1. Introduction to Testing Platform

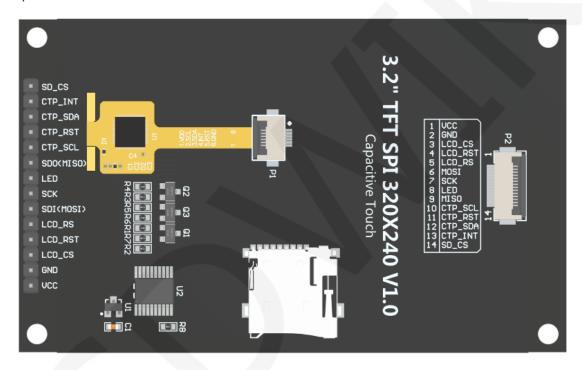
Development board: Arduino UNO/MEGA2560

MCU: AVR_ATmega328P/AVR_ATmega2560

Frequency: 16MHz/16MHz

2. Pin connection instructions

The display module is connected to the microcontroller using a DuPont cable, with



specific instructions as follows:

Module Back Pins

Ard	Arduino UNO microcontroller test program wiring instructions									
Number	Module Pin	Corresponding to UNO development board wiring pin	Remarks							
1	vcc	5V	LCD power positive							
2	GND	GND	LCD Power ground							
3	LCD_CS	10	LCD selection control signal, Low level active							

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			1 1
4	LCD_RST	8	LCD reset control signal, Low level reset
5	LCD_RS	9	LCD command / data selection control signal High level: data, low level: command
6	SDI(MOSI)	11	SPI bus write data signal(SD card and LCD screen used together)
7	SCK	13	SPI bus clock signal(SD card and LCD screen used together)
8	LED	5	LCD backlight control signal (If you need control, please connect the pins. If you don't need control, you can skip it)
9	SDO(MISO)	12	SPI bus read data signal (SD card and LCD screen used together)
10	CTP_SCL	A5	Capacitive touch screen IIC bus clock signal (modules without touch screens do not need to be connected)
11	CTP_RST	6	Capacitor touch screen reset control signal, low-level reset (modules without touch screens do not need to be connected)
12	CTP_SDA	A4	Capacitive touch screen IIC bus data signal (modules without touch screens do not need to be connected)
13	CTP_INT	7	Capacitor touch screen IIC bus touch interrupt signal, when generating touch, input low level to the main control (modules without touch screens do not need to be connected)
14	SD_CS	4	SD card selection control signal, low level active (without SD card function, can be disconnected)

Arduino MEGA2560 microcontroller test program wiring instructions								
Number	Module Pin	Corresponding development k Hardware SPI	Remarks					
1	VCC	ţ	5V	LCD power positive				
2	GND	G	ND	LCD Power ground				

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3	LCD_CS		10	LCD selection control signal, Low level active		
4	LCD_RST		8	LCD reset control signal, Low level reset		
5	LCD_RS		9	LCD command / data selection control signal High level: data, low level: command		
6	SDI(MOSI)	51 11		SPI bus write data signal(SD card and LCD screen used together)		
7	SCK	52 13		SPI bus clock signal(SD card and LCD screen used together)		
8	LED		5	LCD backlight control signal (If you need control, please		
9	SDO(MISO)	50	12	SPI bus read data signal (SD card and LCD screen used together)		
10	CTP_SCL	A5		Capacitive touch screen IIC bus clock signal (modules without touch screens do not need to be connected)		
11	CTP_RST		6	Capacitor touch screen reset control signal, low-level reset (modules without touch screens do not need to be connected)		
12	CTP_SDA	A4		Capacitive touch screen IIC bus data signal (modules without touch screens do not need to be connected)		
13	CTP_INT		7	Capacitor touch screen IIC bus touch interrupt signal, when generating touch, input low level to the main control (modules without touch screens do not need to be connected)		

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			SD card selection control
14	14 SD CS	4	signal, low level active (without
	_		SD card function, can be
			disconnected)

3. Demo Function Description

This testing program program includes two MCU programs, Arduino UNO and Mega2560. Each MCU program includes software spi and hardware spi function programs, which are located in Demo_UNO_Mega2560 directory, as shown in the following figure:



The testing program includes the following test items:

