

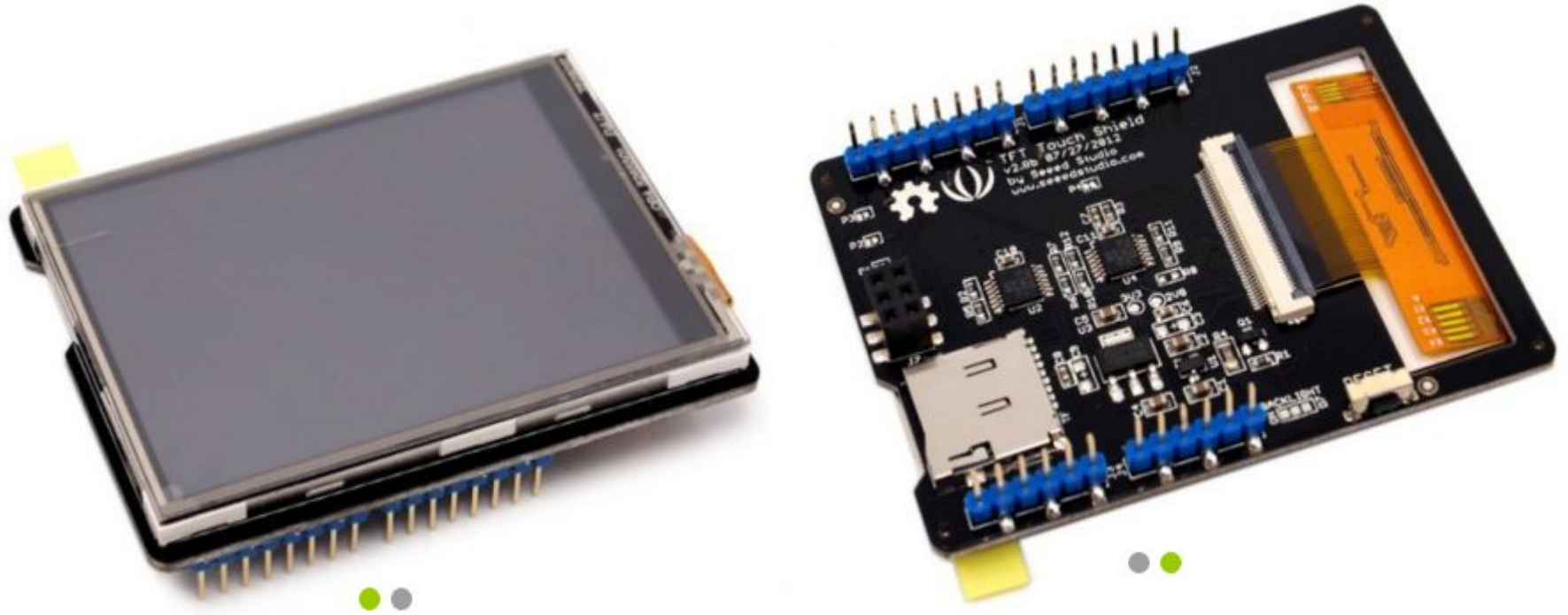
Embedded Workshop

2.8" TFT Touch Shield V2.0

Rusty Cain May 2016

www.the-cains-group.net

2.8" TFT Touch Shield V2.0



2.8" TFT Touch Shield V2.0 Features

2.8" TFT Touch Shield V2.0 Main Page:

http://www.seeedstudio.com/wiki/2.8%27%27_TFT_Touch_Shield_v2.0

Features:

2.8" 320 × 240 pixels, screen.

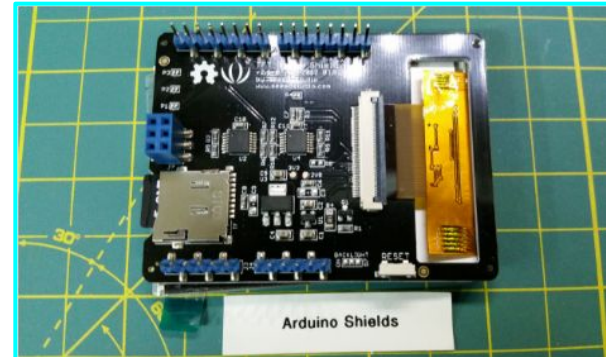
Micro SD card slot for file/image display.

