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CE95290 - Character LCD with Custom Font

Objective

This example demonstrates the use of the Character LCD Component and the custom characters feature using the 2x16 LCD available with CY8CKIT-001.

Requirements

Tool: PSoC® Creator™ 3.3 CP3 or higher

Programming Language: C (ARM® GCC 4.9.3)

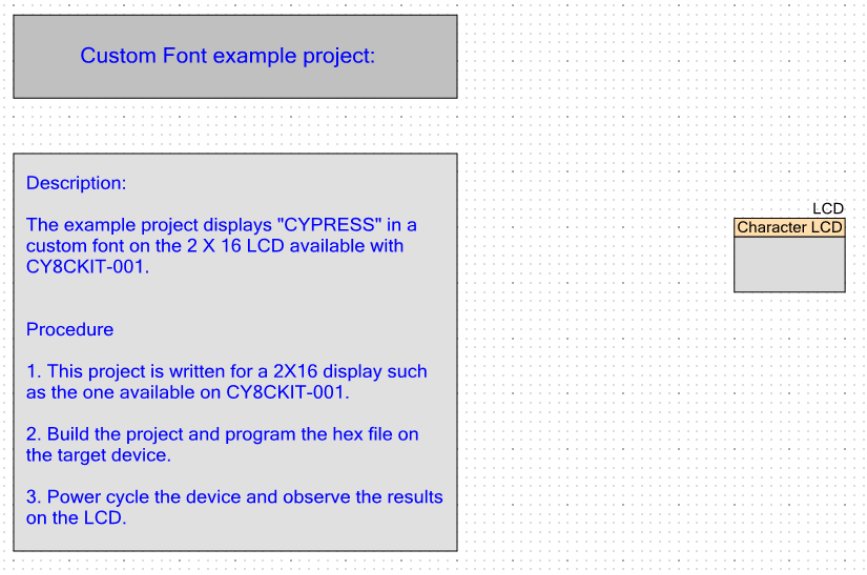
Associated Parts: PSoC 3, PSoC 4, and PSoC 5LP

Related Hardware: CY8CKIT-001, CY8CKIT-002, CY8CKIT-009, CY8CKIT-010, CY8CKIT-038

Design

This example project is designed to run on CY8CKIT-001 with 2x16 LCDs attached. It demonstrates the display of custom and regular characters. Custom characters can be modified through the Character LCD Component, and regular fonts can be modified through the Component API in the main program. The overall schematic is shown in Figure 1.

Figure 1. PSoC Creator Top-Level Schematic



Components

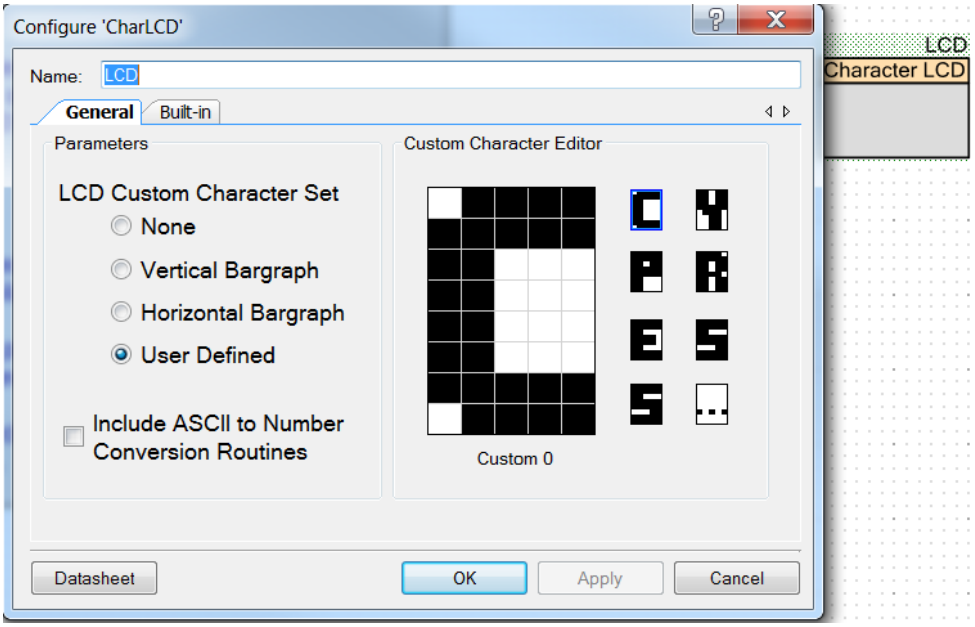
Table 1 lists the PSoC Creator Components used in this example, as well as the hardware resources used by each.

Table 1. List of PSoC Creator Components

Component	Version	Hardware Resources
Character LCD	2.2	P2[6:0]

You can open the Character LCD Component customizer and replace or modify the characters that are displayed on the LCD. An example configuration window is shown in Figure 2.

Figure 2. Overall Top-Level Schematic



The position of each custom character can be modified through the firmware as shown in Figure 3. The LCD_PutChar() function is used to place the custom character accordingly.

