



## 3-wire Serial LCD Module (Arduino Compatible) (SKU:DFR0091)

### Introduction

This LCD module uses a 128x64 liquid crystal display that support Chinese character , English characters and even graphics. It can exhibit 4 lines and 12 English characters/6 Chinese characters per line. It is suitable for interactive work with Arduino.

It features a backlit control, pallerel or serial control, contrast adjust. It can be connect to our interface shield via IDC6 socket and cables.



connection diagram for LCD Module

# Mode Selection

The LCD is shipped in Parallel mode by default. The PSB\_ON switch is used to set the interface mode. To switch to 3-Wire mode, Set the switch to SPI.

## Code

This sample is working under Parallel mode. You will need Arduino library which can be download [here](#).

Connection in Parallel mode:

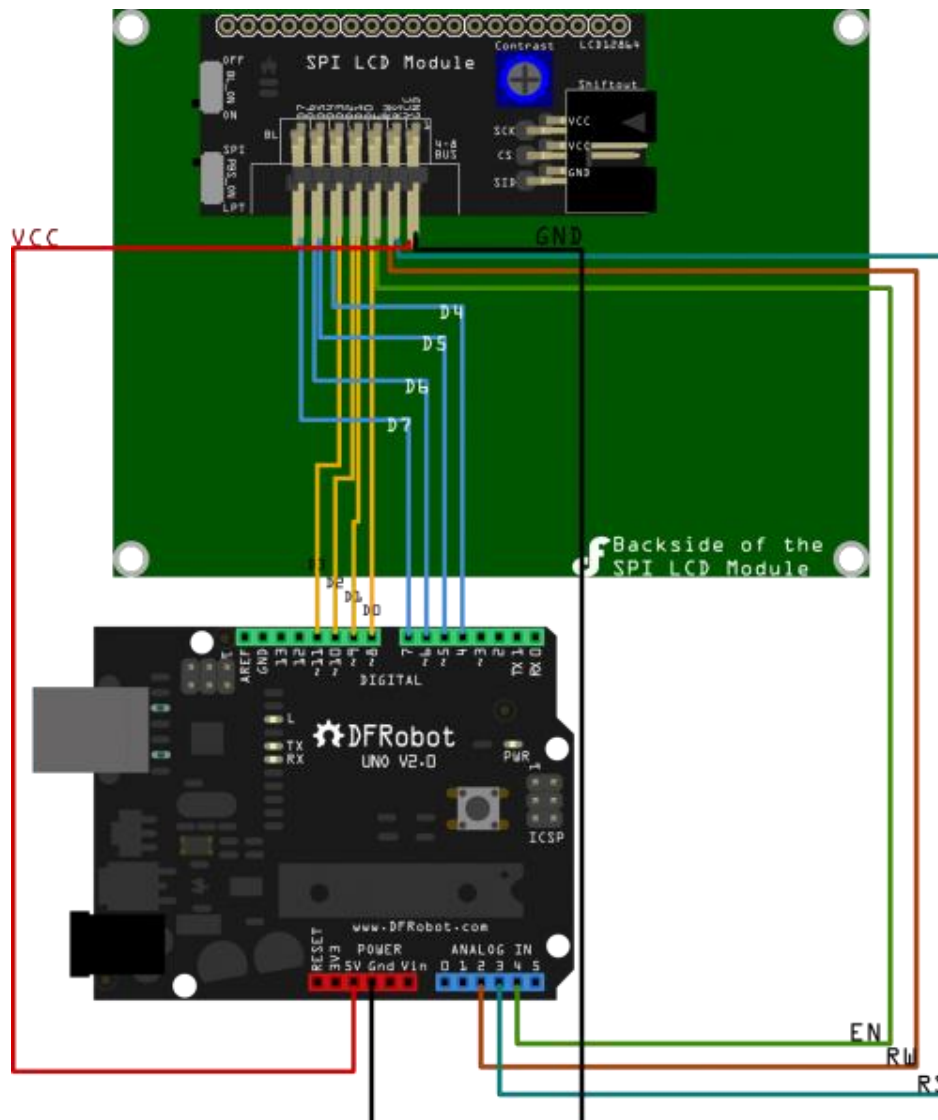


Fig1: Parallel\_Mode

```

/*
LCD Arduino
RS = 17; Analog Pin3
RW = 16; Analog Pin2
EN = 18; Analog Pin4
D0 = 8;
D1 = 9;
D2 = 10;
D3 = 11;
D4 = 4;
D5 = 5;
D6 = 6;
D7 = 7;
PIN15 PSB = 5V;
*/

#include "LCD12864R.h"
#define AR_SIZE( a ) sizeof( a ) / sizeof( a[0] )

unsigned char show0[]={0xBB,0xFA,0xC6,0xF7,0xC8,0xCB,0xC3,0xCE,0xB9,0xA4,0xB3,0xA7};//DFRobot
unsigned char show1[]="www.dfrobot.com";//

void setup()
{
  LCDA.Initialise(); // INIT SCREEN
  delay(100);
}

void loop()
{
  LCDA.CLEAR();//Clear the screen
  delay(100);
  LCDA.DisplaySig(0,0,0x20);//Display space

