

Abstract

Construction of a Microcontroller Embedded Multi-language LED Display Panel

Author: - W.A.D.T. Wijesinghe

Email: - dumindawijesinghe@mobitelnet.lk

The purpose of the research was to develop a Display Panel using LED's (Light Emitting Diodes) in order to display text messages and special graphical characters including English and Sinhalese language characters (virtually any language) with the facility to upload the device with data using USB (Universal Serial Bus) interface.

The well known micro-controller PIC18F4550 by Microchip® Technology Inc. was used as the heart of the device with the assistance of mikroC language by Mikroelektronika® for the PIC micro-controller programming at the device end. Microsoft® Visual Basic© 6.0 language was used for interface programming at the user end.

The interfacing software can decode any text written in a textbox using a particular font face and upload the device with data using USB interface, only when the authentic user is present with the preprogrammed password. After uploading, the data is permanently resided on the device memory and the device then can start displaying the message on 640-LED (16 by 40) panel. After uploading the data, the device can be disconnected immediately. Since the display device is hot pluggable, the interfacing software would automatically detect it upon device connect/disconnect. The data on the permanent memory can be modified anytime very quickly by connecting it to a PC (Personal Computer). The device can display messages in any language (provided the font face is available) with variable speeds (7 programmable display speeds) and with different modes of display such as move left, move right, move up, move down and flip down. Moreover, an online mode has also been embedded in order to use the device as a clock/calendar. In this mode, the device would display current date and time but the device has to be connected to the PC since the calendar information is extracted from the real time clock of the PC. The maximum display size currently is 700 vertical lines which is approximately equivalent to 90 characters. If needed, the size of the display panel can be extended with extra decoder/driver logic easily.