

STM32 Test platform introduction:

This set of STM32 test programs use the development board of the ALIENTEK, as follows:

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

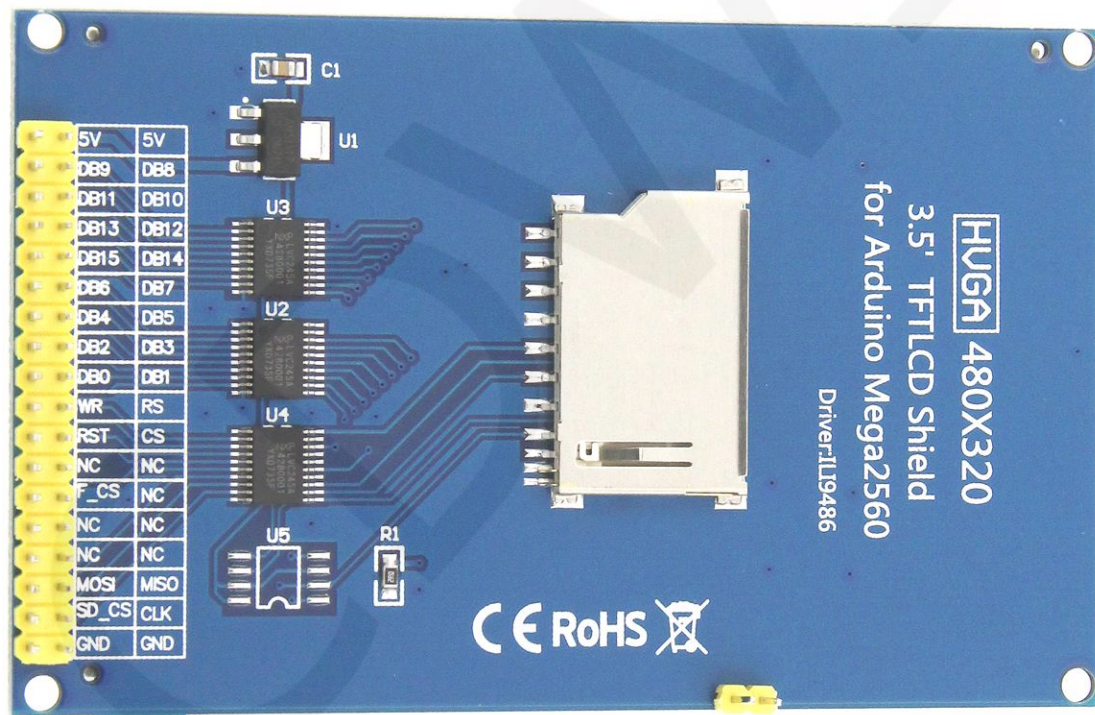
MCU: STM32F103RCT6, STM32F103ZET6, STM32F407ZGT6, STM32F429IGT6

(Corresponding to the above development boards)

Main frequency: 72M, 72M, 168M, 180M9 (Corresponding to the above MCU)

Crystal frequency: 8M, 8M, 8M, 25M (Corresponding to the above MCU)

Wiring instructions:



STM32F103RCT6 microcontroller test program wiring instructions

Number	Module Pin	Corresponding to MiniSTM32 development board wiring pin	Remarks
1	5V	5V	Power pin
2	DB0	PB0	Data bus low 8-bit pin
3	DB1	PB1	
4	DB2	PB2	
5	DB3	PB3	
6	DB4	PB4	
7	DB5	PB5	
8	DB6	PB6	
9	DB7	PB7	
10	DB8	PB8	Data bus high 8-bit pin
11	DB9	PB9	
12	DB10	PB10	
13	DB11	PB11	
14	DB12	PB12	
15	DB13	PB13	
16	DB14	PB14	
17	DB15	PB15	
18	RS	PC8	LCD register / data selection pin
19	WR	PC7	LCD write control pin
20	CS	PC9	LCD chip select control pin
21	RST	PC10	LCD reset control pin
22	NC	No need to connect	Undefined, reserved
23	F_CS	No need to connect	Extended application: SPI flash Chip Select Pin
24	MISO	No need to connect	SPI bus input pin (extended application)
25	MOSI	No need to connect	SPI bus output pin (extended application)
26	CLK	No need to connect	SPI bus clock pin (extended application)
27	SD_CS	No need to connect	Extended reference: SD card select pin

28	GND	GND	Power ground pin
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STM32F103ZET6 microcontroller test program wiring instructions

Number	Module Pin	Corresponding to Elite STM32 development board wiring pin	Remarks
1	5V	5V	Power pin
2	DB0	PF0	Data bus low 8-bit pin
3	DB1	PF1	
4	DB2	PF2	
5	DB3	PF3	
6	DB4	PF4	
7	DB5	PF5	
8	DB6	PF6	
9	DB7	PF7	
10	DB8	PF8	Data bus high 8-bit pin
11	DB9	PF9	
12	DB10	PF10	
13	DB11	PF11	
14	DB12	PF12	
15	DB13	PF13	
16	DB14	PF14	
17	DB15	PF15	
18	RS	PC8	LCD register / data selection pin
19	WR	PC7	LCD write control pin
20	CS	PC9	LCD chip select control pin
21	RST	PC10	LCD reset control pin
22	NC	No need to connect	Undefined, reserved
23	F_CS	No need to connect	Extended application: SPI flash Chip Select Pin
24	MISO	No need to connect	SPI bus input pin (extended application)
25	MOSI	No need to connect	SPI bus output pin (extended application)