Programmable backlight illumination for night/dark viewing.

Serial Peripheral Interface (SPI) high-speed pin-saving communication protocol.

Full-screen touch active range.

65535 rich colors.



2.8" TFT Touch Shield V2.0

SPI Interface / Data Communication Pins:

- **Arduino D10 is SPI (CS) chip select pin:** This pin is not used by the TFT shield.
- **Arduino D11 is SPI (MOSI) data pin:**

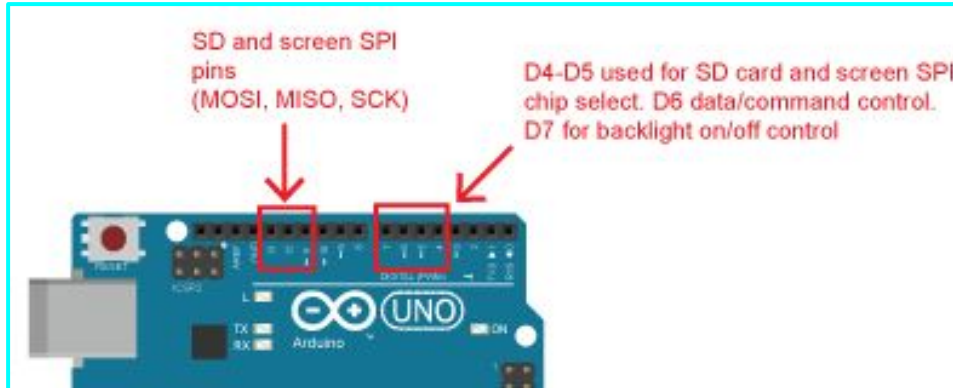
Used as data pin for SD card and screen. This pin is used by the Arduino to send data to the SD card or screen.

- **Arduino D12 is SPI (MISO) pin:**

Used as data pin for SD card and screen. This is the pin that the Arduino uses to receive data from the SD card or screen.

- **Arduino D13 is SPI (SCK) pin:**

Used as serial clock pin for SD card and screen. This pin is used to clock data in and out of the Arduino.



Arduino Pin	Function
D0	Not Used
D1	Not Used
D2	Not Used
D3	Not Used
D4	TF_CS
D5	TFT_CS
D6	TFT_D/C
D7	Backlight Control
D8	Not Used
D9	Not Used
D10	Not Used
D11	SPI_MOSI
D12	SPI_MISO
D13	SPI_SCK

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Chip Select, Data/Command, and Backlight pins:

■ Arduino D4 to TF_CS:

Used for SD card chip select (CS) SPI pin. This pin will indicate the shield that the Arduino wants to send and receive data to and from the microSD card.

■ Arduino D5 to TFT_CS:

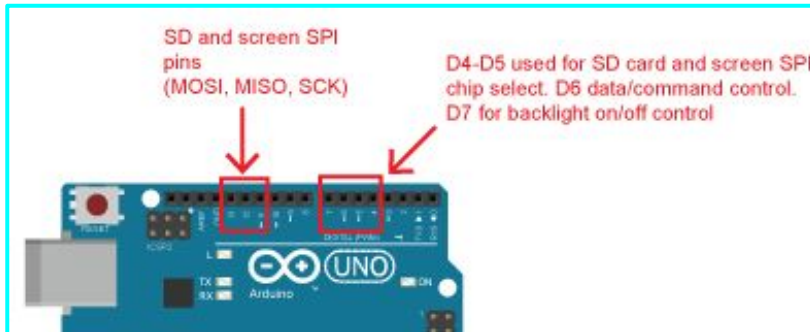
Used for touch screen chip select (CS) SPI pin. This pin will indicate the shield that the Arduino wants to send and receive data to and from the display/screen.

■ Arduino D6 to TFT_D/C:

Used for TFT Data/Command control pin. The value of this pin (HIGH, or LOW) will tell the shield if the Arduino wants to send data or commands.

