1. Introduction to Testing Platform

Development board: STM32F103C8T6, MiniSTM32, Elite STM32, Explorer STM32F4,

Apollo STM32F4/F7

MCU: STM32F103C8T6, STM32F103RCT6, STM32F103ZET6, STM32F407ZGT6,

STM32F429IGT6

Frequency: 72MHz、72MHz、72MHz、168MHz、180MHz (Corresponding to the above MCU)

2. Pin connection instructions

This display module can be directly plugged into the STM32F103C8T6 development board, and can only be connected to other development boards through DuPont cables.



Figure 1: Module Inline STM32F103C8T6 Development Board

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Figure 2 Module Back Pins

NOTE:

- A. The **IIC Address** resistor is used to select the IIC slave device address. If it is soldered on the 0x78 side, select the 0x78 slave device address. If it is soldered on the 0x7A side, select the 0x7A slave device address;
- B. The RES pin row is not soldered by default. If the reset function needs to be controlled in the program, it needs to be soldered;

STM32F103C8T6 IIC Test Program Pin Direct Insertion Instructions				
Number	Module pins	Corresponding STM32F103 development board wiring pins	Remarks	
1	GND	GND	OLED screen power supply ground	
2	VCC	5V/3.3V	OLED screen power supply positive	
3	SCL	PA5	IIC bus clock signal	
4	SDA	PA7	IIC bus data signal	

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5	RES	Not welded	The pin arrangement is not soldered by default. If the reset function needs to be controlled in the program, it needs to be soldered
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STM32F103RCT6 microcontroller IIC test program wiring instructions				
Number	er Module Corresponding to Pin development board wiring pin Remarks		Remarks	
1	GND	GND	OLED screen power supply ground	
2	VCC	5V/3.3V	OLED screen power supply positive	
3	SCL	PB13	IIC bus clock signal	
4	SDA	PB15	IIC bus data signal	
5	RES	Not welded	The pin arrangement is not soldered by default. If the reset function needs to be controlled in the program, it needs to be soldered	

STM32F103ZET6 microcontroller IIC test program wiring instructions				
Number	Module Pin	Corresponding to EliteSTM32 developmentRemarksboard wiring pinImage: Constant of the second s		
1	GND	GND	OLED screen power supply ground	
2	VCC	5V/3.3V	OLED screen power supply positive	
3	SCL	PB13	IIC bus clock signal	
4	SDA	PB15	IIC bus data signal	

STM32F407ZGT6 microcontroller IIC test program wiring instructions					
Number	Imber Module Corresponding to Pin development board wiring pin Remarks		Remarks		
1	GND	GND	GND OLED screen power supply ground		
2	VCC	5V/3.3V	5V/3.3V OLED screen power supply positive		
3	SCL	PB3 IIC bus clock signal			
4	SDA	PB5 IIC bus data signal			
5 RES Not welded The pin arrangement is not soldered by default. If the reset function needs to be controlled in the program, it needs to be soldered					

STM32F429IGT6 microcontroller IIC test program wiring instructions				
Numb er	Module Pin	Corresponding to Apollo STM32F4/F7 development board wiring pin	Remarks	
1	GND	GND	OLED screen power supply ground	
2	VCC	5V/3.3V	OLED screen power supply positive	
3	SCL	PF7	IIC bus clock signal	
4	SDA	PF9	IIC bus data signal	
5	RES	Not welded	The pin arrangement is not soldered by default. If the reset function needs to be controlled in the program, it needs to be soldered	

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3. Demo Function Description

This testing program includes 7 MCU testing programs including STM32F103C8T6,

STM32F103RCT6, STM32F103ZET6, STM32F407ZGT6, STM32F429IGT6,

STM32F767IGT6, STM32H743IIT6. Each MCU testing program includes software IIC functions, which are located in **Demo_STM32** directory, as shown in the following figure:



♦ Description of sample program content

The sample program includes the following content:

- A. Home screen display;
- B. Single color screen brushing
- C. Rectangle drawing display;
- D. Circular drawing display;
- E. Triangle drawing display;
- F. English display;
- G. Display of numbers and symbols
- H. Chinese display;
- I. BMP monochrome image display;
- J. Menu simulation display;