26	CLK	No need to connect	SPI bus clock pin (extended application)
27	SD_CS	No need to connect	Extended reference: SD card select pin
28	GND	GND	Power ground pin

STM32F407ZGT6 microcontroller test program wiring instructions

Number	Module Pin	Corresponding to Explorer STM32F4 development board wiring pin	Remarks
1	5V	5V	Power pin
2	DB0	PG0	Data bus low 8-bit pin
3	DB1	PG1	
4	DB2	PG2	
5	DB3	PG3	
6	DB4	PG4	
7	DB5	PG5	
8	DB6	PG6	
9	DB7	PG7	
10	DB8	PG8	Data bus high 8-bit pin
11	DB9	PG9	
12	DB10	PG10	
13	DB11	PG11	
14	DB12	PG12	
15	DB13	PG13	
16	DB14	PG14	
17	DB15	PG15	
18	RS	PC8	LCD register / data selection pin
19	WR	PC7	LCD write control pin
20	CS	PC9	LCD chip select control pin
21	RST	PC10	LCD reset control pin
22	NC	No need to connect	Undefined, reserved
23	F_CS	No need to connect	Extended application: SPI flash Chip Select Pin

24	MISO	No need to connect	SPI bus input pin (extended application)
25	MOSI	No need to connect	SPI bus output pin (extended application)
26	CLK	No need to connect	SPI bus clock pin (extended application)
27	SD_CS	No need to connect	Extended reference: SD card select pin
28	GND	GND	Power ground pin

STM32F429IGT6 microcontroller test program wiring instructions

Number	Module Pin	Corresponding to Apollo STM32F4/F7 development board wiring pin	Remarks
1	5V	5V	Power pin
2	DB0	PE0	Data bus low 8-bit pin
3	DB1	PE1	
4	DB2	PE2	
5	DB3	PE3	
6	DB4	PE4	
7	DB5	PE5	
8	DB6	PE6	
9	DB7	PE7	
10	DB8	PE8	Data bus high 8-bit pin
11	DB9	PE9	
12	DB10	PE10	
13	DB11	PE11	
14	DB12	PE12	
15	DB13	PE13	
16	DB14	PE14	
17	DB15	PE15	
18	RS	PC8	LCD register / data selection pin
19	WR	PC7	LCD write control pin

20	CS	PC9	LCD chip select control pin
21	RST	PC10	LCD reset control pin
22	NC	No need to connect	Undefined, reserved
23	F_CS	No need to connect	Extended application: SPI flash Chip Select Pin
24	MISO	No need to connect	SPI bus input pin (extended application)
25	MOSI	No need to connect	SPI bus output pin (extended application)
26	CLK	No need to connect	SPI bus clock pin (extended application)
27	SD_CS	No need to connect	Extended reference: SD card select pin
28	GND	GND	Power ground pin

Demo function description:

1. This test program contains four test procedures for STM32 MCU, namely:
STM32F103RCT6, STM32F103ZET6, STM32F407ZGT6, STM32F429IGT6;
2. This set of test program uses the 16-bit parallel port of the single-chip platform to transmit data, so the test program needs to be set to 16-bit mode. For the specific setting method, see the mode switching instructions.
3. Please follow the wiring instructions above to find the corresponding development board and MCU for wiring;
4. This set of tests supports display switching in four directions. For details, see the display direction switching instructions
5. This set of test procedures contains the following test items:
 - A. the main interface displays the test;
 - B. simple brush test;
 - C. rectangular drawing and filling test;
 - D. circular drawing and filling test;
 - E. triangle drawing and filling test;
 - F. English display test;
 - G. Chinese display test;

- H. picture display test;
 - I. rotating display test;
6. the module does not have a touch screen, so there is no touch screen handwritten test items;

Mode switching instructions:

Find the macro definition `LCD_USE8BIT_MODEL` in `lcd.h`, as shown below:

```
#define LCD_USE8BIT_MODEL 1 //定义数据总线是否使用8位模式 0,使用16位模式.1,使用8位模式  
////////////////////////////////////
```

`LCD_USE8BIT_MODEL 0 // Use 16-bit mode`

`LCD_USE8BIT_MODEL 1 // Use 8-bit mode`

Note: Different hardware corresponds to different modes. If

the mode is switched on the software, the hardware should be modified accordingly. Otherwise, the module will not work properly if the hardware and software modes do not match.

Display direction switching instructions:

Find the macro definition `USE_HORIZONTAL` in `lcd.h` as shown below:

```
//////////////////////////////////// 用户配置区  
#define USE_HORIZONTAL 0 //定义液晶屏顺时针旋转方向 0-0度旋转, 1-90度旋转, 2-180度旋转, 3-270度旋转
```

`USE_HORIZONTAL 0 //0° Rotate`

`USE_HORIZONTAL 1 //90° Rotate`

`USE_HORIZONTAL 2 //180° Rotate`

`USE_HORIZONTAL 3 //270° Rotate`