Fire Bird V P89V51RD2

20x4 LCD Interfacing String Display

ERTS LAB IIT-B

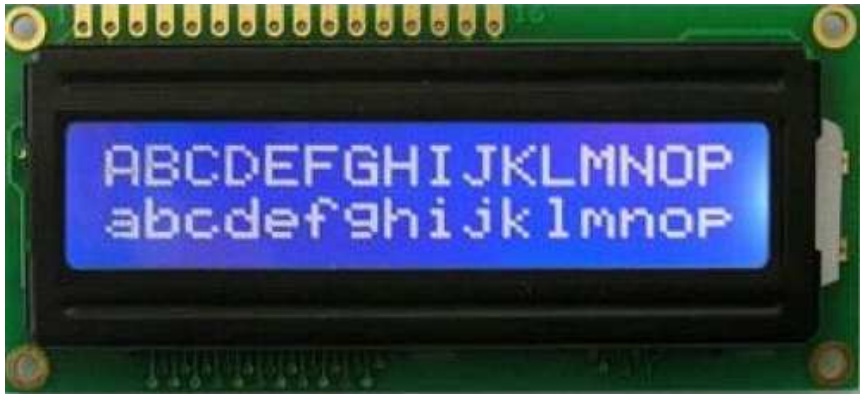
yantra

Introduction

- The most commonly used Character based LCDs are based on Hitachi's HD44780 controller.
- LCDs found in the market today are 1 Line, 2 Line or 4 Line LCDs.
- Which have only 1 controller and support at most of 80 characters.
- Whereas LCDs supporting more than 80 characters make use of 2 HD44780 controllers.

16x2 LCD

- There are 16 columns and 2 rows.
- So you can display total 32 characters at a time.
- This is 16 pin LCD.



Pin	Description
VSS	Ground
VDD	Supply Voltage (5Volts)
VEE	Contrast Voltage
RS	Register Select
RW	Read/Write
E	Enable
D0-D7	Bidirectional Data Bus
VDD,VSS	Back Light Supply (LED+, LED-)

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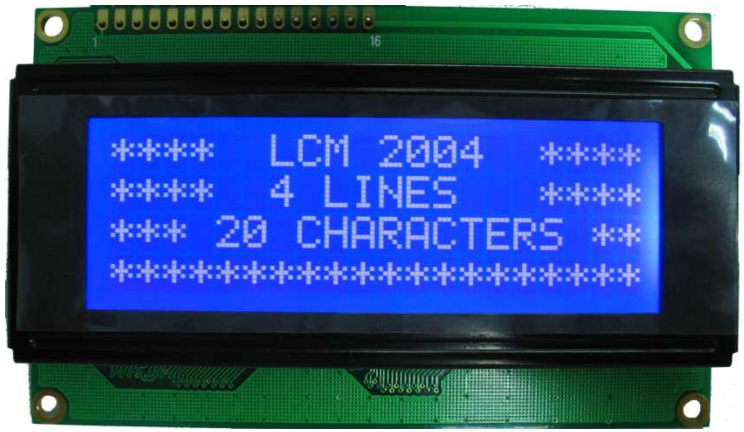
20x4 LCD

- There are 20 columns and 4 rows.
- So you can display total 80 characters at a time.
- This is 16 pin LCD.



Pin	Description
VSS	Ground
VDD	Supply Voltage (5Volts)
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D0-D7	Bidirectional Data Bus
VDD,VSS	Back Light Supply (LED+, LED-)

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16x2 LCD vs 20x4 LCD

- 16x2 LCD Display:
  - There are 2 rows to display text.
  - First row starts from 0x80 & second starts from 0xC0.
- 20x4 LCD Display:
  - There are 4 rows to display text.
  - First row starts from 0x80, second starts from 0xC0, third starts from 0x94 & fourth starts from 0xD4.
- Only two new rows are added in 20x4 LCD with 20 characters.

