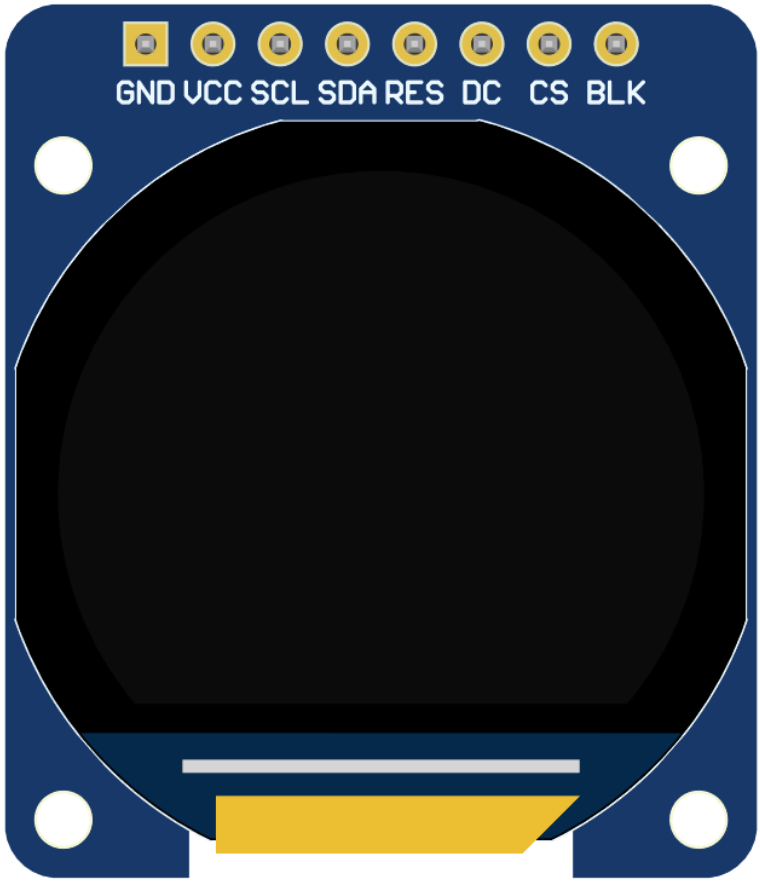
MSP0964

0.96inch IPS TFT SPI Display Module Specification



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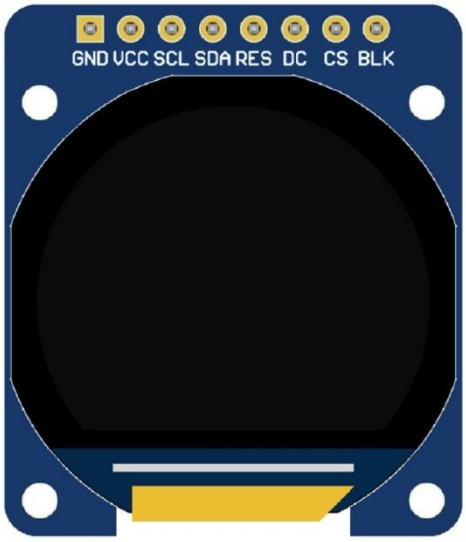
1. GENERAL DESCRIPTION

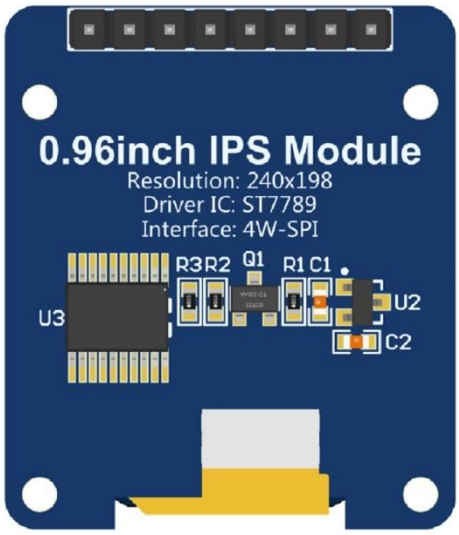
1.1. Product Introduction

MSP0964 is a 0.96-inch IPS color LCD display module. The display module adopts a 4-wire SPI interface, which only requires 5 IOs to achieve display. The 240x198 standard definition resolution can be applied to various products that require screen display function.