```

```

delay(100);
LCDA.DisplayString(0,1,show0,AR_SIZE(show0)); //LOGO
delay(100);
LCDA.DisplayString(2,0,show1,AR_SIZE(show1)); //LOGO
while(1);
}

```

The following sample is working under 3-Wire mode. You will need the Arduino Library which can be downloaded [here](#).

Connection in 3-Wire mode:(2 Methods)

Method1:

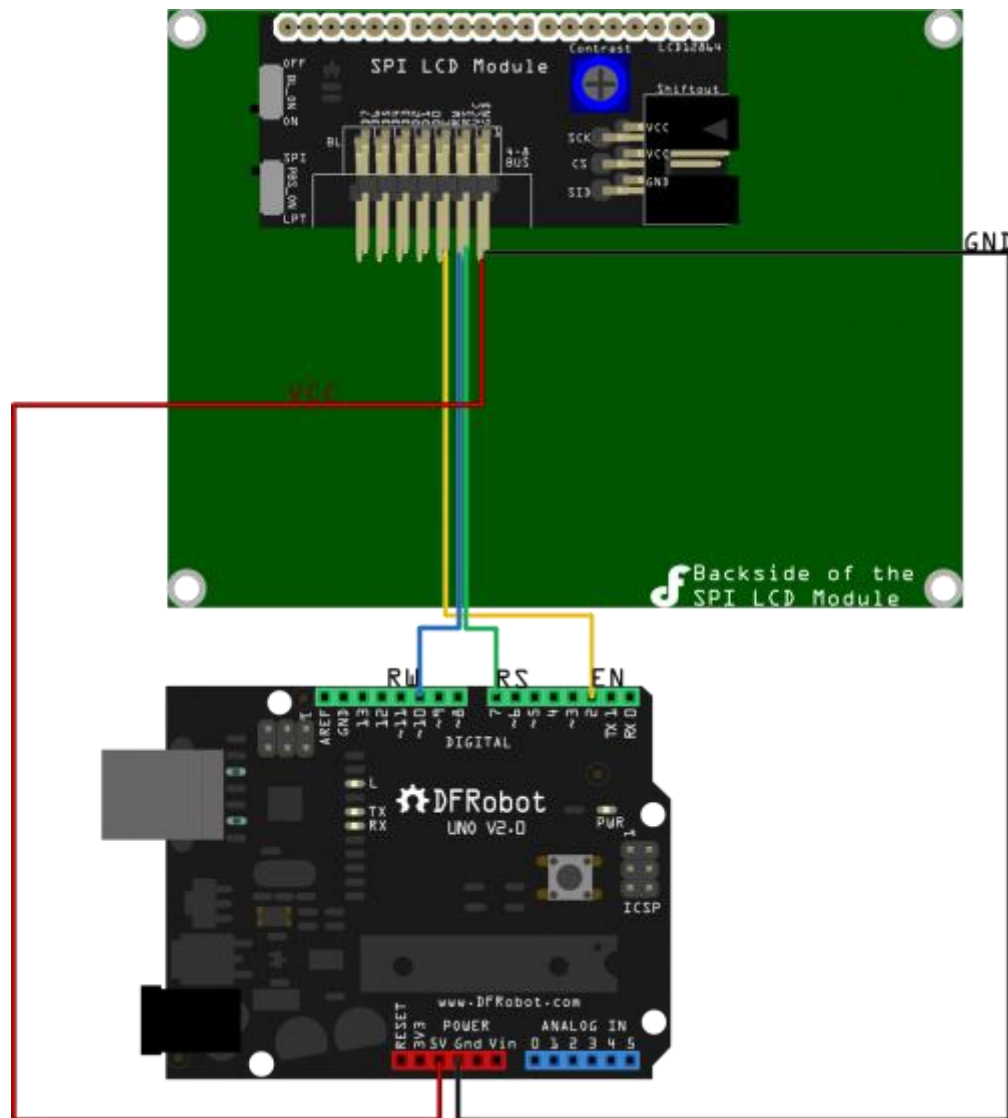


Fig2: 3-Wire Mode\_1

Method2:

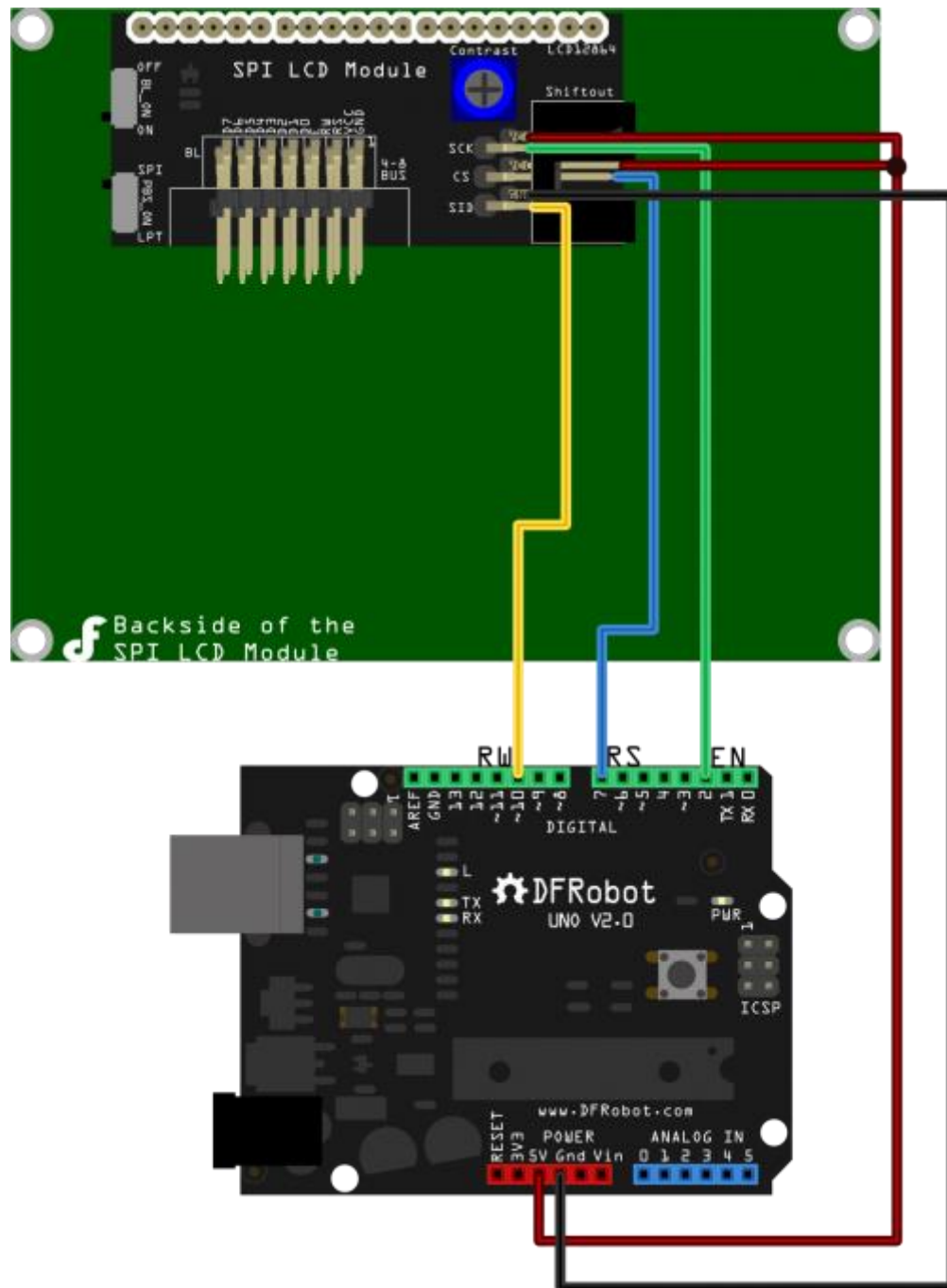


Fig2: 3-Wire Mode\_2

/\*

1. SPI Interface Inatruction

clockPin --> SCK(EN)

```
latchPin --> CS(RS)
```

```
dataPin --> SID(RW)
```

## 2. Connection:

1) Turn the BL\_ON Switch to the "ON" side;

2) Turn the PBS\_ON Switch to the "SPI" side

### Method1:

LCD	Arduino
EN	Digital Pin 2
RS	Digital Pin 7
RW	Digital Pin 10
VCC	5V
GND	GND;