- A. Example_ 01_ Simple_ Test is a screen swiping test that does not rely on the library;
- B. Example_ 02_ clear_ Screen is a simple screen brushing test that cycles the screen in the order of black, white, red, green, and blue colors;
- C. Example_03_ colligate_ Test is a comprehensive test that displays graphics, lines, and counts program runtime;
- D. Example_04_ display_ Graphics is a graphical display test that displays various graphics;
- E. Example_05_ display_ Scroll is a scrolling test that displays text scrolling;
- F. Example_ 06_ display_ String is a text display test that displays different sizes of Chinese and English;

- G. Example_07_ read_ Piexl tests for reading specified pixel color values
- H. Example_08_ show_ bmp_ Picture is a test for displaying BMP format images on SD cards
- I. Example 09 switch Test is a switch touch test that triggers the switch by clicking and touching;
- J. Example_ 10_ display_ Phonecall is a touch test for telephone dialing, which simulates the dialing function through touch;
- K. Example 11 touch Pen is a touch stroke test that uses a pen to draw on the LCD screen;
- L. Example_12_Show_SDCardInfo is a test that displays the storage information of the SD card:
- M. SDCard Extend Example is an SD test example that comes with the software;

4. Demo Usage Instructions

Installing development tool software

Download the installation package from the Arduino official website.

Download address:https://www.arduino.cc/en/software

Download the corresponding installation package according to your PC system,

as shown in the following figure (the version in the picture may not be the latest

version, and the download interface may not be the latest):



Arduino IDE 1.8.19

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

Refer to the Getting Started page for Installation instructions.

SOURCE CODE

Active development of the Arduino software is hosted by GitHub. See the instructions for building the code. Latest release source code archives are available here. The archives are PGP-signed so they can be verified using this gpg key.

After the download is completed, unzip and click Install.



♦ Installing software library

After the development environment is set up, the software library used by the sample program needs to be copied to the project library directory so that the sample program can be called. The software library is located in the

Demo_UNO_Mega2560\Install libraries directory, as shown in the following figure:



Among them:

LCDWIKI_GUI is a graphical library for the application layer;

LCDWIKI_ SPI is the SPI driver for the underlying display screen;

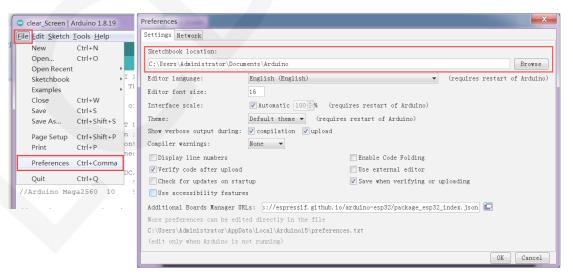
LCDWIKI_ TOUCH is a touch screen driver;

The default path for the engineering library directory is C: Users\Administrator

\Documents\Arduino\libraries. You can also change the project library directory:

open the Arduino IDE software, click File ->Preferences, and reset the Sketchbook

location in the pop-up interface, as shown in the following figure:



Copy the software library to the project library directory, as shown in the following

figure:



♦ Compile and Run Programs

- A. Connect the display module to the UNO or Mega2560 development board, and then power up the development board.
- B. Open any example (using clear_screen as an example), as shown in the following figure:

€○ -	Memo_MSP3222_MSP3223_UNO_M	ega2560_Hardware_Sl	PI • Example_02_cle	ear_screen 🕨 clear_Screen	_ □ X
文件(F) 编	辑(E) 查看(V) 工具(T) 帮助(H)				
组织 ▼	包含到库中▼ 共享▼ 新建文件夹				11 - 12
	名称	修改日期	类型	大小	
	Clear_Screen.ino	2023/5/22 16:41	Arduino file	3 KB	

C. After opening the sample project, select the UNO or Mega2560 device, as shown in the following figure:

Select UNO:

LCDWIKI MSP3222_MSP3223 UNO_Mega2560 Demo Instructions

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😊 clear_Screen Arc	duino 1.8.19				・ 远择・ 百度
File Edit Sketch To	ools Help				「 编辑 保
Clear_Screen	Auto Format Archive Sketch	Ctrl+T		<u>∳</u>	
// IMPORTANT // CONFIGURE	Fix Encoding & Reload Manage Libraries Serial Monitor	Ctrl+Shift+I Ctrl+Shift+M	BOARD.		
//This progr	Serial Plotter	Ctrl+Shift+L	black,white,red,green,	blue. 🗏	
//when using //the SDA pi	Teensy 4 Security WiFi101 / WiFiNINA Firmware Upd	ater	rdware spi lines to th	e LCD,	
//if you don	Board: "Arduino Uno")		pin d	
//other pins	Port	1	Arduino AVR Boards	Arduino Yú	ín
//pin usage	Get Board Info		ESP32 Arduino 🕐 🔍	Arduino U	
// //Arduino Un	Programmer	1	Teensyduino		uemilanove or Diecimila
//Arduino Me	Burn Bootloader		50 5 5V/3.3	Arduino N Arduino M	ega or Mega 2560
//Remember to	set the pins to suit your	display module		Arduino M	0 0

