

Display Chinese Characters On LCD

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	This code uses M051 to drive LCD to display Chinese Characters
BSP Version	M051 Series BSP CMSIS v3.01.001
Hardware	Nu-LB_004 v1.0

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1 Function Description

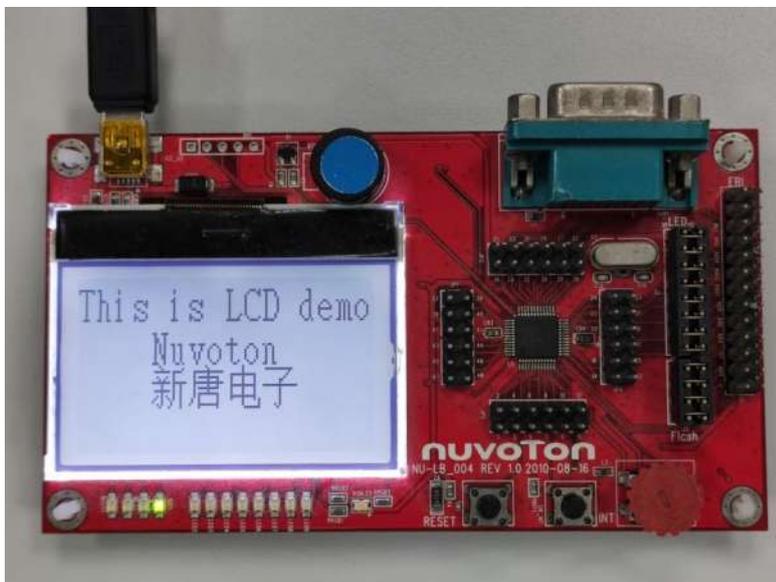
1.1 Introduction

The sample code is to add LCD Chinese characters display function based on the Nuvoton NU-LB_004 learning board. This code is intended to provide a reference design for customers who want to display Chinese characters on the LCD. At present, only the characters of “新唐电子” can be displayed. If you want to display more than one character, the customers need to generate a 16×16 font library. The generation of 16×16 font is from left to right and then from up to down.

If there are few characters, you can put it on the chip flash. If you have more characters, it is recommended to put them on the external SPI flash.

1.2 Principle

1.3 Demo Result



2 Code Description

Explain important code workflows:

```
ShowCharCH(2, 2, 0); //in the third row and third column of LCD show '新'
ShowCharCH(2, 3, 1); //in the third row and fourth column of LCD show '唐'
ShowCharCH(2, 4, 2); //in the third row and fifth column of LCD show '电'
ShowCharCH(2, 5, 3); //in the third row and sixth column of LCD show '子'
```

Explain important code workflows:

```
/**
 * @brief show 16x16 Chinese character on LCD
 * @param x X position,x=0\1\2\4
 * @param y Y position,y=0\1\2\4\5\6\7
 * @param index Chinese character library in CHCode array
 * @return None
 */
void ShowCharCH(uint8_t x, uint8_t y, uint16_t index)
{
    int i = 0, k = 0;
    unsigned char temp;

    k = index * 32;
    /*Display 8x16 points in the upper half*/
    for (i = 0; i < 16; i++)
    {
        SetPACA((x * 2), (129 - (y * 16) - i));
        temp = CHCode[k + i];
        SpiWrite(0x100 | temp);
    }
    /*Show 8x16 points in the lower half*/
    for (i = 0; i < 16; i++)
    {
        SetPACA((x * 2) + 1, (129 - (y * 16) - i));
        temp = CHCode[k + i + 16];
        SpiWrite(0x100 | temp);
    }
}
```

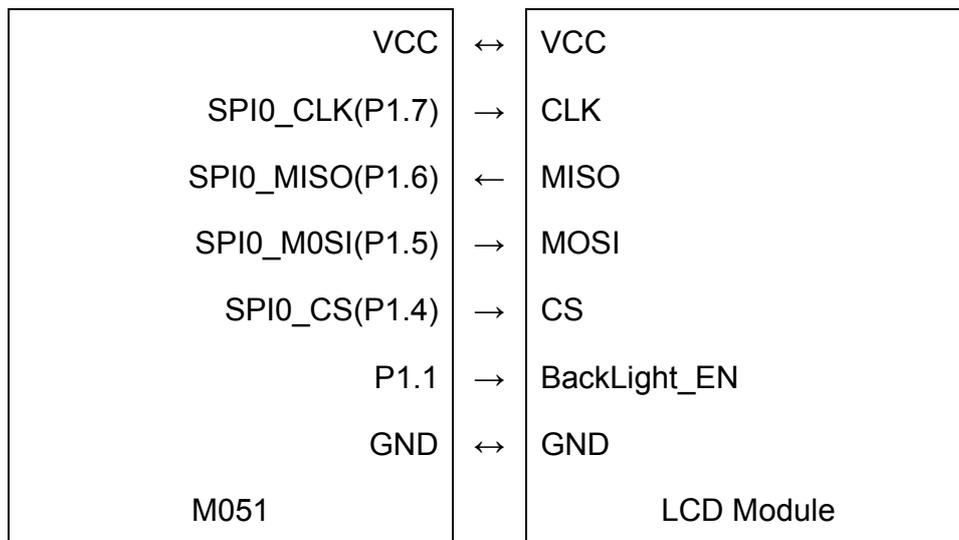
3 Software and Hardware Environment

- **Software Environment**

- BSP version
 - ◆ M051 Series BSP CMSIS v3.01.001
- IDE version
 - ◆ Keil uVersion 5.26

- **Hardware Environment**

- Circuit components
 - ◆ Nu-LB_004
- Diagram



4 Directory Information

📁 EC_M051_Display_Chinese_Characters_On_LCD_V1.00

📁 Library	Sample code header and source files
📁 CMSIS	Cortex [®] Microcontroller Software Interface Standard (CMSIS) by Arm [®] Corp.
📁 Device	CMSIS compliant device header file
📁 StdDriver	All peripheral driver header and source files
📁 SampleCode	
📁 ExampleCode	Source file of example code

5 How to Execute Example Code

1. Browsing into sample code folder by Directory Information (section 4) and double click EC_M051_Display_Chinese_Characters_On_LCD.uvproj.
2. Enter Keil compile mode
 - a. Build
 - b. Download
 - c. Start/Stop debug session
3. Enter debug mode
 - a. Run

6 Revision History

Date	Revision	Description
Jun. 21, 2019	1.00	1. Initially issued.

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