

```

                                lcd.h
// filename***** LCD.H *****
// LCD Display (HD44780) on Port H for the 9S12DP512
// Jonathan W. Valvano 9/18/09

// This example accompanies the books
// "Embedded Microcomputer Systems: Real Time Interfacing",
// Thompson, copyright (c) 2006,
// "Introduction to Embedded Systems: Interfacing to the Freescale 9S12",
// Cengage Publishing 2009, ISBN-10: 049541137X | ISBN-13: 9780495411376

// Copyright 2009 by Jonathan W. Valvano, valvano@mail.utexas.edu
// You may use, edit, run or distribute this file
// as long as the above copyright notice remains

/*
size is 1*16
if do not need to read busy, then you can tie R/W=ground
ground = pin 1      Vss
power  = pin 2      Vdd    +5V
ground = pin 3      Vlc    grounded for highest contrast
PH4    = pin 4      RS      (1 for data, 0 for control/status)
PH5    = pin 5      R/W     (1 for read, 0 for write)
PH6    = pin 6      E        (enable)
PH3    = pin 14     DB7     (4-bit data)
PH2    = pin 13     DB6
PH1    = pin 12     DB5
PH0    = pin 11     DB4
16 characters are configured as 2 rows of 8
addr  00 01 02 03 04 05 06 07 40 41 42 43 44 45 46 47
*/

//-----LCD_Open-----
// initialize the LCD display, called once at beginning
// Input: none
// Output: true if successful
short LCD_Open(void);

//-----LCD_Clear-----
// clear the LCD display, send cursor to home
// Input: none
// Output: true if successful
short LCD_Clear(void);

//-----LCD_OutChar-----
// sends one ASCII to the LCD display
// Input: letter is ASCII code
// Output: true if successful
short LCD_OutChar(unsigned char letter);

//-----LCD_OutString-----
// Display String
// Input: pointer to NULL-terminated ASCII string
// Output: true if successful
short LCD_OutString(char *pt);

//-----TERMIO_PutChar-----
// sends one ASCII to the LCD display
// Input: letter is ASCII code
// handles at least two special characters, like CR LF or TAB
// Output: true if successful

```

lcd.h

```
#define CR 13 // \r
#define TAB 9 // \n
#define LF 10 // \n
short TERMIO_PutChar(unsigned char letter);
```