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TV Remote Controlled In Home Appliance Using 8051 Microprocessor

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ABSTRACT:
We operate all the electrical and electronic appliance such as light, fan, motor etc through switches of the regular switch board. This manual switching of any home appliance is very hard method for those people who are physically disabled. So, this manual switching helps them to operate all home appliances using single TV remote. This project has integration of TV remote technology and embedded system. . User has to use an application on his Home appliance to control those devices. Then he/she can give command using the buttons on that TV remote. For this you have to turn on the IR of your remote, so the main wireless controlling technique used in this project is IR technology. IR receiver will be connected to the project. This microcontroller device is connected to the circuit which has a decoder. It sends out a code for respective command sent by user. Then the respective device connected to the circuit will be turned on or off depending on the command given. For example: Turn on motor, Turn off motor, Turn on buzzer etc. Such that by giving commands from TV remote you can control home appliances.

KEYWORDS: Power Supply (5 volt) using USB , microcontroller PIC16f874A/877A, IC-TSOAP1738,Micro C PRO for pic , Proteus design Suit, PICKIT3 v3.10

INTRODUCTION:

This project is designed to use of controlling home appliance using 8051 microprocessor. The program on the microcontroller serially communicates with TV remote to generate respective output based on the input data to operate a set of relay through a relay driver IC. In the receiver section, IR and relay board are interfaced with microcontroller. IR is an open standard specification for a Infrared frequency based short communication.

There are number of home appliance control system are proposed. Each one has featured some new parameters and usability. It has been shown that various devices can be controlled without the change of the core of system but it cannot be implemented in the IR technology. The proposed appliance control mechanism that has been designed is mainly based upon the IR service of the TV remote device in which the application would be installed. The TV remote platform includes support for a IR network stack, which allows a device to wirelessly exchange data with other IR device, just as we need to send particular data values to the appliances remotely. The application framework provides access to the Infrared remote functionality through the Television remote.

PROJECT PLAN:

IC-TSOAP1738: The TSOP 1738 is a member of IR remote control receiver series. This IR sensor module consists of a PIN diode and a pre amplifier which are embedded into a single package. The output of TSOP is active low and it gives +5V in off state. When IR waves, from a source, with a centre frequency of 38 kHz incident on it, its output goes low. Lights coming from sunlight, fluorescent lamps etc. may cause disturbance to it and result in undesirable output even when the source is not transmitting IR signals. A band pass filter, an integrator stage and an automatic gain control are used to suppress such disturbances .TSOP module has an inbuilt control circuit for amplifying the coded pulses from the IR transmitter. A signal is generated when PIN photodiode receives the signals. This input signal is received by an automatic gain control (AGC). For a range of inputs, the output is fed back to AGC in order to adjust the gain to a suitable level. The signal from AGC is passed to a band pass filter to filter undesired

frequencies. After this, the signal goes to a demodulator and this demodulated output drives an npn transistor. The collector output of the transistor is obtained at pin 3 of TSOP module .Members of TSOP17xx series are sensitive to different centre frequencies of the IR spectrum. For example TSOP1738 is sensitive to 38 kHz whereas TSOP1740 to 40 kHz centre frequency. The 40 pins make it easier to use the peripherals as the functions are spread out over the pins. This makes it easier to decide what external devices to attach without worrying too much if there are enough pins to do the job.

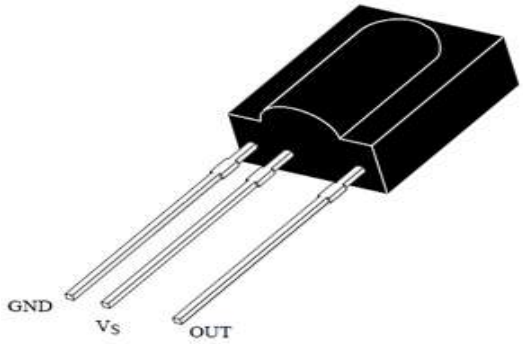

Fig 1:

One of the main advantages is that each pin is only shared between two or three functions so its easier to decide what the pin function (other devices have up to 5 functions for a pin).

