbS) and indium antimonide (InSb) LDRs (light dependent resistor) are used for the mid infrared The spectral region . Ge: Cu photo conductors are among the best far-infrared detectors available, and are used for infrared astronomy and infrared spectroscopy.

V. CONCLUSION

The system is one of the cost-effective lighting solution. The strong feature of the SYSTEM is flexibility, expandability, robustness and compatibility. The SYSTEM makes the ease integration of lighting control and sensors into different types of modules that is input module and light module. Not just effective on controlling lightings, SYSTEM works well in most of the abnormal condition. Polling for the detection of module failure and power up device action allow the smoothness of the operation of the whole system. The implementations of SYSTEM on different kind of illustrated problem had well proven that SYSTEM is one of the effective lighting solutions with the prototype constructed for the purposes of proof of concept. requires the nodes to send the data to the central control. The intelligent lighting implementation presented in our on a small scale with a central controller can be further extended for a paper. The proposed approach though tested The intelligent lighting implementation presented in a small scales with a central controller can be further extended for a large scale implementation using the distributed architecture presented in.

Simultaneously optimizing user comfort and reducing energy usage building automation is of enormous the economic importance. Implementing an effective control strategy poses a complex optimization problem. In this paper, we presented a decision theoretic formalization of this optimization problem, and provided efficient algorithms for optimally trading off these two main conflicting goals. Our algorithms presented in Section 2 utilize building structure for efficient and effective coordinated illumination. We have presented design requirements, system architecture, and implementation of the Illuminator. It is an intelligent light control system for entertainment and media production Using WSN. We used the Illuminated, a multimodal and high fidelity light sensor module designed for the Mica family, to satisfy the high-performance light sensing requirement.

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