2 ×16 LCD Controller

1. Introductions

The LCD Keypad shield is developed for Arduino compatible boards, to provide a user-friendly interface that allows users to go through the menu, make selections etc. It consists of a 1602 white character blue backlight LCD. The keypad consists of 5 keys — select, up, right, down and left. To save the digital IO pins, the keypad interface uses only one ADC channel. The key value is read through a 5 stage voltage divider.

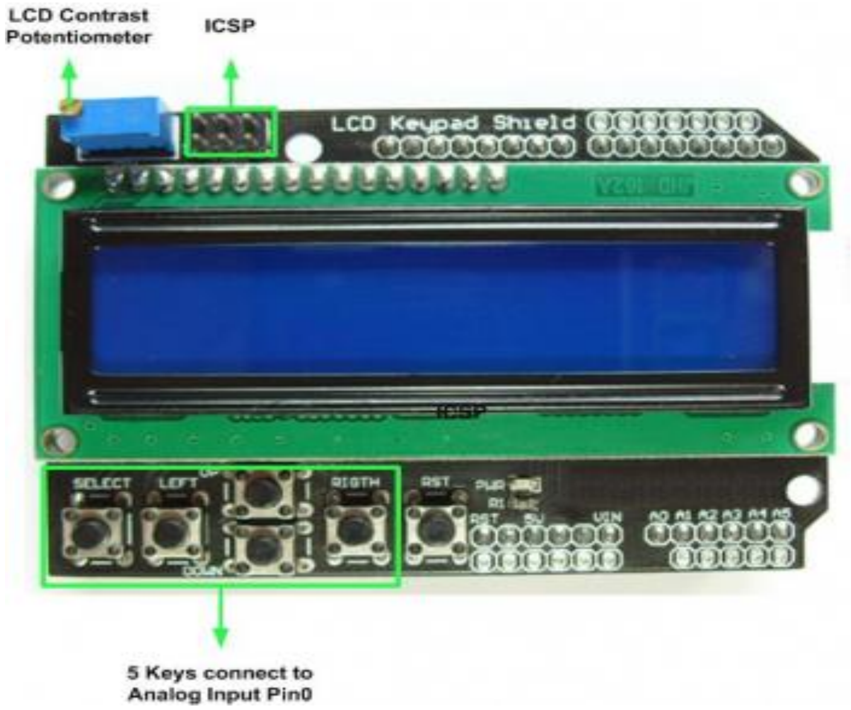
Tip: this module is as same as the DFRobot LCD keypad shield(www.dfrobot.com/wiki
/index.php?title=Arduino_LCD_KeyPad_Shield_(SKU:_DFR0009)#Diagram)

Specifications:

- Blue Backlight with white words
- uses 4 Bit Arduino LCD Library
- Left, Right, Up, Down and Select buttons
- Screen contrast adjustment
- Arduino Reset button

2 Pin Instruction

Pin	Function
Analog 0	Button (select, up, right, down and left)
Digital 4	DB4(the LCD)
Digital 5	DB5(the LCD)
Digital 6	DB6(the LCD)
Digital 7	DB7(the LCD)
Digital 8	RS
Digital 9	RW
Digital 10	Backlit Control


LCD Contrast Potentiometer
ICSP
LCD Keypad Shield
SELECT
LEFT
UP
DOWN
RIGTH
RST
PWR
5 Keys connect to Analog Input Pin0

3. Example

Here is a example to test the button function of this module.

******code begin******

```
//Sample using LiquidCrystal library
#include <LiquidCrystal.h>

/*******************************************************

This program will test the LCD panel and the buttons
Mark Bramwell, July 2010

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// select the pins used on the LCD panel
LiquidCrystal lcd(8, 9, 4, 5, 6, 7);

// define some values used by the panel and buttons
int lcd_key     = 0;
int adc_key_in  = 0;
#define btnRIGHT  0
#define btnUP     1
#define btnDOWN   2
#define btnLEFT   3
```

```
#define btnSELECT 4
#define btnNONE   5

// read the buttons
int read_LCD_buttons()
{
 adc_key_in = analogRead(0);      // read the value from the sensor
 // my buttons when read are centered at these valies: 0, 144, 329, 504, 741
 // we add approx 50 to those values and check to see if we are close
 if (adc_key_in > 1000) return btnNONE; // We make this the 1st option for speed reasons since it will be the most likely result
 // For V1.1 us this threshold
 if (adc_key_in < 50)   return btnRIGHT;
 if (adc_key_in < 250)  return btnUP;
 if (adc_key_in < 450)  return btnDOWN;
 if (adc_key_in < 650)  return btnLEFT;
 if (adc_key_in < 850)  return btnSELECT;

 // For V1.0 comment the other threshold and use the one below:
/*
 if (adc_key_in < 50)   return btnRIGHT;
 if (adc_key_in < 195)  return btnUP;
 if (adc_key_in < 380)  return btnDOWN;
 if (adc_key_in < 555)  return btnLEFT;
 if (adc_key_in < 790)  return btnSELECT;
*/


 return btnNONE;  // when all others fail, return this...
}

void setup()
{
 lcd.begin(16, 2);              // start the library
 lcd.setCursor(0,0);
 lcd.print("Push the buttons"); // print a simple message
}

void loop()
{
 lcd.setCursor(9,1);            // move cursor to second line "1" and 9 spaces over
 lcd.print(millis()/1000);      // display seconds elapsed since power-up
 lcd.setCursor(0,1);            // move to the begining of the second line
 lcd_key = read_LCD_buttons();  // read the buttons

 switch (lcd_key)               // depending on which button was pushed, we perform an action
 {
   case btnRIGHT:
     {
     lcd.print("RIGHT ");
     break;
     }
   case btnLEFT:
     {
     lcd.print("LEFT   ");
     break;
     }
   case btnUP:
     {
     lcd.print("UP    ");
     break;
     }
   case btnDOWN:
     {
     lcd.print("DOWN  ");
     break;
     }
   case btnSELECT:
     {
     lcd.print("SELECT");
     break;
     }
     case btnNONE:
     {
     lcd.print("NONE  ");
     break;
     }
 }

}
```

******Code End******