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2 Madhurya mudiar

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5 **Abstract**

6 Looking at today's scenario throughout the world we get to see how fast paced our life has
7 become and time is the most valuable thing. Communication media have played an important
8 role in bringing the world closer. The system deals with customized industrial process manager
9 at the vicinity of personal computer. For this we are using one of the most widely available
10 technologies namely wireless communication. In any manufacturing process there are lots of
11 valves & different types of Relay controlled which has to be continuously ON-OFF at regular
12 intervals depending upon requirement of production. This paper aims to acknowledge the
13 importance of the multichannel timer scheduler in the coming years and also proposes a novel
14 method of to develop such a system which will be able to program the respective
15 process-switching sequence. Thus this paper not only aims to contribute to the "PC based
16 Wireless controlling of multichannel timer scheduler but also utilizes Embedded technology
17 and wireless communication to minimize the complications of multichannel controlling
18 through manual methods".

19

20 *Index terms*— Communication, technologies, intervals21 **1 Pc Controlled Multichannel Timer Scheduler Madhurya Mu-**
22 **diar**

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31 process-switching sequence. Thus this paper not only aims to contribute to the "PC based Wireless controlling of
32 multichannel timer scheduler but also utilizes Embedded technology and wireless communication to minimize the
33 complications of multichannel controlling through manual methods". phenomenal growth of Wireless technology
34 has led to the suggestions that PC will find its way into the industries. The above mentioned technologies
35 have played an important role in making world closure in this scenario since they permit easy and power saving
36 deployment. The latest application of these technologies is to enable humans to control multichannel processes
37 in industries to our own comfort. In any manufacturing process there are lots of valves & different types of Relay
38 controlled which has to be continuously ON-OFF depending upon requirement of production. We are going to
39 develop such a system which will be able to program the respective process-switching sequence. User will be able
40 to reprogram the time sequence of each valve operation. We will be implementing SCADA Supervisory control
41 & data acquisition. A computer system for gathering & analyzing real time data. SCADA systems are used to
42 monitor and control equipment in industries. Imagine the convenience, if we could control different devices at
43 home/industry by using a single PC. Our project aims at the same and could be used to control the printer
44 power, loads & other household electrical appliances Author: Department of Electronics and Telecommunication
45 Engineering SIGCOE, Mumbai University. Navi Mumbai, India.

46 Our project is wireless technology based low cost, compact module which will basically have two units:-One
47 Transmitter unit for sending control code. And one receiver for accepting the code. Thus the complete system
48 becomes customized industrial process manager.

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

57 The device which has to be controlled is connected to the relays which can be set ON/OFF by just clicking
58 on a PC. On this the computer will generate a code through the serial port and is available at the transmitter
59 system. For controlling multiple devices wireless Rf transmitters & receiver can be circuited Due to this wireless
60 technology the user can control the multiple devices by using a controller and personal computer to control an
61 appliance by sending a control word using transmitter placed in the remote location and a receiver to enable
62 receiving action. Due to the micro controller technology based system, we can program a timer to ON/OFF any
63 devices for a particular amount of time. One more method exists in which we can use a remote control to control
64 the device by just pressing the remote for ON/OFF via PC. One more efficient way of controlling is by using
65 a micro controller and personal computer to control an appliance by sending a control word using transmitter
66 placed in the remote location and a receiver to enable receiving action. The main advantage of the system is
67 that it will be compact, portable, and reliable and efficient. Thus due to above advantages we have chosen this
68 method for our project.

69 2 a) System design

70 The module consists of a micro controller and Personal Computer. They are interface by wireless communication
71 .The PIC is interfaced with the relay unit through its ports which can later be connected to multichannel process
72 to be controlled

73 The proposed block diagram of our project consisting of the transmitter board (for sending) and receiver board
74 is as shown above The following are the brief explanation of the working principle of the various major block or
75 sections used in the system: P Power Supply This unit will supply the various voltage requirements of each unit.
76 This will be consisting of transformer, rectifier, filter & regulator. The rectifier used here is bridge rectifier. It
77 will convert 230VAC into desired 5V/12V DC.

78 3 MAX 232

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

84 4 Microcontroller

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

90 5 Encoder

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

97 6 Decoder

98 The 212 decoders are a series of CMOS LSIs for remote control system applications. They are paired with
99 Holtek_s 212 series of encoders (refer to the encoder/decoder cross reference table). For proper operation, a
100 pair of encoder/decoder with the same number of addresses and data format should be chosen. The decoders
101 receive serial addresses and If no error or unmatched codes are found, the input data codes are decoded and then

102 transferred to the output pins. The VT pin also goes high to indicate a valid transmission. The 212 series of
103 decoders are capable of decoding information's that consist of N bits of address and 12_N bits of data. of this
104 series, the HT12D is arranged to provide 8 address bits and 4 data bits, and HT12F is used to decode 12 bits of
105 address information.

106 **7 P PIC**

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

112 **8 Decoder**

113 The 212 decoders are a series of CMOS LSIs for remote control system applications. They are paired with
114 Holtek_s 212 series of encoders (refer to the encoder/decoder cross reference table). For proper operation, a pair
115 of encoder/decoder with the same number of addresses and data format should be chosen. The decoders receive
116 serial addresses and data from a programmed 212 series of encoders that are transmitted by a carrier using an
117 RF or an IR transmission medium. They compare the serial input data three times continuously with their local
118 addresses. If no error or unmatched codes are found, the input data codes are decoded and then transferred to
119 the output pins. The VT

120 **9 Relays**

121 A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field,
122 which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two
123 switch positions and they are double throw (changeover) switches. These relays are used since they are small in
124 size and are capable of handling highvoltages. Relays are usually SPDT or DPDT but they can have many more
125 sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available.

126 **10 Keil (?Vision 2)**

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

130 **11 Introduction to Visual Basic**

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

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

140 **12 Eagle(Easily Applicable Graphical Layout Editor)**

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

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

147 The latest application of these technologies is to enable humans to control multichannel process to their own
148 comfort. Uses the latest technology of wireless communication. It can be used basically as a timer scheduler to
149 schedule the sequence of various processes through automation easing manual operation. ? Facility processes
150 occur both in public facilities and private ones, including buildings, airports, ships, and space stations.

151 **13 Global Journal of Researches in Engineering**

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

156 By clicking on the available options on the control screen of the personal computer to on or off a particular
157 device, a code is generated.

158 The time interval and the modes are selected by the user.

159 Initially we have to select the port.

160 As soon as we select the right port following message is displayed. The reset all options resets all the options
161 selected by the user There are three modes Manual mode In manual mode the user can control the ON/OFF
162 action of channels by simply clicking on the option available. When OFF action is selected green signal is
163 indicated on the channel. When ON action is selected red signal is indicated on the channel

164 14 Automatic Mode

165 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
166 time the particular channel selected will be automatically ON or OFF as desired. For example: At 6:10 AM
167 channel 0 will be ON and at 6:20:10 AM it will become OFF

168 15 Timer mode

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

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

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

185 After analyzing all the aspects covered in PIC, SCADA & wireless technology we have intensions of making
186 a working module. The project will control the various multichannel processes in industry. This will help to
187 reduce manpower. The wireless technology will make the controlling process with ease. Hence it will be a great
188 advantage for the industries. ¹

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Figure 1: Figure

I.

Figure 2: Volume

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