Select Mega2560:

💿 clear_Screen Ai	rduino 1.8.19				X	v	▶ 选择 ▼	百度网
File Edit Sketch T	ools Help			-		5	编辑	保存
Clear_Screen	Auto Format Archive Sketch Fix Encoding & Reload	Ctrl+T						
// CONFIGURE	Manage Libraries Serial Monitor	Ctrl+Shift+I Ctrl+Shift+M	BOARD.					
//This progr //when using	Serial Plotter Teensy 4 Security WiFi101 / WiFiNINA Firmware Updater	Ctrl+Shift+L	lack,white,red	es to the		ľ .		
//the SDA pi //if you don	Board: "Arduino Mega or Mega 2560"		Boards Manage		pin ć			
<pre>//other pins //pin usage //</pre>	Processor: "ATmega2560 (Mega 2560)" Port Get Board Info		Arduino AVR B ESP32 Arduino Teensyduino		Arduino Y Arduino U Arduino E	Ino	ve or Dieci	mila
//Arduino Un //Arduino Me	Programmer Burn Bootloader			7/3.3V 7/3.3V		lano lega or M lega ADK	ega 2560	
//Remember to /**********	set the pins to suit your disp *********	lay module!	*****	*****	Arduino L			

D. Set the port. If you choose Mega2560, you also need to set the processor based

on the development board used, as shown in the following figure:

💿 clear_Screen Arc	luino 1.8.19					
File Edit Sketch To	ols Help					
Clear_Screen	Auto Format Archive Sketch	Ctrl+T				▼
// IMPORTANT // CONFIGURE	Fix Encoding & Reload Manage Libraries Serial Monitor	Ctrl+Shift+I Ctrl+Shift+M	BOARD.			^
//This progr //when using	Serial Plotter Teensy 4 Security WiFi101 / WiFiNINA Firmware Updater	Ctrl+Shift+L			red,green, ines to th	
//the SDA pi //if you don //other pins	Board: "Arduino Mega or Mega 2560" Processor: "ATmega2560 (Mega 2560)"	, 	t to 3	.3V a	lified. and set the 60 (Mega 25)	
//pin usage // //Arduino Un	Port: "COM49" Get Board Info	1	/MISO	negal2 LED 5	VCC	GND
//Arduino Un	Programmer Burn Bootloader	,	12 50	5		GND GND

E. Click the upload button to compile and download the program, as shown in the

following figure:

💿 clear_Screen Arduino 1	.8.19								
<u>File Edit Sketch Tools H</u> e	elp								
									<u> </u>
clear_Screen									
// IMPORTANT: LCDWI	KI_S	PI LIBR	ARY MUS	T BE SPECI	FICAL	LY			A
// CONFIGURED FOR E	ITHE	R THE T	FT SHIE	LD OR THE	BREAK	OUT BOARD.			
//This program is a			-		-				
//when using the BR			-	-			-		ne LCD,
//the SDA pin and S	-								
//if you don't need						et it to 3	.3V a	nd set the	e pin c
//other pins can be		ined by	yousel	i, for exam	ple				
<pre>//pin usage as foll //</pre>		DG (DG				200 (MT 20			(1) ID
						SDO/MISO			GND
		9				12	-		
//Arduino Mega2560	10	9	8	51	52	50	5	5V/3.3V	GND
<pre>//Remember to set t /***********************************</pre>	he p ****	ins to ******	suit yo ******	ur display	modu *****	le! *******	****	*****	******

F. If the following prompt appears, it indicates that the program has been compiled

and downloaded successfully, and has already been run:

💿 clear_Screen Arduino 1.8.19	X
<u>Eile Edit Sketch Tools Help</u>	
	P
clear_Screen	
· • [Þ
Done uploading.	
Reading ###################################	s ^
avrdude: verifying	
avrdude: 11806 bytes of flash verified	
avrdude done. Thank you.	
avraude done. Thank you.	E
	~
	•
1 Arduino Uno on	сом49

G. If the display module displays content, it indicates that the program has run successfully.