TELEMATICS 3.5" TFT Touch LCD Shield SKU: DFR0387

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Introduction
For beginners to Arduino it can be daunting and risky to wire LCD driver circuits - one wrong connection and your component can be damaged. This LCD expansion board removes all the complications and risks.

The TELEMATICS 3.5" TFT Touch LCD Shield is an Arduino compatible display designed by DFRobot, with a resolution of 320x480, three serial ports and one IIC interface. It is perfectly compatible with Arduino DUE, Mega1280/2560, and Bluno Mega1280/2560. There is an on-board voltage switch which supports changing the output voltage between 3.3V and 5V to ensure that it won't damage your DUE. In addition, the LCD shield comes with a MicroSD card slot on the back that can be used for data storage up to a maximum of 32GB. We also offer a variety of driver packages to help you implement different features.

Note: Since the operating voltage of DUE and MEGA are different, the backlight brightness will change if you replace your Arduino platform. Please adjust the D8 PWM signal to control the brightness of the backlight.

Specification
- Screen Size: 3.5"
- Resolution Ratio: 320x480
- Power Supply: 5V
- Output Voltage: 3.3/5V
- Backlight Control Mode: D8 PWM signal
- Supports MicroSD card (Up to 32GB)
- Serial Ports: 3
- IIC interface: 1
- Compatible with Arduino DUE/Mega 1280/2560
- Compatible with the Bluno Mega 1280/2560
- Supports Touch Functionality
- Dimensions: 100x57mm/3.93x2.24 inches
- Weight: 70g

Board Overview

![Board Overview](wik/index.php/File:Lcd.png)

<table>
<thead>
<tr>
<th>Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIC</td>
<td>IIC (SDA: 20, SCL: 21)</td>
</tr>
<tr>
<td>Serial1</td>
<td>Serial1</td>
</tr>
<tr>
<td>Serial2</td>
<td>Serial2</td>
</tr>
<tr>
<td>Serial3</td>
<td>Serial3</td>
</tr>
<tr>
<td>DS52</td>
<td>- &gt;DATA0</td>
</tr>
<tr>
<td>DS50</td>
<td>- &gt;CMD</td>
</tr>
<tr>
<td>DS52</td>
<td>- &gt;CLK</td>
</tr>
<tr>
<td>DS53</td>
<td>- &gt;CD/DATA3</td>
</tr>
</tbody>
</table>

Note:
- LCD Driving Pins: D2, D3, D4, D5, D6, D8, D22~D41, D50~D53
Tutorial

Requirements

- **Hardware**
  - Bluno Mega 2560 x 1
  - TELEMATICS 3.5" TFT Touch LCD Shield x 1

- **Software**
  - Arduino IDE (Latest) Click to Download Arduino IDE from Arduino® (https://www.arduino.cc/en/Main/Software)

Sample Code 1

In this section, we'll explain how to initialize the LCD screen. You can use the `setFontsize` and `setColor` function to change the font and the color of the characters.

```c
1 /*
2 This code will demonstrate how to make the LCD display string with the library
3 If you need to set the font size, you can call this function "setFontsize()"; and you can set the parameters:
4 FONT_SIZE_SMALL
5 FONT_SIZE_MEDIUM
6 FONT_SIZE_LARGE
7 FONT_SIZE_XLARGE
8
9 If you want to set the font color, you can call this function "setColor()" with the parameters:
10 RGB16_RED-------->RED
11 RGB16_GREEN------>GREEN
12 RGB16_BLUE------->BLUE
13 RGB16_YELLOW------>YELLOW
14 RGB16_CYAN-------->CYAN
15 RGB16_PINK-------->PINK
16 RGB16_WHITE------->WHITE
17
18
19 Created 2016-4-8
20 By Andy shou <Andy.zhou@dfrobot.com>
21 version:V1.0
22 */
23 #include <Arduino.h>
24 #include <SPI.h>
25 #include <MultiLCD.h>
26
27 Lcd_B6518I_1602 lcd;
28
29 void setup()
30 {
31   lcd.begin();
32   lcd.setFontSize(FONT_SIZE_MEDIUM); // set font size
33   lcd.setColor(RGB16_RED); // set strings color
34   lcd.println("");
35   lcd.println("hi!");
36   lcd.println("hi!");
37   lcd.println("hi!");
38   lcd.println("hi!");
39   lcd.setColor(RGB16_WHITE);
40 }
41
42 void loop()
43 {  
```

Sample Code 2

In this section, we'll explain how to use the SD card with LCD screen.
/*
  This code is to teach you how to use SD library.
*/

#include <Arduino.h>
#include <SPI.h>
#include <MultiLCD.h>
#include <SD.h>
#include "datalogger.h"

#define STATE_SD_READY 0x1
#define STATE_OBO_READY 0x2
#define STATE_GPS_CONNECTED 0x4
#define STATE_GPS_READY 0x8
#define STATE_MEM_READY 0x10
#define STATE_GUI_ON 0x20

LCD_DS1581 lcd;
Datalogger logger;
byte state = 0;

bool checkSD()
{
  Sd2Card card;
  SDVolume volume;
  state &= ~STATE_SD_READY;
  pinMode(SS, OUTPUT);

  lcd.setFontSize(FONT_SIZE_MEDIUM);
  if (card.init(SPI_HALF_SPEED, SD_CS_PIN)) {
    const char* type;
    switch(card.type()) {
      case SD_CARD_TYPE_SD1:
        type = "SD1";
        break;
      case SD_CARD_TYPE_SD2:
        type = "SD2";
        break;
      case SD_CARD_TYPE_SDHC:
        type = "SDHC";
        break;
      default:
        type = "SDx";
        break;
    }
    lcd.print(type);
    lcd.write('\');
    if (!volume.init(card)) {
      lcd.print("No FAT!");
      return false;
    }
    uint32_t volumenize = volume.blocksPerCluster();
    volumenize >>> 1; // 512 bytes per block
    volumenize *= volume.clusterCount();
    volumenize >>> 10;
    lcd.print((Int)volumenize);
    lcd.print("MB");
  } else {
    lcd.print("No SD Card");
    return false;
  }

  if (!SD.begin(SD_CS_PIN)) {
    lcd.print("Bad SD");
    return false;
  }
  state |= STATE_SD_READY;
  return true;
}

void setup()
{
  lcd.begin();
  lcd.setFontSize(FONT_SIZE_MEDIUM); // set font size
  lcd.setColor(ARGB16_RED); // set strings color
  lcd.println();
  lcd.println("OFRobot!!!");
  lcd.println("TELEMATICS LCD SHIELD V1.0");
}
Sample Code 3

In this section, we will explain how to use the touch function.

```c
#include <Arduino.h>
#include <SPI.h>
#include <MultiCD.h>
#include "touch.h"

LCD_RS1581 lcd;

void setup(){
  lcd.begin();
  lcd.setFontSize(FONT_SIZE_MEDIUM); // set font size
  lcd.setColor(RGB16_WHITE); // set strings color
  lcd.print("DFRobot");
  lcd.print("TELEMATICS LCD SHIELD V1.0");
  lcd.print();
  lcd.setcolor(RGB16_WHITE);
  touch.init();
}

void loop(){
  lcd.setCursor(0, 0);
  // int x, y;
  if (touch.read(x, y)) {
    lcd.print("X:");
    lcd.print(x);
    lcd.print(" Y:");
    lcd.print(y);
    lcd.print(" ");
  } else {
    lcd.print(" ");
  }
}