MICROCONTROLLER PIN DIAGRAM:

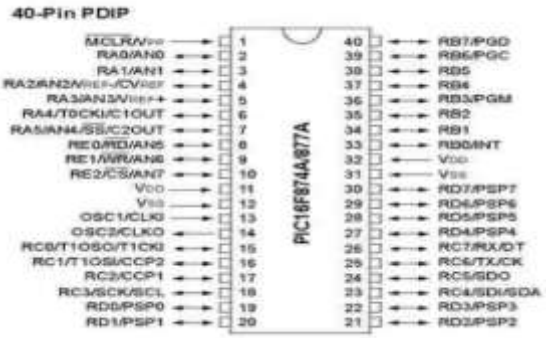

Fig 2:

According to protocol break out the message in 0 and 1.After that compare the message with the button .After identify, Microcontroller will send key number serially to the system.

Micro C PRO for PIC

Micro C PRO for PIC is a full-featured *ANSI C compiler for PIC* devices from Microchip®. It is the best solution for developing code for PIC devices. It features intuitive IDE, powerful compiler with *advance optimizations*, lots of hardware and software libraries, and additional tools that will help you in your work. Compiler comes with comprehensive Help file and lots of ready-to-use examples designed to get you started in no time. Compiler license includes free upgrades and a product lifetime tech support, so you can rely on our help while developing.

Proteus Design Suit:

It is used for design circuit, simulation design, PCB (printed circuit board design). Proteus Platinum provides the complete Electronic Design Solution for the modern engineer. Including Complete Design Cycle with the Proteus Design Suite

PICKIT3 V3.10 (PROGRAMMER SOFTWARE):

PIC kit is a family of programmers for PIC microcontrollers made by Microchip Technology. They are used to program and debug microcontrollers, as well as program EEPROM.

WORKING:

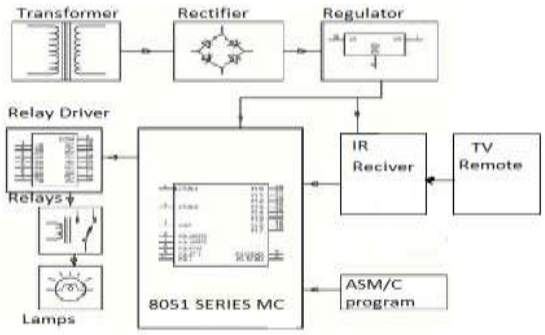

Fig 3:

The block diagram of the IR remote control for home appliances is shown in the figure that consists of the power supply block with transformer, rectifier, and regulator. Relays that are interfaced to the 8051 Microcontroller using relay driver, IR receiver which is also interfaced to the microcontroller TV remote or IR remote is used for controlling all the home appliances remotely, which are represented as lamps Connected to the relays

The power supply block converts the 230V into 5V DC for providing the required 5V DC supply to the Microcontroller circuit the user can assign the TV remote buttons for each home appliance and thus Whenever the particular button is pressed, then the coded infrared data is transmitted to the receiver circuit. This coded data is decoded at the IR receiver circuit and the signal is fed to the microcontroller. After receiving the appropriate signal, the microcontroller sends the command signal to the particular relay to turn on or turn off the specific home appliance. Thus, we can control all the home appliances using the TV remote control.is the weight of vehicle.

CONCLUSION AND FUTURE ASPECTS:

In the coming days, as demand of single control is increasing every moment, it will prove a great boon to the world, since it will save a lot of manual work and time which is useful for disable people. Future aim of this research is to develop our country by enriching it in utilizing its sources in more useful manner. Because it helps to save electricity using one remote to control any home appliance. Any country can only develop when it uses electricity for actual time. Now times comes when these types of innovative ideas should be brought into practice. At least, by this idea we should start to think something about to save electricity.

This project can also be modified by using Bluetooth technology on android phone. Which help to increase the area of controlling home appliance?

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