Pc Controlled Multichannel Timer Schedular

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This paper aims to acknowledge the importance of the multichannel timer scheduler in the coming years andalso proposes a novel method of to develop such a system which will be able to program the respective process-switching sequence.Thus this paper not only aims to contribute to the "PC based Wireless controlling of multichannel timer   scheduler but also utilizes Embedded technology and wireless communication to minimize the complications of multichannel controlling through manual methods".

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Strictly as per the compliance and regulations of:

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I. INTRODUCTION

Phenomenal growth of Wireless technology has led to the suggestions that PC will find its way into the industries. The above mentioned technologies have played an important role in making world closure in this scenario since they permit easy and power saving deployment. The latest application of these technologies is to enable humans to control multichannel processes in industries to our own comfort. In any manufacturing process there are lots of valves & different types of Relay controlled which has to be continuously ON-OFF depending upon requirement of production. We are going to develop such a system which will be able to program the respective process-switching sequence. User will be able to reprogram the time sequence of each valve operation. We will be implementing SCADA Supervisory control & data acquisition.A computer system for gathering & analyzing real time data. SCADA systems are used to monitor and control equipment in industries. Imagine the convenience, if we could control different devices at home/industry by using a single PC. Our project aims at the same and could be used to control the printer power, loads & other household electrical appliances

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Our project is wireless technology based low cost, compact module which will basically have two units:-

➢ One Transmitter unit for sending control code.
➢ And one receiver for accepting the code.

Thus the complete system becomes customized industrial process manager.

II. PROBLEM DEFINATION

In industries and factories we see that machines with controllers and control panel have to be under the supervision of a technical personnel and its mandatory for him to be present at the site of the machine all the time so that he can manually has access to control panel (in order to modify the parameters). This leads to his unavailability for some other work and also unnecessary loss of valuable time for him. Even controlling home appliances like heaters, security systems etc. From remote would add a greater degree of convenience to the user. For this we came up with this project so that the above stated problems can be successfully overcome as the machines and appliances can be controlled while being on a terminal.

III. LITERATURE SURVEY

The solution to above-mentioned problem can be achieved in following ways:-

➢ The device which has to be controlled is connected to the relays which can be set ON/OFF by just clicking on a PC. On this the computer will generate a code through the serial port and is available at the transmitter system.
➢ For controlling multiple devices wireless Rf transmitters & receiver can be circuited Due to this wireless technology the user can control the multiple devices by using a controller and personal computer to control an appliance by sending a control word using transmitter placed in the remote location and a receiver to enable receiving action.
➢ Due to the micro controller technology based system, we can program a timer to ON/OFF any devices for a particular amount of time.
➢ One more method exits in which we can use a remote control to control the device by just pressing the remote for ON/OFF via PC.

> One more efficient way of controlling is by using a micro controller and personal computer to control an appliance by sending a control word using transmitter placed in the remote location and a receiver to enable receiving action.

> The main advantage of the system is that it will be compact, portable, and reliable and efficient. Thus due to above advantages we have chosen this method for our project.

IV. PROPOSED SYSTEM

a) System design

The module consists of a micro controller and Personal Computer. They are interface by wireless communication .The PIC is interfaced with the relay unit through its ports which can later be connected to multichannel process to be controlled
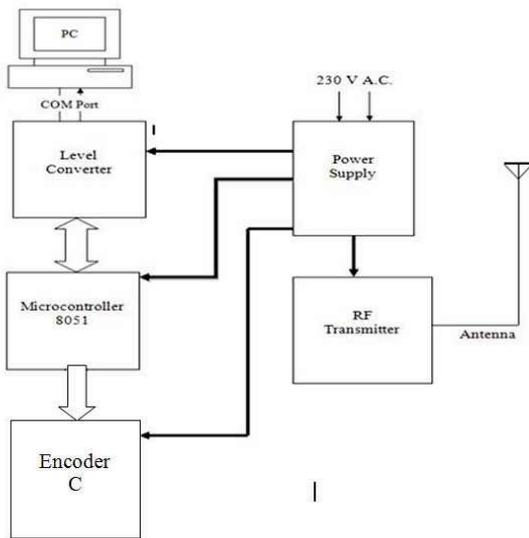
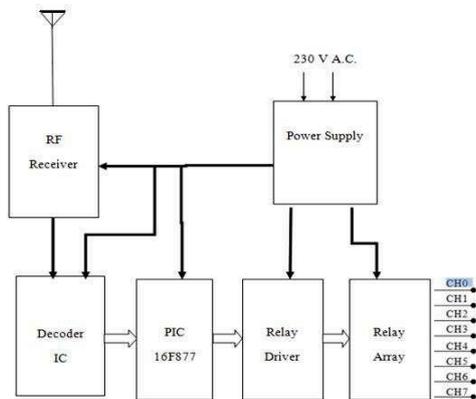Figure- I: Block Diagram of transmitter section