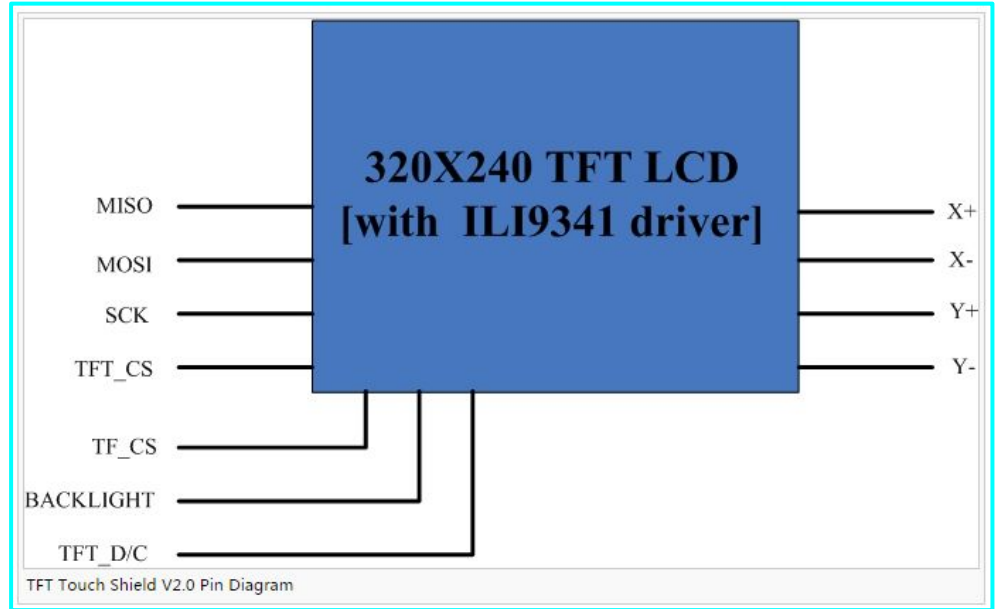
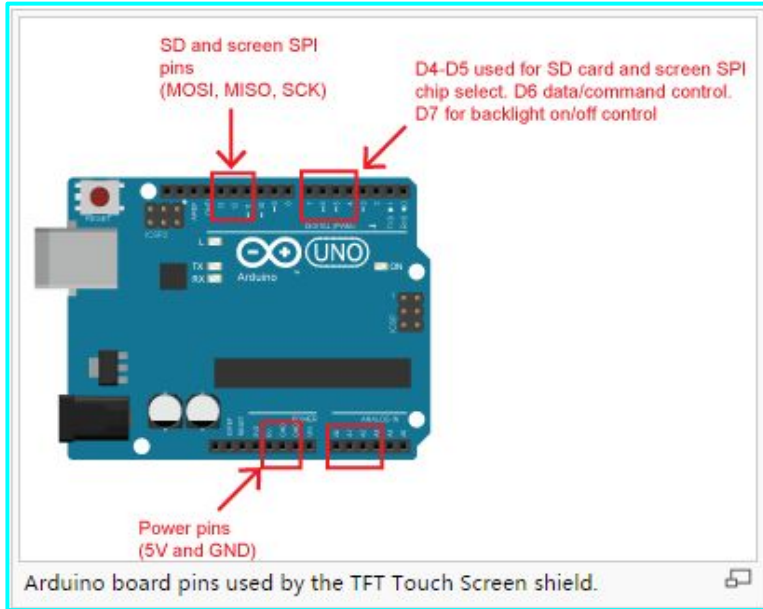
■ Arduino D7 to BACKLIGHT:

Used for touch screen backlight on/off control.