Figure 3. Code segment in *main.c*

```
LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_0);        /* Puts "C" at 2nd column in first row */
pos += 2u;

LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_1);        /* Puts "Y" at 4th column in first row */
pos += 2u;

LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_2);        /* Puts "P" at 6th column in first row */
pos += 2u;

LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_3);        /* Puts "R" at 8th column in first row */
pos += 2u;

LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_4);        /* Puts "E" at 10th column in first row */
pos += 2u;

LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_5);        /* Puts "S" at 12th column in first row */
pos += 2u;

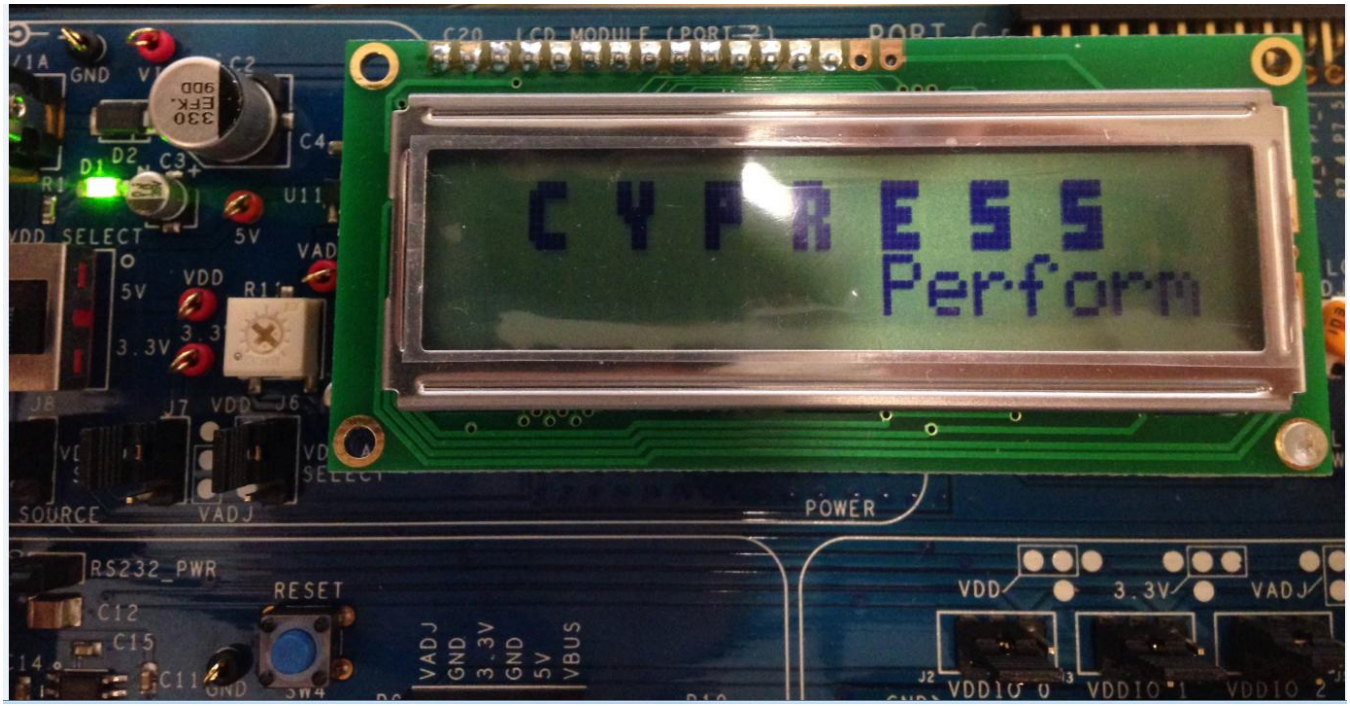
LCD_Position(row, pos);
LCD_PutChar(LCD_CUSTOM_6);        /* Puts "S" at 14th column in first row */
pos += 2u;
```

The regular text “Perform” can also be changed through the firmware in *main.c* using the LCD_PrintString() function.

Operation

1. Build and compile the project using PSoC Creator.
2. Connect the processor module corresponding to the device family to CY8CKIT-001.
   a. PSoC 3 CY8CKIT-009
   b. PSoC 4 CY8CKIT-038
   c. PSoC 5 CY8CKIT-010
3. Program the kit using CY8CKIT-002 PSoC® MiniProg3.
4. Make sure that the LCD is connected to the CY8CKIT-001 header P18, and then verify that the output is “CYPRESS Perform” as shown in Figure 4.

Figure 4. LCD Output



Related Documents

Table 2 lists all relevant application notes, device datasheets, and Component datasheets.

Table 2. Related Documents

Application Notes		
AN54181	Getting Started with PSoC 3	Describes PSoC 3 shows and how to build a basic code example
AN79953	Getting Started with PSoC 4	Describes PSoC 4 and shows how to build a basic code example
AN77759	Getting Started with PSoC 5LP	Describes PSoC 5LP and shows how to build a basic code example
PSoC Creator Component Datasheets		
CharLCD	Supports the character LCD Component	
Device Documentation		
PSoC 3 Datasheets	PSoC 3 Technical Reference Manuals	
PSoC 4 Datasheets	PSoC 4 Technical Reference Manuals	
PSoC 5LP Datasheets	PSoC 5LP Technical Reference Manuals	
Development Kit (DVK) Documentation		
CY8CKIT-001 PSoC® Development Kit		
CY8CKIT-002 PSoC® MiniProg3 Program and Debug Kit		
PSoC 3 Kits		
PSoC 4 Kits		
PSoC 5 Kits		

Document History

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**	5424028	WESL	09/08/2016	New Spec

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