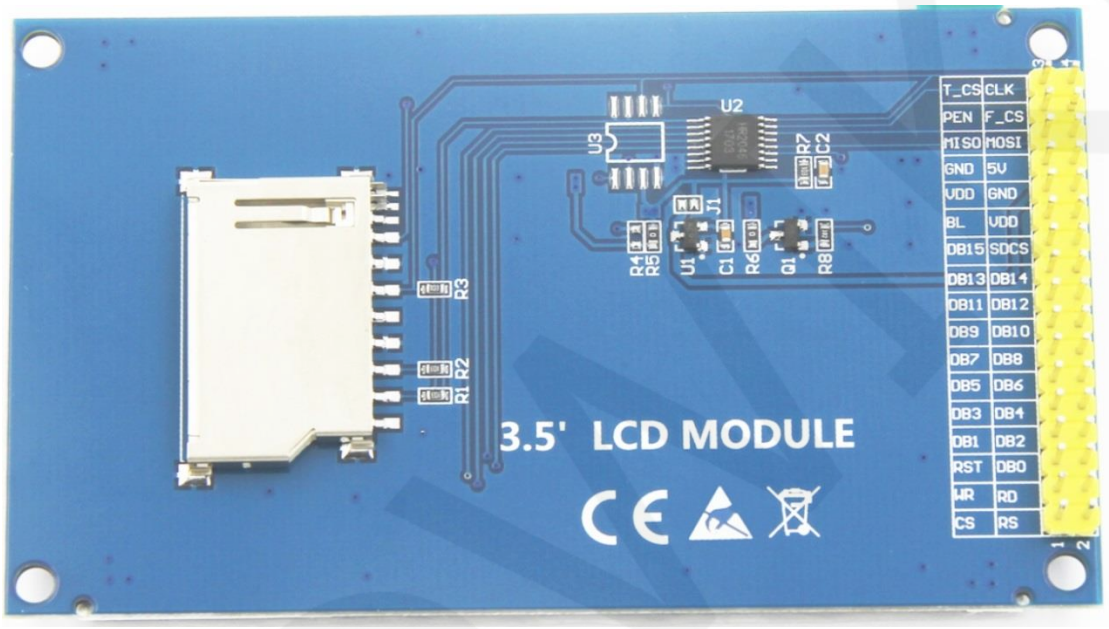
C51 Test platform introduction:

Development board: STC89/STC12 development board

MCU : STC89C52RC /STC12C5A60S2

Crystal frequency : 12MHZ

Wiring instructions:



Picture1. Module Pin silk screen picture

NOTE:

1. **This module hardware only supports 16-bit data bus mode;**

Important Note:

1. **The following pin numbers 1~34 are the pin number of Module pin with PCB backplane of our company. If you purchase a bare screen, please refer to the pin definition of the bare screen specification, refer to the wiring according to the signal type instead of directly Wire according to the following module pin numbers. For example: CS is 1 pin on our module. It may be x pin on different size bare screen. The following wiring program instructions tell you to**

connect CS signal to the P1.3 pin of C51 microcontroller.

2. **About VCC supply voltage: If you buy a module with PCB backplane, VCC/VDD power supply can be connected to 5V or 3.3V (module has integrated ultra low dropout 5V to 3V circuit), but it is recommended to connect 3.3V, because connecting 5V will lead to circuit Increased heat generation, affecting module life; if you buy a bare screen LCD, remember to only connect 3.3V.**
3. **About the backlight voltage: The module with the PCB backplane has integrated triode backlight control circuit, which only needs to input the high level of the BL pin or the PWM wave to illuminate the backlight. If you are buying a bare screen, the LEDAx is connected to 3.0V-3.3V and the LEDKx is grounded.**

STC12C5A60S2 microcontroller test program wiring instructions			
Number	**Module Pin**	**Corresponding to STC12 development board wiring pin**	**Remarks**
1	**CS**	P13	LCD reset control pin(low level enable)
2	**RS**	P12	LCD register / data selection control pin (high level: register, low level: data)
3	**WR**	P11	LCD write control pin
4	**RD**	P10	LCD read control pin
5	**RST**	P33	LCD reset control pin(low level reset)
6	**DB0**	P00	LCD data bus low 8-bit pin
7	**DB1**	P01	
8	**DB2**	P02	
9	**DB3**	P03	
10	**DB4**	P04	
11	**DB5**	P05	
12	**DB6**	P06	
13	**DB7**	P07	