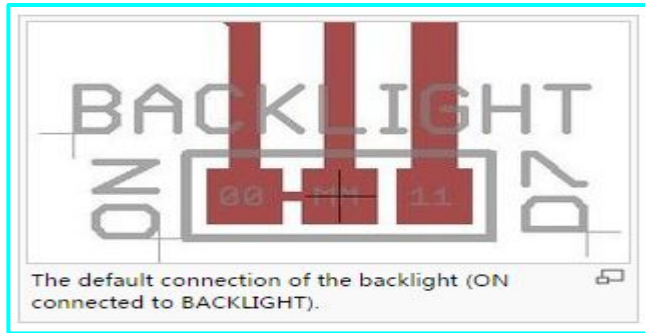
Arduino Pin	Function
D0	Not Used
D1	Not Used
D2	Not Used
D3	Not Used
D4	TF_CS
D5	TFT_CS
D6	TFT_D/C
D7	Backlight Control
D8	Not Used
D9	Not Used
D10	Not Used
D11	SPI_MOSI
D12	SPI_MISO
D13	SPI_SCK

Hardware configuration

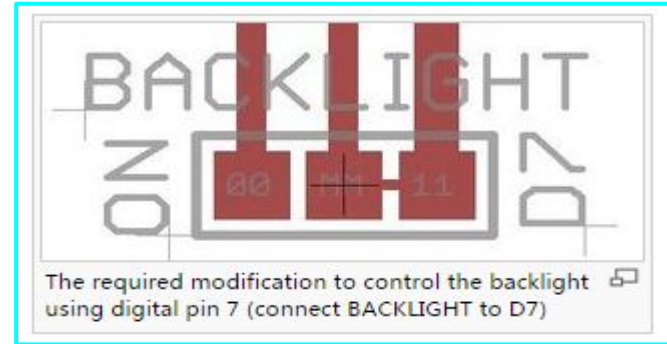


Backlight Control on/off state using the Arduino Digital I/O pin 7

Default setting for backlight



Modify Connection to D7

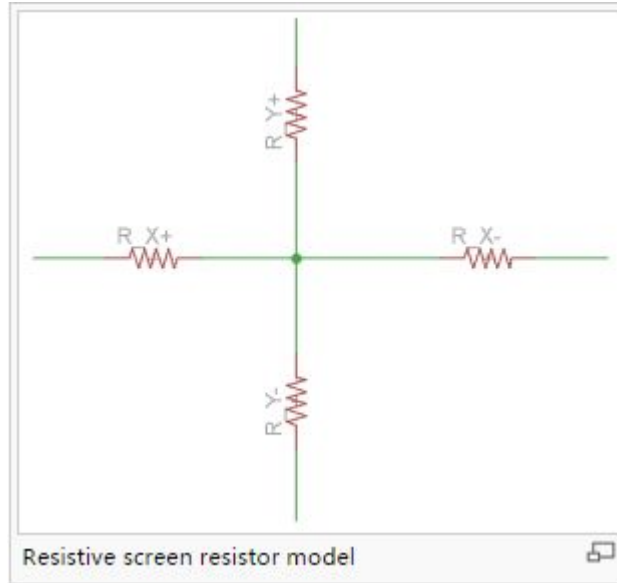


```
#define Backlight 7
void setup(void)
{
  pinMode(Backlight,OUTPUT);
}
void loop(void)
{ digitalWrite(Backlight,HIGH); // turn on the backlight
  delay(500);
  digitalWrite(Backlight,LOW); // turn off the backlight
  delay(500);
}
```

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Touch Panel Output Pins

Resistive touch screens can be roughly modeled by the following four-resistor network:



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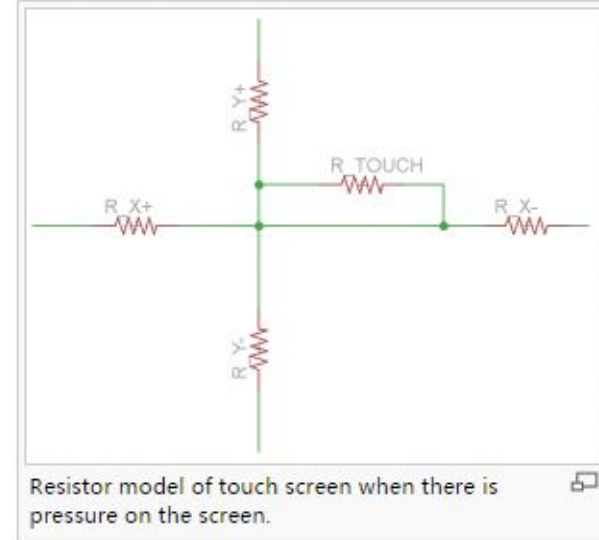
When the screen is touched a new resistance, R_{touch} , is put into the network. One must then calculate the voltage at each terminal to get the touch point.