1.2. Image



Front



Back

Picture 1 MSP0964 product

2. PRODUCT FEATURES

2.1. Feature Description

- 0.96 “ color screen with 240x198 resolution of 65K colors and rich display colors
- The upgrade adopts IPS full view panel, with good visual angle
- On board level conversion circuit, compatible with 5V and 3.3V MCU
- Adopting a 4-wire SPI serial bus to save I/O pins
- Unique circular display screen
- Module input supports a 2.54mm spacing needle interface
- Provide rich example learning programs (ESP32/STM32/Arduino/C51/CH32/RaspberryPi)
- Provide low-level driver technical support, and update WIKI information online
- Multiple tests for module aging can meet military level standards, supporting long-term stable work

3. PRODUCT PARAMETERS

3.1. TFT Parameters

Item	Parameters	Unit
Panel Size	0.96	inch
Panel Type	IPS	-
Resolution	240xRGBx198	pixels
Active Area	24.408(W)x20.137(H)	mm
Number of Colors(Max)	65K	-
Driver IC	ST7789H2	-
Display Interface	4-Line SPI	-
Pixel Size	0.1017(H)x0.1017(V)	mm
View Angle	ALL 0’ CLOCK	deg
Brightness(TYP)	300	cd/m^2
Backlight Type	White LED*4	-
Operation Temperature	-10~60	℃
Storage Temperature	-20~70	℃

3.2. Size Parameters

Item	Parameters	Unit
TFT Outline Size	27.4±0.2(W)x27.0±0.2(H)x1.31±0.15(D) (Excluding cables and adhesive backing)	mm
Module Outline Size	28.4(W)x33.0(H)x11.17(D) (including Pin Header)	mm

3.3. Electrical Parameters

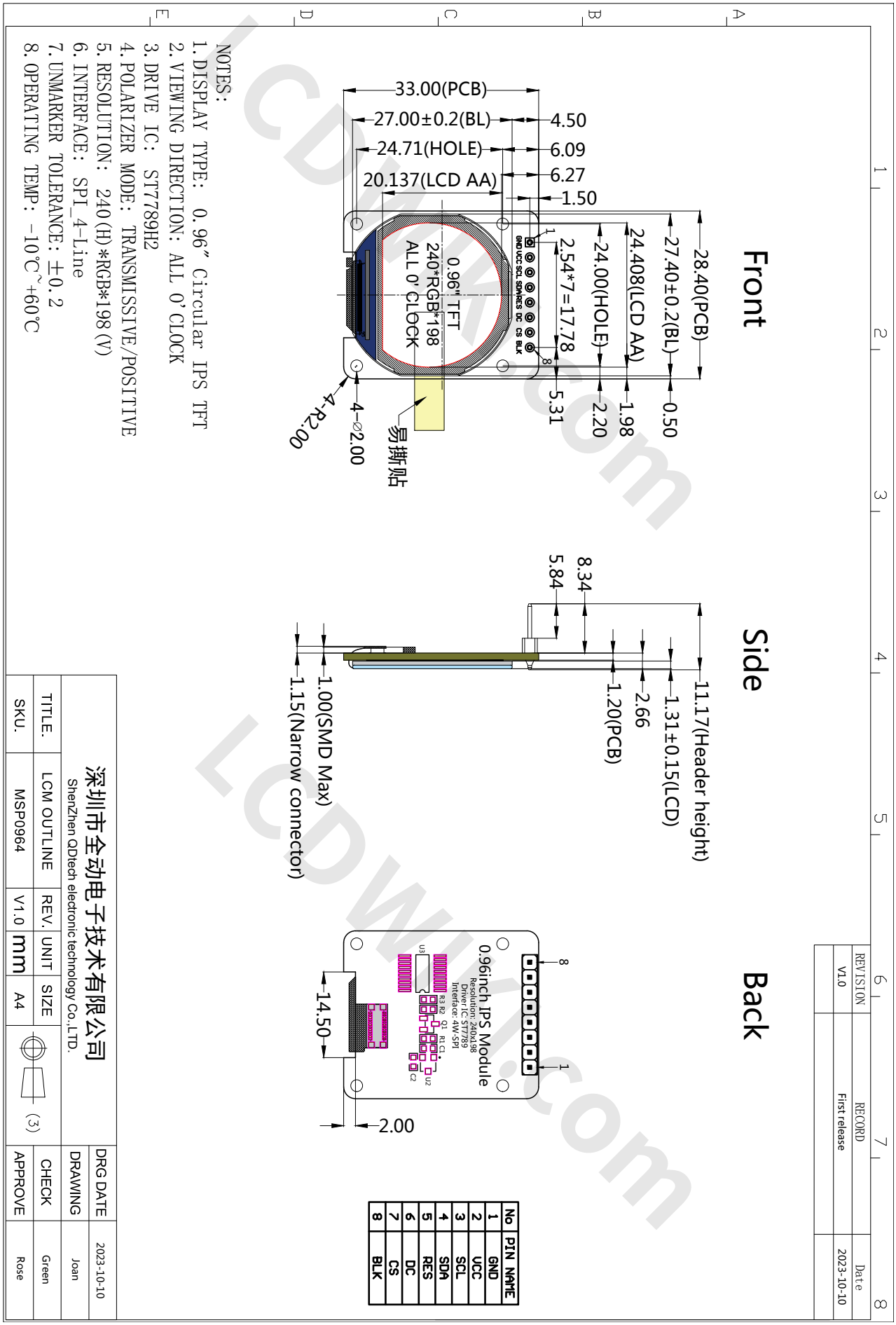
Item	Parameters	Unit
Working Voltage	5.0/3.3V	V
Backlight Current	40	mA
Power	0.09	W

