Character module and Graphic module

Character LCD Modules

Character modules are composed of 1 to 4 lines of 10 to 40 character blocks having 5x8 dots. Each character block is addressed separately and can form alphanumeric characters and a limited number of symbols. Character modules contain a built-in controller chip (HD44780 or equivalent) that allows the LCD module to receive data directly from a 4-bit or 8-bit microprocessor or microcontroller. The controller has at least 160 character patterns in the character generator (CG) ROM. Also available is user-definable CG RAM, which allows the user to program up to 8 characters.

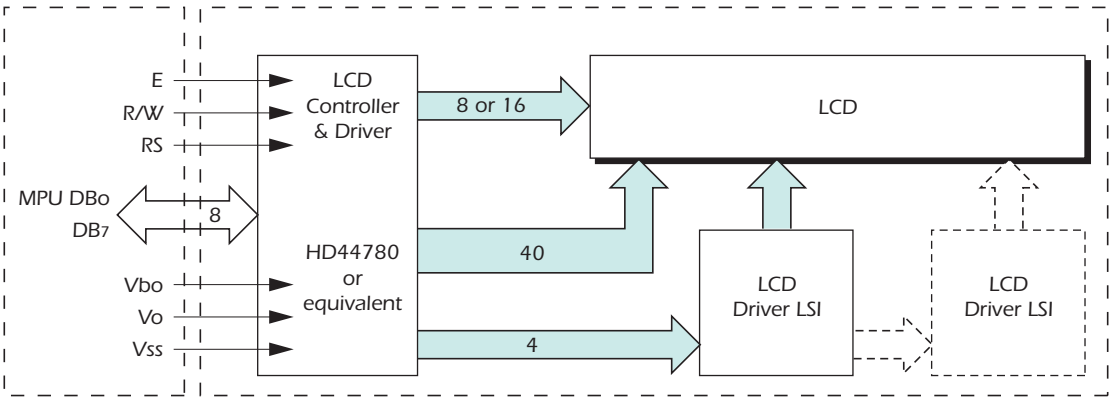

Fig.2

To display data on the module, data is sent through the data bus from the microprocessor to the LCD controller (see Fig. 2). The controller contains two 8-bit registers, one for instructions and one for data. They are selected by the register select (RS) signal. First, positioning data is sent to the LCD and written into the instruction register. This is followed by a character code that is written into the data register. The LCD module will then display the specified character in the correct position.

Graphic LCD Modules

Graphic modules offer the greatest flexibility in formatting data on the display. They allow for text, graphics or any combination of the two. Since character size is defined by software, they allow any language or character font to be shown. The only limit is the resolution of the display.

Graphic modules are organized in rows (horizontal) and columns (vertical) of pixels. Each pixel is addressed individually, allowing any combination to be "on". This bitmapping provides the user with the ability to construct text of any size or shape, or true graphics, if that is desired. BeyondTek offers resolutions of 72x48 to 320x240 in its standard module.

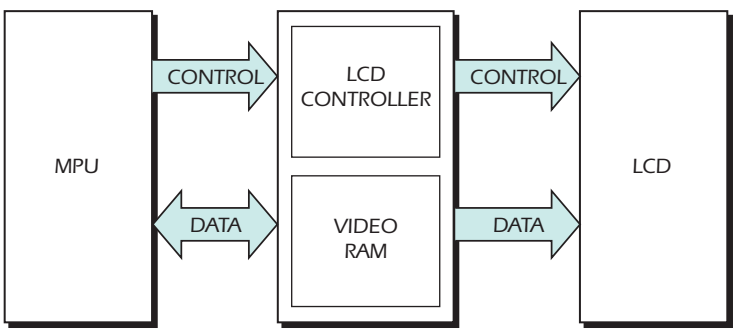

Fig.3