Figure-II : Block Diagram of receiver section

The proposed block diagram of our project consisting of the transmitter board (for sending) and receiver board is as shown above The following are the brief explanation of the working principle of the various major block or sections used in the system:

Power Supply

This unit will supply the various voltage requirements of each unit. This will be consisting of transformer, rectifier, filter & regulator. The rectifier used here is bridge rectifier. It will convert 230VAC into desired 5V/12V DC.

MAX 232

This section will be used to convert TTL logic into RS232 logic and vice-versa. IN TTL---logic 1 is +5V and logic 0 is 0V. In RS232---logic 1 is -10V & logic 0 is +10V. This unit will provide interface that is required to communicate microcontroller with RS232 based devices using serial communication link. The MAX232 IC is dedicated for the logic conversion. This unit is also called as a logic converter or a level converter. This unit requires +_5V DC for its proper operation.

Microcontroller

This unit is controlling the actions of the transmitter side of the transmitter module. It is responsible for. It receives the serial data from the RS 232 unit and converts it into parallel data. This software code is responsible for ON-OFF action of appliances which has been selected by the user. The controller here will be 8051 family. The code will written in C language and will burn the program into the code memory using a programmer. This unit requires +5V dc supply.

Encoder

The 212 encoders are a series of CMOS LSIs for remote control system applications. They are capable of encoding information which consists of N address bits and 12_N data bits. Each address/ data input can be set to one of the two logic states. The programmed addresses/data are transmitted together with the header bits via an RF or an infrared transmission medium upon receipt of a trigger signal. The capability to select a TE trigger on the HT12E or a DATA trigger on the HT12A further enhances the application flexibility of the 212 series of encoders.

Decoder

The 212 decoders are a series of CMOS LSIs for remote control system applications. They are paired with Holtek_s 212 series of encoders (refer to the encoder/decoder cross reference table). For proper operation, a pair of encoder/decoder with the same number of addresses and data format should be chosen. The decoders receive serial addresses and

data from a programmed 212 series of encoders that are transmitted by a carrier using an RF or an IR transmission medium. They compare the serial input data three times continuously with their local addresses. If no error or unmatched codes are found, the input data codes are decoded and then transferred to the output pins. The VT pin also goes high to indicate a valid transmission. The 212 series of decoders are capable of decoding information's that consist of N bits of address and 12_N bits of data. of this series, the HT12D is arranged to provide 8 address bits and 4 data bits, and HT12F is used to decode 12 bits of address information.

PIC

PIC decodes the code Microcontroller has a set of ready codes, which are there at the transmitter side also. For a particular received code, microcontroller sets a particular port's pin or resets it if device is to be switched off. Relay driver drives the relay. It functions as a switch. Relay works on electromagnetic principle. Thus whenever a '1' comes from the microcontroller, relay driver connects VCC across the relay and the device which has been connected across the relay turns on

Decoder

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Relays

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 they are double throw (changeover) switches. These relays are used since they are small in size and are capable of handling highvoltages. 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.

V. DEVELOPMENT TOOLS

Keil (μVision 2)

The Keil C51 Cross Compiler is an ANSI C Compiler that is written specifically to generate fast, compact code for the 8051 microcontroller family. The C51 Compiler generates object code that matches the efficiency and speed of assembly programming.

Introduction to Visual Basic

Welcome to Microsoft Visual Basic, the fastest and easiest way to create applications for Microsoft Windows® .Whether you are an experienced professional or brand new to Windows programming, Visual Basic provides you with a complete set of tools to simplify rapid application development.