### Method2:

LCD	Arduino
SCK	clockPin(defined in the "initDriverPin" function)
CS	latchPin(defined in the "initDriverPin" function)
SID	dataPin (defined in the "initDriverPin" function)
VCC	5V
GND	GND

```
*/
```

```
#include "LCD12864RSPI.h"
```

```
#include "DFrobot_bmp.h"
```

```
#include "DFrobot_char.h"
```

```
#define AR_SIZE( a ) sizeof( a ) / sizeof( a[0] )
```

```
unsigned char wangzhi[]=" www.DFRobot.com ";
```

```
unsigned char en_char1[]="ST7920 LCD12864 ";
```

```
unsigned char en_char2 []="Test, Copyright ";

unsigned char en_char3 []="by DFRobot ---> ";

void setup()
{
    LCDA.initDriverPin(2,7,10); //INIT SPI Interface
    LCDA.Initialise(); // INIT SCREEN
    delay(100);
    LCDA.DrawFullScreen(logo); //LOGO
    delay(5000);
}

void loop()
{
    LCDA.CLEAR(); //Clear Screen
    delay(100);
    LCDA.DisplayString(0,0,en_char1,16);
    delay(10);
    LCDA.DisplayString(1,0,en_char2,16);
    delay(10);
    LCDA.DisplayString(2,0,en_char3,16);
    delay(10);
    LCDA.DisplayString(3,0,wangzhi,16);
    delay(5000);
    LCDA.CLEAR(); //Clear Screen
    delay(100);
    LCDA.DisplayString(0,0,show1,16);
    delay(10);
    LCDA.DisplayString(1,0,show2,16);
    delay(10);
    LCDA.DisplayString(2,0,show3,16);
    delay(10);
    LCDA.DisplayString(3,0,wangzhi,16); //LOGO
```

```
delay(5000);  
}
```

The following sample is working under 3-Wire mode. It demonstrates how to display integers on the LCD screen. You will need the Arduino Library which can be downloaded [here](#).

```
/*  
1. SPI Interface Inatruction  
    clockPin --> SCK(EN)  
    latchPin --> CS(RS)  
    dataPin --> SID(RW)  
2. Connection:  
    1) Turn the BL_ON Switch to the "ON" side;  
    2) Turn the PBS_ON Switch to the "SPI" side  
  
Method1:  
  
    LCD                Arduino  
    EN                 Digital Pin 2  
    RS                 Digital Pin 7  
    RW                 Digital Pin 10  
    VCC                5V  
    GND                GND;  
  
Method2:  
  
    LCD                Arduino  
    SCK                clockPin(defined in the "initDriverPin" function)  
    CS                 latchPin(defined in the "initDriverPin" function)  
    SID                dataPin (defined in the "initDriverPin" function)  
    VCC                5V  
    GND                GND  
  
This sample shows how to use LCD12864 to display integer on the screen, and i  
t uses function itoa() from library stdlib.h  
*/  
  
#include "LCD12864RSPI.h"
```



```
#include "DFrobot_bmp.h"
#include "DFrobot_char.h"
#include "stdlib.h"
#define AR_SIZE( a ) sizeof( a ) / sizeof( a[0] )

int i=0; //counter, initial value is 0

unsigned char wangzhi []=" www.DFRobot.cn ";

unsigned char en_char1 []="ST7920 LCD12864 ";

unsigned char en_char2 []="Test, Copyright ";

unsigned char en_char3 []="by DFRobot ---> ";

void setup()
{
  LCDA.initDriverPin(2,7,10); //INIT SPI Interface
  LCDA.Initialise(); // INIT SCREEN
  delay(100);
  LCDA.DrawFullScreen(logo); //LOGO
  delay(2000);
  randomSeed(0);
  LCDA.CLEAR();
  delay(100);
  LCDA.DisplayString(0,0,en_char1,16);
  delay(10);
  LCDA.DisplayString(1,0,en_char2,16);
  delay(10);
  LCDA.DisplayString(2,0,en_char3,16);
  delay(10);
  LCDA.DisplayString(3,0,wangzhi,16);
  delay(2000);
}
```

```

}

void loop()
{
  LCDA.CLEAR();//clear the screen
  delay(100);

  int number= i; // the interger should be in the range from -32768 ~ 32767
  char buf [16];
  itoa(number,buf,10); //transform integer into string
  unsigned char temp[16];

  for (int i=0;i<=15;i++)
  {
    if(buf[i]!='0'&&buf[i]!='1'&&buf[i]!='2'&&buf[i]!='3'&&buf[i]!='4'&&buf[i]!='5'&&buf[i]!='6'&&buf[i]!='7'&&buf[i]!='8'&&buf[i]!='9'&&buf[i]!='-')
      {temp[i]=' ';} // put space into those where no values are assigned initially
    else
      {temp[i]=buf[i];}
  }
  LCDA.DisplayString(0,0,temp,16);//display the counter on the screen

  delay(1000);
  i++; // counter works every 1 second
}

```