3.4. Other Parameters

Item	Parameters	Unit
SKU	MSP0964	-
Interface	2.54mm pin interface	-
Weight(including package)	13	g

4. PRODUCT OUTLINE DRAWING

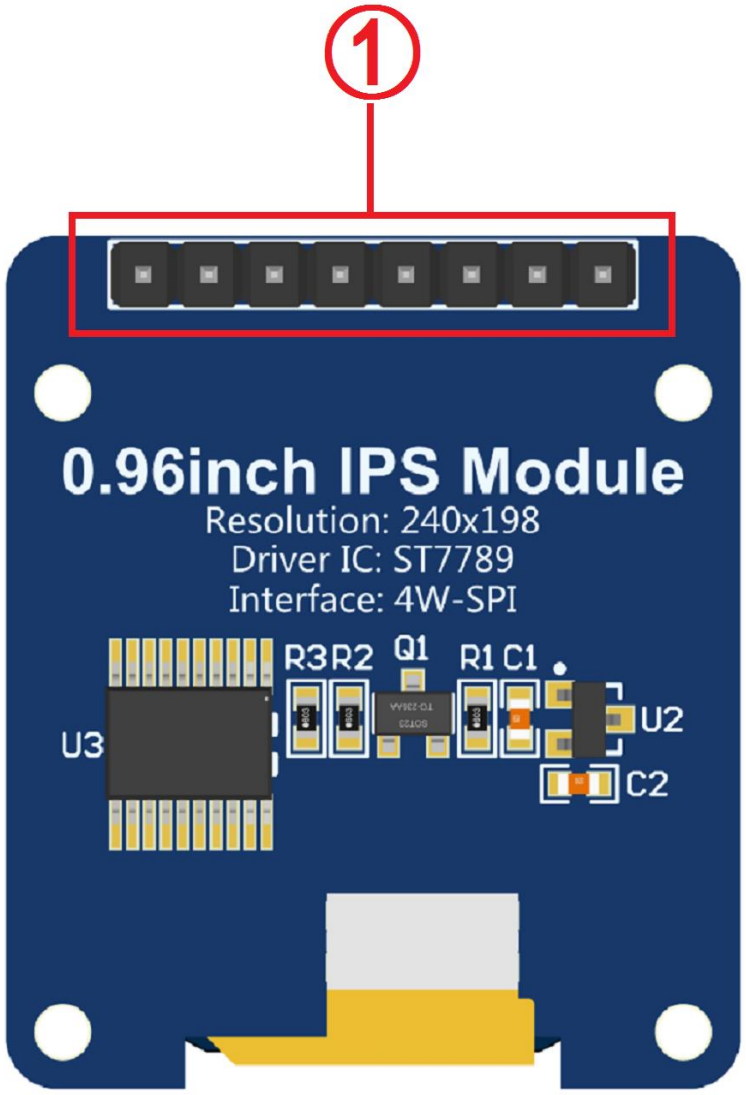
4.1. MSP0964 Outline Drawing



Picture 2 MSP0964 Outline Drawing

5. PRODUCT INTERFACE

5.1. Interface Function Description



Picture 3 Product Interface

Number	Interface	Function Description
①	**8P pin arrangement**	2.54mm spacing row pins, module signal input pins