The Visual Basic programming language is not unique to Visual Basic. The Visual Basic programming system, Applications Edition included in Microsoft Excel, Microsoft Access, and many other Windows applications uses the same language. The Visual Basic Scripting Edition (VBScript) is a widely used scripting language and a subset of the Visual Basic language. The investment you make in learning Visual Basic will carry over to these other areas. Whether your goal is to create a small utility for yourself or your work group, a large enterprise-wide system, or even distributed applications spanning the globe via the Internet, Visual Basic has the tools you need.

Eagle(Easily Applicable Graphical Layout Editor)

The EAGLE is an editor, which is easy-to-use, yet powerful tool for designing printed circuit boards (PCBs). It is a complete platform for the development of any type of complicated & sophisticated multilayered PCBs.

Mikrol CCS PIC programming
Customer Computer Services (CCS) compiler ports the Microchip PIC12x, PIC16x, PIC18x, and dsPIC superset of ANSI C to work with embedded micros, such as fuse and interrupt level support. CCSLOAD features a Windows user interface with extensive diagnostics, serialization, and security options as well as a command line interface that will run on Linux and Window's platforms

VI. FUTURE SCOPE

The latest application of these technologies is to enable humans to control multichannel process to their own comfort. Uses the latest technology of wireless communication. It can be used basically as a timer scheduler to schedule the sequence of various processes through automation easing manual operation.

Enables humans to control multichannel process to their own comfort. Uses the latest technology of wireless communication. To control a plant or equipment in industries such as:

- Telecommunications, water and waste control, energy, oil, gas refining & transportation.
- Computer systems that control industrial processes.
- Gas refining & transportation.
- Manufacturing.
- Production, power generation, fabrication & refining.
- Infrastructures processes and include water treatment and distribution, waste water collection.
- Oil and gas pipelines
- Electrical power transmission and distribution, Wind Farms
- Large communication systems.
- Facility processes occur both in public facilities and private ones, including buildings, airports, ships, and space stations.

VII. RESULT

The PC serial port is a powerful platform for implementing projects dealing with the control of real-world peripherals. This port can be used to control the printer as also household and other electrical appliances.The computer program through the interface circuit controls the relays, which, in turn, switch the appliances on or off.

- By clicking on the available options on the control screen of the personal computer to on or off a particular device, a code is generated. The time interval and the modes are selected by the user.
- Initially we have to select the port.
- As soon as we select the right port following message is displayed.
- The reset all options resets all the options selected by the user

There are three modes
Manual mode

In manual mode the user can control the ON/OFF action of channels by simply clicking on the option available. When OFF action is selected green signal is indicated on the channel. When ON action is selected red signal is indicated on the channel

Automatic Mode

In this mode the user can set the time in the hr: min: sec format the clock must be 12 hr format. At the selected time the particular channel selected will be automatically ON or OFF as desired. For example: At 6:10 AM channel 0 will be ON and at 6:20:10 AM it will become OFF

Timer mode

In this mode the particular channel will be ON or OFF for the particular time interval specified by the buser. For example as selected by the user every 10 sec the channel 0 will be ON and for every 20 sec it will remain OFF. This entire ON/OFF action will keep on repeating.

- This code then generates through the serial port and is then available at the input of level shifter.
- Level shifter converts the code, which is in RS-232 logic in to TTL logic because the rest of the circuit works on TTL logic. The code is then given to microcontroller.
- The code is then given of microcontroller 89C51 which converts serial data to parallel data. The code is then given Rf transmitter.
- RF transmitter where the code is digitally modulated using ASK with the carrier frequency of 434MHZ.The ASK modulated signal is then transmitted using a whip antenna. The ASK modulated code then arrives at the receiving whip antenna. It is then given to RF receiver, receiver then demodulates the ASK modulated code so that the original binary code is available at the input of PIC.

PIC decodes the code Microcontroller has a set of ready codes, which are there at the transmitter side also. For a particular received code, microcontroller sets a particular port's pin or resets it if device is to be switched off. Relay driver drives the relay. It functions as a switch. Relay works on electromagnetic principle. Thus whenever a '1' comes from the microcontroller, relay driver connects VCC across the relay and the device which has been connected across the relay turns on.

VIII. CONCLUSION

After analyzing all the aspects covered in PIC, SCADA & wireless technology we have intensions of making a working module. The project will control the various multichannel processes in industry. This will help to reduce manpower. The wireless technology will make the controlling process with ease. Hence it will be a great advantage for the industries.

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