Design and implementation of a Bluetooth Controlled Digital Display

Ahmed AlHomrani, Ahmed Al-Hilal, Mohammed Al-Momin, Mustafa Al-Amer

King Fahd University of Petroleum & Minerals
جامعة الملك فهد للبترول و المعادن

ABSTRACT

- The project consists of design, implementation and testing of a Bluetooth controlled digital display. The project combines an engineering challenge in the fields of programing, communication, interfacing, and manufacturing.

- The main idea is to display a number that present for example the time of prayer, and changing the displayed time to the new one using Bluetooth

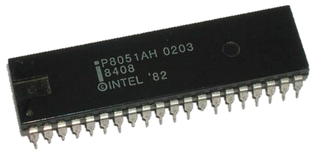
PROJECT DESCRIPTION

- The project is to display the time in hours and minutes with four seven-segment displays in a closed box. The displayed number can be changed wirelessly using Bluetooth with a password protection to limit the access to the display. The displays are connected to, and controlled by a microcontroller which is connected to a Bluetooth chipset. The Bluetooth chipset is for the interfacing with laptop (or Mobile) in the outside.

- To show the clock time we used the real time clock IC. Then, the microcontroller will compare the displayed time “iqama time” with the real time every minute. If they match the microcontroller will command the display to flash. This will allow the audience to realize that iqama time is now.

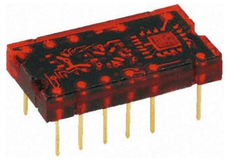
PROJECT COMPONENTS

- ***Microcontroller***
  - 80C51 8-bit microcontroller
  - Low voltage (2.7 V–5.5 V)
  - High speed (33 MHz)
  - I/O 32 pins

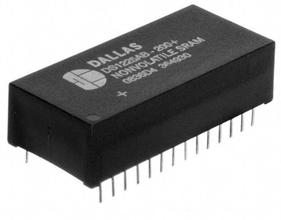


- ***Bluetooth Chipset***
  - Ezurio BISM-2 Bluetooth
  - Serial Interference:RS232
  - AT command based programming interface
  - Default baud Rate 9600, Data Bits 8, Stop Bits 1

- ***Digital Displays***
  - hex decoder display til311.
  - internal resistance. latching enable, blacking enable.
  - input binary number.
  - drive for hexadecimal characters.



- ***Real Time Clock IC***
  - The RTC registers contain century, year, month, date, day, hours, minutes, and seconds data in 24-hour BCD format.
  - Interface Parallel
  - Memory Size of 8KB



CONCLUSIONS

The microcontroller controls the displayed time in hours and minutes and real time clock IC. The displayed number can be changed wirelessly using the Bluetooth chipset EZURiO with interaction of the microcontroller to the command received. The Bluetooth chipset EZURiO is interfaced with the Mobile in the outside. This concludes the whole project.