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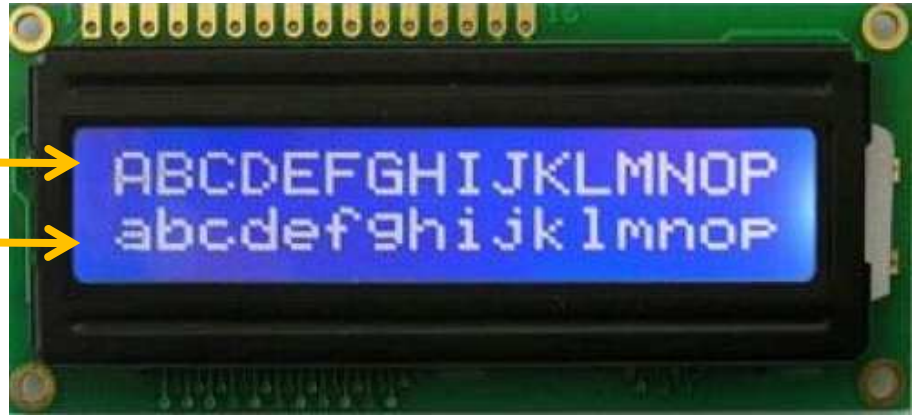
16x2 LCD vs 20x4 LCD

Line Number

0x80

0xC0



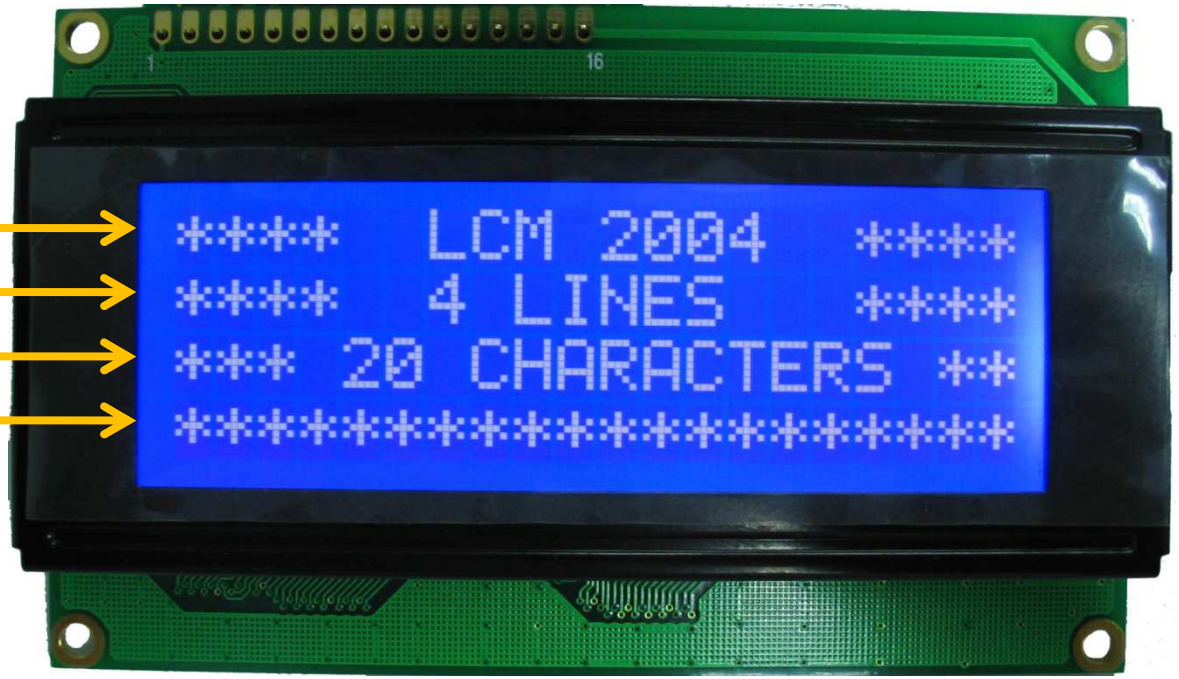
Line Number

0x80

0xC0

0x94

0xD4



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20x4 LCD programming

- Similar programming like 16x2.
- Header is provided “LCD_20x4.H”

```
void main(void)
{
        LCD_INIT();
        LCD_CMD(LINE1);
        LCD_WRITE(“ABCD”);
        LCD_CMD(LINE2);
        LCD_WRITE(“EFGH”);
        LCD_CMD(LINE3);
        LCD_WRITE(“1234”);
        LCD_CMD(LINE4);
        LCD_WRITE(“!@#$”);
        while(1);
}
```

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