Arduino LCD KeyPad Shield (SKU: DFR0009)

From Robot Wiki

Contents

Introduction

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.

Note: Version 1.1 main updates are the button values, which have being updated on the example code. For older version check the comments and edit, or use the Enhanced V1.0 library

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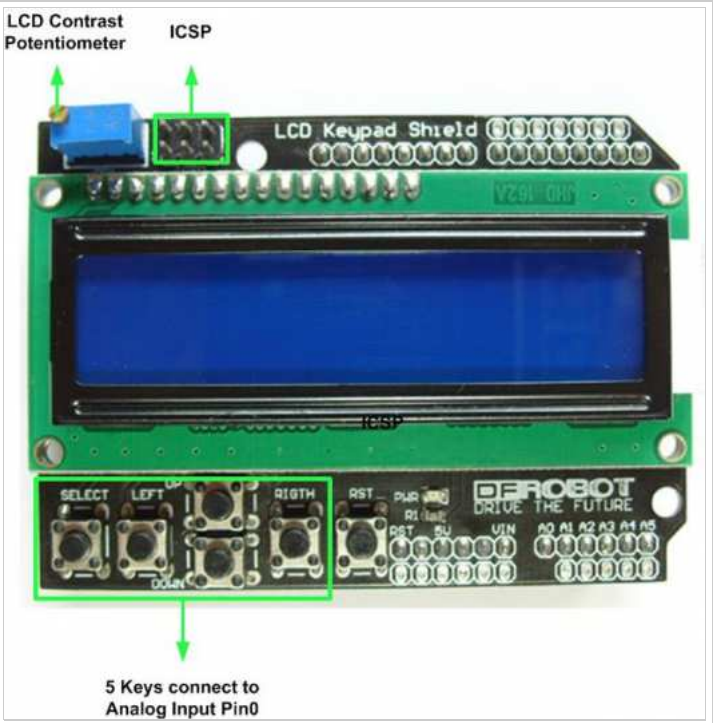
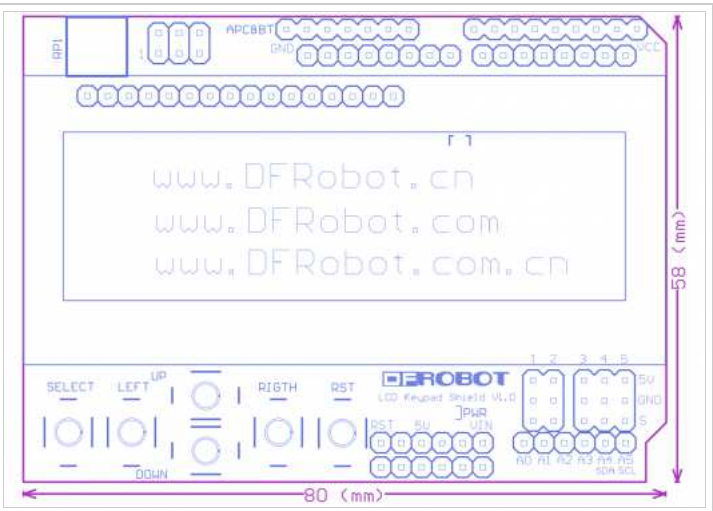
Diagram



LCD&Keypad Shield Diagram



Pin Out Diagram

Pin Allocation

Pin	Function
Analog 0	Button (select, up, right, down and left)
Digital 4	DB4
Digital 5	DB5
Digital 6	DB6

Digital 7	DB7
Digital 8	RS (Data or Signal Display Selection)
Digital 9	Enable
Digital 10	Backlit Control

Sample Code

Example use of LiquidCrystal library

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

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

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

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

// 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
 // 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;
     }
 }

}
```

Example use of Enhanced LiquidCrystal_I2C library(Not updated)

This library inherits LiquidCrystal and adds another method: button - to read button pushed on a keypad. This works on the Old version of the board V1.0

Library Forum (http://www.dfrobot.com/forum/index.php?topic=31.0)

```
/*
DFRobot LCD Shield for Arduino
Key Grab v0.2
Written by Glendon Klassen
gjklassen@gmail.com
http://www.sourceforge.net/users/ecefixer
http://ecefixer.tumblr.com

Displays the currently pressed key on the LCD screen.

Key Codes (in left-to-right order):

None   - 0
Select - 1
Left   - 2
Up     - 3
Down   - 4
Right  - 5
```

```
*/

#include <LiquidCrystal.h>
#include <DFR_Key.h>

//Pin assignments for DFRobot LCD Keypad Shield
LiquidCrystal lcd(8, 9, 4, 5, 6, 7);
//-------------------------------------------

DFR_Key keypad;

int localKey = 0;
String keyString = "";

void setup()
{
  lcd.begin(16, 2);
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print("Key Grab v0.2");
  delay(2500);

  /*
  OPTIONAL
  keypad.setRate(x);
  Sets the sample rate at once every x milliseconds.
  Default: 10ms
  */
  keypad.setRate(10);

}

void loop()
{
  /*
  keypad.getKey();
  Grabs the current key.
  Returns a non-zero integer corresponding to the pressed key,
  OR
  Returns 0 for no keys pressed,
  OR
  Returns -1 (sample wait) when no key is available to be sampled.
  */
  localKey = keypad.getKey();

  if (localKey != SAMPLE_WAIT)
  {
    lcd.clear();
    lcd.setCursor(0, 0);
    lcd.print("Current Key:");
    lcd.setCursor(0, 1);
    lcd.print(localKey);
  }
}
```

Documents

- LCDKeypad Shield Schematics V1.0 (http://www.dfrobot.com/image/data/DFR0009/LCDKeypad%20Shield%20V1.0%20SCH.pdf)
- LCDKeypad Shield Schematics (http://www.dfrobot.com/wiki/images/a/a7/LCDKeypad_Shield_SCH.png)
- Shield diagram (http://www.shieldlist.org/dfrobot/lcd)

Old libraries for V1:

- LCDKeypad (http://www.dfrobot.com/image/data/DFR0009/LCDKeypad.zip)

- DFR_Key (http://www.dfrobot.com/image/data/DFR0009/DFR_Key.zip)

→ Go Shopping Arduino LCD&KeyPad Shield (SKU: DFR0009) (http://www.dfrobot.com/index.php?route=product/product&keyword=DFR0009&category_id=0&description=1&model=1&product_id=51)

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