14	**DB8**	P20	LCD data bus high 8-bit pin
15	**DB9**	P21	
16	**DB10**	P22	
17	**DB11**	P23	
18	**DB12**	P24	
19	**DB13**	P25	
20	**DB14**	P26	
21	**DB15**	P27	
22	**SDCS**	No need to connect	SD card selection control pin (used when using the SD card expansion function, this test program is not used)
23	**BL**	P32	LCD backlight control pin(High level light)
24	**VDD**	3.3V/5V	Module power positive pin (module has integrated voltage regulator IC, so the power supply can be connected to 5V or 3.3V)
25	**VDD**	3.3V/5V	
26	**GND**	GND	Module power ground pin
27	**GND**	GND	
28	**5V**	No need to connect	LCD backlight power positive pin (default shared onboard backlight power supply, this pin can not be connected)
29	**MISO**	P35	Touch screen SPI bus data input pin
30	**MOSI**	P34	Touch screen SPI bus data output pin
31	**PEN**	P40	Touch screen interrupt detection pin (Low level when a touch occurs)
32	**F_CS**	No need to connect	Flash chip select control pin (used when using the Flash extension function, this test program is not used)
33	**T_CS**	P37	Touch screen IC chip select control pin(Low level enable)
34	**CLK**	P36	Touch screen SPI bus clock control pin

STC89C52RC microcontroller test program wiring instructions

Number	Module Pin	Corresponding to STC89 development board wiring pin	Remarks

1	**CS**	P13	LCD reset control pin(low level enable)
2	**RS**	P12	LCD register / data selection control pin (high level: register, low level: data)
3	**WR**	P11	LCD write control pin
4	**RD**	P10	LCD read control pin
5	**RST**	P14	LCD reset control pin(low level reset)
6	**DB0**	P30	LCD data bus low 8-bit pin
7	**DB1**	P31	
8	**DB2**	P32	
9	**DB3**	P33	
10	**DB4**	P34	
11	**DB5**	P35	
12	**DB6**	P36	
13	**DB7**	P37	
14	**DB8**	P20	LCD data bus high 8-bit pin
15	**DB9**	P21	
16	**DB10**	P22	
17	**DB11**	P23	
18	**DB12**	P24	
19	**DB13**	P25	
20	**DB14**	P26	
21	**DB15**	P27	
22	**SDCS**	No need to connect	SD card selection control pin (used when using the SD card expansion function, this test program is not used)
23	**BL**	3.3V	LCD backlight control pin(High level light)
24	**VDD**	3.3V/5V	Module power positive pin (module has integrated voltage regulator IC, so the power supply can be connected to 5V or 3.3V)
25	**VDD**	3.3V/5V	
26	**GND**	GND	Module power ground pin
27	**GND**	GND	
28	**5V**	No need to connect	LCD backlight power positive pin (default shared onboard backlight power supply, this pin can not be connected)
29	**MISO**	No need to connect	Touch screen SPI bus data input pin

30	MOSI	No need to connect	Touch screen SPI bus data output pin
31	PEN	No need to connect	Touch screen interrupt detection pin (Low level when a touch occurs)
32	F_CS	No need to connect	Flash chip select control pin (used when using the Flash extension function, this test program is not used)
33	T_CS	No need to connect	Touch screen IC chip select control pin(Low level enable)
34	CLK	No need to connect	Touch screen SPI bus clock control pin

Note:

1. **Since the STC89C52RC microcontroller does not have a push-pull output function, the backlight control pin needs to be connected to a 3.3V power supply to be properly lit.**
2. **Since the STC89C52RC microcontroller's Flash capacity is too small (less than 25KB), the program with touch function cannot be downloaded, so the touch screen does not need wiring.**

Demo function description:

1. This set of test procedures are applicable to the STC12C5A60S2 and STC89C5SRC microcontroller platforms respectively;
2. Please find the corresponding development board for wiring according to the above wiring instructions;
3. This set of test program supports 8-bit mode and 16-bit data bus mode switching. For details, see the following mode switching instructions.
4. This set of test program supports display switching in four directions. For details, see the following instructions for switching directions;
5. STC89C5SRC microcontroller Flash capacity is too small (less than 25KB), can not download too large programs, so its test program only contains simple red, green and blue screen test items;
6. STC12C5A60S2 microcontroller test program contains the following test items:

A. the main interface displays the test;

B. read ID and color value test;

C. simple brush test;

D. rectangular drawing and filling test;

E. circular drawing and filling test;

F. triangle drawing and filling test;

G. English display test;

H. Chinese display test;

I. picture display test;

J. rotating display test;

K. touch screen handwriting test;

Mode switching instructions:

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

```
#define LCD_USE8BIT_MODEL    0    //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 data bus mode

LCD_USE8BIT_MODEL 1 // Use 8-bit data bus mode

Note:

1. **Not every LCD screen supports 8-bit/16-bit mode. Please check with us to see if you have purchased it;**
2. **After the 8/16-bit switch is performed on the software, the hardware also needs to be changed to the corresponding mode to be able to drive normally. Please consult us how to modify the bare screen.**

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 //Clockwise 0° Rotate

USE_HORIZONTAL 1 //Clockwise 90° Rotate

USE_HORIZONTAL 2 //Clockwise 180° Rotate

USE_HORIZONTAL 3 //Clockwise 270° Rotate