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Remotely Controllable Regulator for Line-Loads

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ABSTRACT

Daily used consumer electrical equipment such as Ceiling fans, Televisions, DVD players, Computers and etc. are controlled by many methods, but the wireless remote controlling systems extricate the inconvenience of controlling them manually, and IR remote controlling system is a very popular method among them. Resistive and inductive type loads driven by AC power are usually controlled manually using various techniques. An inexpensive IR remote and sensing circuitry with a controller system have been designed which enables the user to control both the level and the period of power supplied to the load as an alternate for commercially available expensive similar systems. Communication between the IR remote and the sensor is performed according to Series Infrared Controller (SIRC) protocol which is used in many commercially available IR remotes. The power supplied to the load is controlled by using a Triac. Since the time is considered for triggering, the conducting cycle of the Triac can be controlled to be within 0^o to 180^o. A seven segment display unit was also included to the design to indicate the supplied power Level and the turning OFF time of the load. PICmicro® 12F683 and 18F2550 microcontrollers were used to control the operation of the designed system.

Keywords: *Component; IR; SIRC; Remote; Control; PIC*

1.0 INTRODUCTION

Ceiling fans and incandescent light bulb are commonly found inductive and resistive type loads which are used in almost every house and industry nowadays and there are methods to control their operation manually using many ways.

Remote controlling systems were introduced to control electrical and electronic equipment's which people deal with day to day life since it is very convenient and allow the user to control the equipment from a distance. Remote controlling systems use many media to communicate between the remote and the device and use of Infrared (IR) light is one of the easy and inexpensive way of performing it.

The main task of this work is to design an inexpensive IR remote controlling system to control the power supplied to a line-load.

This design contains an IR remote, voltage regulator with IR sensor and a seven segment display unit to indicate the supplied power level and the sleep time of the connected resistive or inductive load.