5.2. Pin Function Description

Module Pin	Pin Function Description
GND	LCD Power ground
VCC	LCD power positive(It is recommended to connect to 5V. When connected to 3.3V, the backlight brightness will be

	slightly dim)
SCL	LCD SPI bus clock signal
SDA	LCD SPI bus write data signal
RES	LCD reset control signal, Low level reset
DC	LCD command / data selection control signal High level: data, low level: command
CS	LCD selection control signal, Low level active
BLK	LCD backlight control signal (If you need control, please connect the pins. If you don't need control, you can skip it)

6. PRECAUTIONS

6.1. Safe Use of Products

- Do not use violence to press or hit the screen to avoid damaging it
- Do not use hard objects to scratch the screen to avoid scratching it
- Do not place heavy items on the product to avoid crushing the screen
- Please keep the product clean and do not drip water or oil on the screen
- Please use a clean, soft, and dry cloth to wipe the screen, and do not spray water or cleaning agents directly onto the screen
- Do not disassemble the product randomly to avoid damaging the screen or wiring
- Do not place the product in a high temperature and humidity environment
- Please place the product facing upwards in a stable place to prevent it from falling and damaging the product
- Please use the correct voltage to connect to the product to avoid damage due to high voltage
- When using the product, do not touch the components or pins with wet hands to avoid causing short circuits and damaging the product
- When the product is not in use for a long time, please unplug the power supply

6.2. Frequently Asked Questions FAQ

- **Question 1: After receiving the product, there is no response from the wiring and the screen does not light up**

  Analysis:

Due to the fact that this module is an IPS display panel, only connecting to the power supply will not emit white light. It is recommended to first connect only three pins (VCC connected to 5V/3.3V, GND grounded, LED pin connected to 5V/3.3V). At this time, when observing from the vicinity of the LCD screen pin array, it is normal to see that there is an internal light bead lit up, indicating that the backlight is normal.

If the backlight still does not respond according to the above operation, it is speculated that there may be a hardware circuit malfunction.

- **Question 2: After receiving the product, the wiring test has a bright back, but there is no display screen**

Analysis:

Backlit indicates that the power supply is connected correctly and there is no short circuit phenomenon, but if the screen needs to be displayed normally, SPI communication needs to be completely normal, including factors such as correct matching of SPI signal wiring and program burning, and normal operation of the microcontroller.

It is recommended to use the demo program we have tested for the first time. The program should not be modified and try to find the same microcontroller development board for testing as much as possible. This can eliminate the factor of dim dots caused by program modifications. At this time, it is also important to pay attention to whether the demo compilation and download prompt is successful, whether the development board is running normally, and whether the wiring is wired according to program requirements.

If the demo does not match your microcontroller and must be modified to run, it is recommended to use the_ Example modification test for SoftWare suffix words, which will be more effective than_ HardWare is more likely to succeed.

If the picture still cannot be displayed normally after many times of tossing and turning according to the above steps, use the necessary tools such as multimeter/oscilloscope/Logic analyzer to analyze and test the signal, and

contact our technicians for help.

- **Question 3: The product can display, but the backlight brightness fluctuates and is unstable**

  Analysis:

  The backlight circuit of this module is driven by a transistor. The LED pin inputs a high level to light up the backlight, and a low level to turn off the backlight. The PWM signal can also be input through the LED pin to achieve dimming purposes; If the LED pin is suspended without any treatment, an unstable state will occur, which means that the LED pin will be very dark when touched by hand. It is necessary to configure the LED pin with a stable level output to ensure stable and normal backlight.

- **Question 4: What if there is no example in the demo that my microcontroller is suitable for**

  Analysis:

  As is well known, there are over ten thousand types of microcontroller models, and the development boards derived from them are countless. Our demo is configured with examples of the ESP32/STM32/CH32/C51/AruinoUNO/RaspberryPi platform by default, and each example will only be released after being tested and certified. All source code is free and open-source learning, and is mostly written in pure C language, making it convenient for customers to transplant to their own microcontroller platform; If you cannot find a directly usable example in the demo, you need to refer to our code and transplant it yourself. If necessary, you can also purchase our test board to test the screen first to determine its quality and increase confidence; Our company provides low-level driver technical support. Welcome to communicate, exchange, and learn!