Arduino Pin	Function
A0	Y-
A1	X-
A2	Y+
A3	X+
A4	Not Used
A5	Not Used

The shield provides a pin/terminal for each of the modeled resistors:

- Arduino A0 to Y-
- Arduino A1 to X-
- Arduino A2 to Y+
- Arduino A3 to X+

The Y-, X-, Y+, and X+ terminals of the touch screens are connected to analog pins in the Arduino board when the TFT shield is stacked.



Download the TFT Libraries

- Go To: www.the-cains-group.net
- Download Libraries from - 2016-May Workshop
 - [Seed_Touch_Screen.zip](#)
 - [TFT_Touch_Shield_V2-master.zip](#)
- Alternative Github Download [SeedTFTV2.0 Library for Arduino 1.0](#)

Libraries Needed

```
#include <stdint.h>
#include <SeedTouchScreen.h>
#include <TFTv2.h>
#include <SPI.h>
#include <SD.h>
```



2.8" TFT Touch Shield V2.0

Download Zip file at Github file location for TFT.

https://github.com/Seeed-Studio/TFT_Touch_Shield_V2/tree/1fb650827b6db94dcb588026ea3fc2e10c0c747a

The screenshot shows the GitHub interface for the repository 'Seeed-Studio / TFT_Touch_Shield_V2'. At the top, there are navigation links for 'Pull requests', 'Issues', and 'Gist'. Below that, the repository name is displayed along with 'Watch' (14), 'Star' (32), and 'Fork' (37) buttons. The 'Code' tab is selected, showing options for 'Issues' (2), 'Pull requests' (0), 'Wiki', 'Pulse', and 'Graphs'. A note states 'No description or website provided.' Below this, repository statistics are shown: '23 commits', '1 branch', '0 releases', and '4 contributors'. A horizontal bar contains buttons for 'New pull request', 'Create new file', 'Upload files', 'Find file', and 'Clone or download'. The 'Clone or download' button is highlighted with a blue circle and a blue arrow points to it from the right. Below the bar, a commit history table is visible, listing files and their commit details.

File	Commit Message	Commit Hash	Time
ioovee	Update tftbmp2.ino	1fb6508	Latest commit on Apr 11
examples	Update tftbmp2.ino		a month ago
License.txt	git		2 years ago
README.md	Update README.md		2 years ago
TFTv2.cpp	Merge pull request #4 from nubok/master		2 years ago
TFTv2.h	Fixed typo in function naming:		2 years ago
font.c	Update font.c		2 years ago
keywords.txt	git		2 years ago
README.md			

Projects

Project 1:

Download: [Project_1_TFT_Circle.ino](#)

Draw a Circle - Code show how to draw Circles on Screen

Download: [Project_1_TFT_Draw_Num.ino](#)

Draw a Number - Code show how to draw numbers on Screen

Project 2:

Download: [Project_2_TFT_Paint.ino](#)

Paint Pad - Code demonstrates how to use touch Screen

Project 3:

Download: [Desktop.bmp](#), [flower.bmp](#), [hibiscus.bmp](#), [test.bmp](#)

Copy to micro SD Card

Download: [Project_3_tft_bmp.ino](#)

Read 320x 240 bmp files from the SD card and display on Screen

Uses console port at 9600 baud

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WIKI Page

http://www.seeedstudio.com/wiki/2.8%27%27_TFT_Touch_Shield_v2.0

Library

TFT Display

http://www.seeedstudio.com/wiki/File:Seed_TFT_v2.0.zip

TouchScreen

http://www.seeedstudio.com/wiki/File:Seed_Touch_Screen.zip

[Github - Touch_Screen_Driver](#)

[Github - Library](#)

[Github - ArduinoPhone](#)

[Github - CANBUS_SHIELD_OBD_RECIPLE](#)