♦ Example program display direction switching instructions

Found macro definition USE_HORIZONTAL and COLOR_STATE in

HARDWARE\OLED\oled.h file, as shown in the following:

define USE_HORIZONTAL 0 // 设置显示方向: 0-正常,1-旋转180度 define COLOR STATE 0 // 设置显示模式: 0-正常显示,1-反色显示

Modify USE_ HORIZONTAL and COLOR_ STATE macro according to the following definition:

#define COLOR_STATE 1 //Monochrome background, black display content

Example program IIC slave device address modification instructions

The IIC slave device address has been modified in hardware, and corresponding modifications need to be made in software.First, locate the macro definition IIC_SLAVE_ADDR in the HARDWARE\IIC\iic.h file, as shown in the following figure:

//定义IIC从设备地址 #define IIC_**SLAVE_A**DDR 0x78 //0x7A

Then modify IIC_SLAVE_ADDR macro definition according to the following definition is sufficient to:

#define IIC_ SLAVE_ ADDR 0x78 //Slave device address is 0x78 (default value)
#define IIC_ SLAVE_ ADDR 0x7A //Slave device address is 0x7A

4. Demo Usage Instructions

♦ Installing development tool software

Firstly, you need to install the development tool software, which uses Keil5.

Please refer to the online download and installation methods for yourself.

♦ Installing Device Library

After the successful installation of the tool software, it is necessary to install several MCU device libraries, otherwise the project cannot be established, and compilation and download cannot be carried out. Please consult online for the installation method of the device library.

♦ Compiling Programs

After the library installation is completed, open the **PROJECT** directory under the sample program, locate the **uvprojx** file, double-click to open the sample project, as shown in the following figure:



After opening the sample project, you can make modifications to the project code (or not). After the modifications are completed, click the compile button to compile the code. The following prompt appears, indicating successful compilation, as shown in the following figure:

	\sim			
G:\project\2.42inch\2.42inch_OLED_SSD1309_IIC_Module_MC242GX_V1.0\1	X			
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Build target 'QD-OLED' "\OBJ\TEST_OLED.axf" - 0 Error(s), 0 Warning(s).				
Build Time Elapsed: 00:00:00	-			
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♦ Download and Run Programs

The development board supports SWD download and Jlink download

Here is an introduction to Jlink download. For other download methods, please refer to the documentation in the development board documentation package or consult the internet.

The steps for downloading Jlink are as follows (using the STM32F103RCT6 development board as an example):

A. After the program compilation is completed, proceed with the program download. First, connect JTAG to the computer and development board, click on the magic wand icon ->Debug ->drop-down menu, and select J-LINK/J-TRACE Cortex, as shown in the following figure:

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E:\project\3.2inch\QDtech	_3.2inch_ILI9341_S	PI_V1.0\2-STM32测试程序\STM32_Dem	o_STM32F103RCT	6_Hardware_SPI\USER\TOUCH.uvproj -	µVision 😐 🖾
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B. Click on Settings again, set ort to SW and Max to 2MHz, as shown in the following:

E:\project\3.2inch\QDtech	_3.2inch_JLI9341_SPI_V1.0\2-STM32测试程序\STM32_Demo_STM32F103RCT6_Hardware_SPI\USER\TOUCH.uvproj - µVision	
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B-B delay.c B-B system_stm32f1 B-B system_stm32f1 B-B key.c B-B lcd.c B-B lcd.c B-B vojic.c B-B touch.c B-B touch	Cortex JLink/JTrace Target Driver Setup Debus Trace Flash Download J-Link / J-Trace Adapter SN: 5008621590 Pevice: J-Link ARM W: 78.00 dll 74.80g W: 7-Link ARM Y8 coapiled P G Automatic Detectic ID CODE: G Automatic Detectic ID CODE: Auto Clk Auto Clk C Manual Configurati Device Name: Add Delete Update IR len:	
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C. Select the microcontroller model, click on the magic wand icon ->Device ->select

the **STM32F103RC** microcontroller model, as shown in the following figure:

E:\project\3.2inch\QDtech_3.2inch_ILI934	41_SPI_V1.0\2-STM32测试程序\STM32_Demo_STM32F103RCT6_Hardware_SPI\USER\TOUCH.uvproj - µVision 📃 💷	X
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e- ≛ test.c e- ≛ GUI.c	Device Database 💌	
e– ∄ delay.c	Vendor: STMicroelectronics Software Pack	
⊕- 🗄 system_stm32f10x.c	Device: STM32F103RC Pack: Keil.STM32F1xx_DFP.1.0.4	
e- ⊡ kev.c	Toolset ARM URL: http://www.keil.com/pack/	
e−≝ lcd.c	Search:	
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⊕ <u></u> 24cxx.c	STM32F103RC STM32 F1 series of mainstream MCUs covers the	k *
⊕ ⊜ CORE	STM32F103RD freeds of a large variety of applications in the industrial, medical and consumer markets. High performance with first-class peripherals and low-	
🗄 🛅 FWLib	STM32F103RE Select this MCU power, low-voltage operation is paired with a high level of integration at accessible prices with a simple architecture and easy-to-use tools	
	STM32F103RF model Typical applications include motor drives and application control, medical	-
Project 🛞 Books 🚯 Funct 🗛 Temp	and randinate equipment, industrial applications, FLCs, inventers, primers, and scanners, alarm systems, video intercom, HVAC and home audio	
Build Output	G STM32F103T6	4
	LCD parallel interface, 8080/6800 modes STM32F103T8 STM32F103T8	*
	STM32F103TB - Timer with quadrature (incremental) encoder input	
	STM32F103V8	

D. Select the flash model (if selected, please ignore it), click

Utilities>Settings>Add>select STM32F10x High density Flash ->Add, as

shown in the following figure:

1 E:\project\3.2inch\QDtech_3.2inch_ILI9341_SPI_V1.0\2-STM32测试程序	۹\STM32_Demo_STM32F103RCT6_Hardware_SPI\USER\TOUCH.uvproj - µVision 📃 🗵 🍡
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Cortex JLink/JTrace Target Driver Setup Debug Trace Flash Download Download Function Erase Full Cl IP Program RAM for A	Description Flash Size Device Type Origin STM32F10x High-density 512k On-chip Flash Device Family Package STM32F10x High-density 512k On-chip Flash Device Family Package STM32F10x High-density 16B On-chip Flash Device Family Package STM32F10x High-density 4M Ext Flash SPI MDK Core RC28F640.J3x Dual Flash 16M Ext Flash 32-bit MDK Core S29GL064N Dual Flash 16M Ext Flash 32-bit MDK Core
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Add Renove	Add Cancel

E. After setting up both JTAG and flash, the program can be downloaded. Download the program, click the **download** button, and download the hex file to the development board. If the prompt "**Programming Done. Verify OK.**" appears, it indicates successful download, as shown in the following figure:

E:\project\3.2inch\QDtech_3.2inch_ILI	9341_SPI_V1.0\2-STM32测	试程序\STM32_Demo_STM32F103	RCT6_Hardwar 📼 💷 🔀
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Build Output			1
Erase Done. Programming Done. Verify OK. Application running	successful		
		* JLink Info: ETM fitted.	J-LINK / J-TRACE Cc

F. After the program is successfully downloaded, if the module does not respond, you need to press the reset button or power off and restart to run normally. If you want the program to automatically run after successful download, you need to press the following settings:

Click on the magic wand icon ->Utilities ->Settings ->check Reset and run, as shown in the following figure:

📓 E:\project\3.2inch\QDtech_3.2inch_ILI9341_SPI_V1.0\2-STM32测试程序\STM32_Demo_STM32F103RCT6_Hardware_SPI\USER\T				
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B-12240 Download Function RAM for Algorithm	******			
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E Do not Erase Veset and Run				
Programming Algorithm	-			
Device Size Device Type Address Range				
STM32F10x High-dens 512k On-chip Flash 08000000H - 0807FFFFH				
Erase Done.				
Programming Do Verify OK.	-			
Application ru				

G. If the display module displays characters and graphics normally, it indicates that the program has run successfully.

NOTE:

A. When downloading the program, if the following error occurs, it indicates that the

JTAG setting is incorrect. Please follow step B to set it:

JLink - Cortex-M Error	JLink - Cortex-M Error
8 No JLink Device found	8 No Cortex-M SW Device Found
确定	确定
JLINK is not connected to the computer	JLINK is connected to the computer, but not connected to the development board

B. If the following error occurs, it indicates that the flash setting is incorrect. Please follow step D to set it:

uVision	22
Error: Flash Downl	oad failed - "Cortex-M3"
	确定