

```

1  #include "LCD_IO_Init.h"
2
3
4  void LCD_IO_Init()
5  {
6      RCC->APB2ENR |= RCC_APB2ENR_IOPCEN | RCC_APB2ENR_IOPBEN | RCC_APB2ENR_IOPAEN;
7
8      GPIOC->CRL |= GPIO_CRL_MODE7 | GPIO_CRL_MODE6 | GPIO_CRL_MODE5 | GPIO_CRL_MODE4 | GPIO_CRL_MODE3 |
GPIO_CRL_MODE2 | GPIO_CRL_MODE1 | GPIO_CRL_MODE0 ;
9      GPIOC->CRL &= ~GPIO_CRL_CNF7 & ~GPIO_CRL_CNF6 & ~GPIO_CRL_CNF5 & ~GPIO_CRL_CNF4 & ~GPIO_CRL_CNF3 &
~GPIO_CRL_CNF2 & ~GPIO_CRL_CNF1 & ~GPIO_CRL_CNF0 ;
10
11     GPIOB->CRL |= GPIO_CRL_MODE5 | GPIO_CRL_MODE1 | GPIO_CRL_MODE0 ;
12     GPIOB->CRL &= ~GPIO_CRL_CNF5 & ~GPIO_CRL_CNF1 & ~GPIO_CRL_CNF0 ;
13
14     commandToLCD(LCD_8B2L, 0);
15     commandToLCD(LCD_8B2L, 0);
16     commandToLCD(LCD_8B2L, 0);
17     commandToLCD(LCD_8B2L, 0);
18     commandToLCD(LCD_DCB, 0);
19     commandToLCD(LCD_CLR, 0);
20     commandToLCD(LCD_MCR, 0);
21 }
22
23 /*
24 * Name: commandToLCD
25 * Type: PUBLIC
26 * Parameters: a single byte of command information for the LCD controller
27 * Returns: nothing
28 * Description: This function generates control timing and data signals to send one command byte to the
LCD
29 */
30 void commandToLCD(uint8_t data, int CORD)
31 {
32     if (CORD == 0)
33     {
34         GPIOB->BSRR = LCD_CM_ENA; //RS low, E high
35         // GPIOC->ODR = data; //BAD: may affect upper bits on port C
36         GPIOC->ODR &= 0xFF00; //GOOD: clears the low bits without affecting high bits
37         GPIOC->ODR |= data; //GOOD: only affects lowest 8 bits of Port C
38         delay(80000);
39         GPIOB->BSRR = LCD_CM_DIS; //RS low, E low
40         delay(800000);
41     }
42     //send to LDC screen aka display
43     else if (CORD == 1)
44     {
45         GPIOB->BSRR = LCD_DM_ENA; //RS low, E high
46         // GPIOC->ODR = data; //BAD: may affect upper bits on port C
47         GPIOC->ODR &= 0xFF00; //GOOD: clears the low bits without affecting high bits
48         GPIOC->ODR |= data; //GOOD: only affects lowest 8 bits of Port C
49         delay(80000);
50         GPIOB->BSRR = LCD_DM_DIS; //RS low, E low
51         delay(800000);
52     }
53 }
54
55
56
57
58

```