Shenzhen Surenoo Technology SA3 LC1602M LCD Module User Manual

Contents

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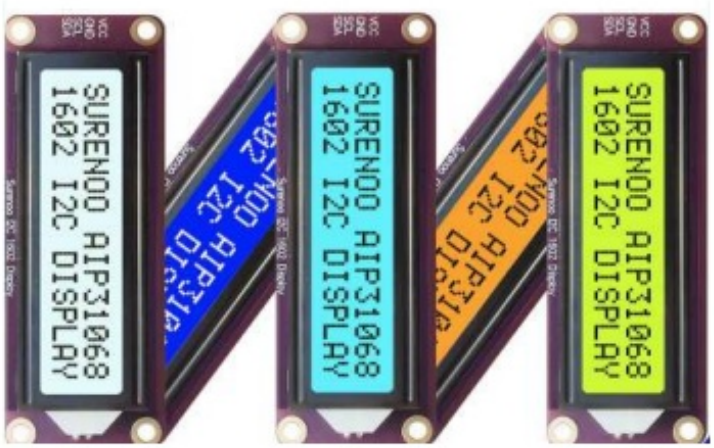

Product Information

The SLC1602M is an LCD screen module designed for use with a 3.3V or 5V power input. It uses an I2C communication interface and is controlled by the AiP31068L chip. The slave address is 0X7C and the display dimensions are 64.5 x 16.0 mm. The product size is 87.0 x 32.0 x 13.0(mm) and the operating current is 26mA(5V), 13mA (3.3V).

Features

- Operating voltage: 3.3V/5.0V
- Communication interface: I2C
- Screen type: LCD screen
- Control chip: AiP31068L
- Slave address: 0X7C
- Display dimensions: 64.5 x 16.0 mm
- Product size: 87.0 x 32.0 x 13.0(mm)
- Operating current: 26mA(5V), 13mA (3.3V)

Parameters

Pin	Description
VCC	3.3V/5V power input
GND	Ground
SCL	I2C clock cable
SDA	I2C data cable

Outline Dimension

The unit of measurement is in millimeters (mm). The LCD screen module has a size of 87.0 x 32.0 x 13.0(mm).

Product Usage Instructions

Hardware Setting

To enable the I2C interface, open the Raspberry Pi terminal and enter the following command to enter the

configuration interface:
Select Interfacing Options -> I2C ->yes to start the i2C kernel driver. Then, reboot the Raspberry Pi:

Hardware Connection
When connecting the Raspberry Pi, choose to connect with a 4PIN cable and refer to the pin correspondence table below:

LCD Pin	BCM2835 Raspberry Pi Pin	Raspberry Pi Board Pin No.
VCC	3.3V	3.3V
GND	GND	GND
SCL	SCL.1	5
SDA	SDA.1	3

Take the LCD1602 Module using the PH2.0 4PIN interface as an example and connect it to the Raspberry Pi according to the above table.

Example Demo
To display two lines of characters on the LCD, run the following commands:
To automatically obtain the local time and display it on the LCD, run the following command:

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Reference Controller Datasheet
Character LCD Selection Guide
AiP31068L
T t Code

Overview

Features

- I2C interface, only two cables can be directly controlled, easy to access a variety of control boards
- Can display up to 16 x 2 characters, support screen scrolling, cursor movement, and other functions
- The appearance is exquisite and compact, and the workmanship is exquisite and beautiful. Highly integrated design, stable performance, fine workmanship, compact body with the dimensions of 87 * 32 * 13 mm.
- Onboard AiP31068L LCD driver chip
- Provide complete supporting information manuals (user manuals/sample demos)

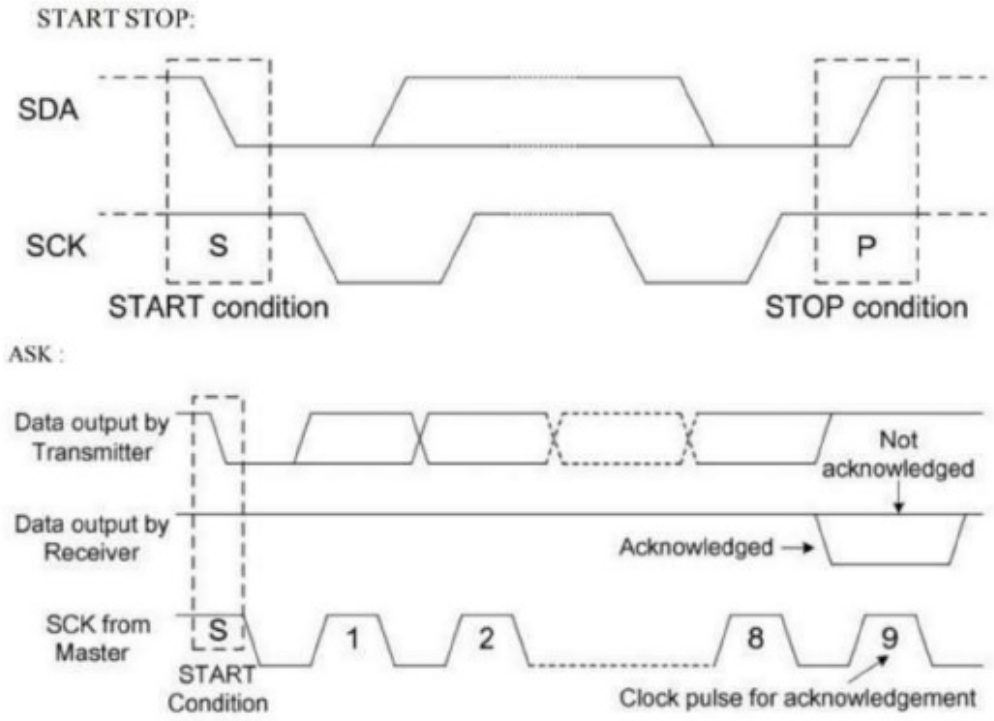
Parameters

- Operating voltage: 3.3V/5.0V
- Communication interface: I2C
- Screen type: LCD screen
- Control chip: AiP31068L
- Slave address: 0X7C
- Display dimensions: 64.5 x 16.0 mm
- Product size: 87.0 x 32.0 x 13.0(mm)
- Operating current: 26mA(5V), 13mA (3.3V)

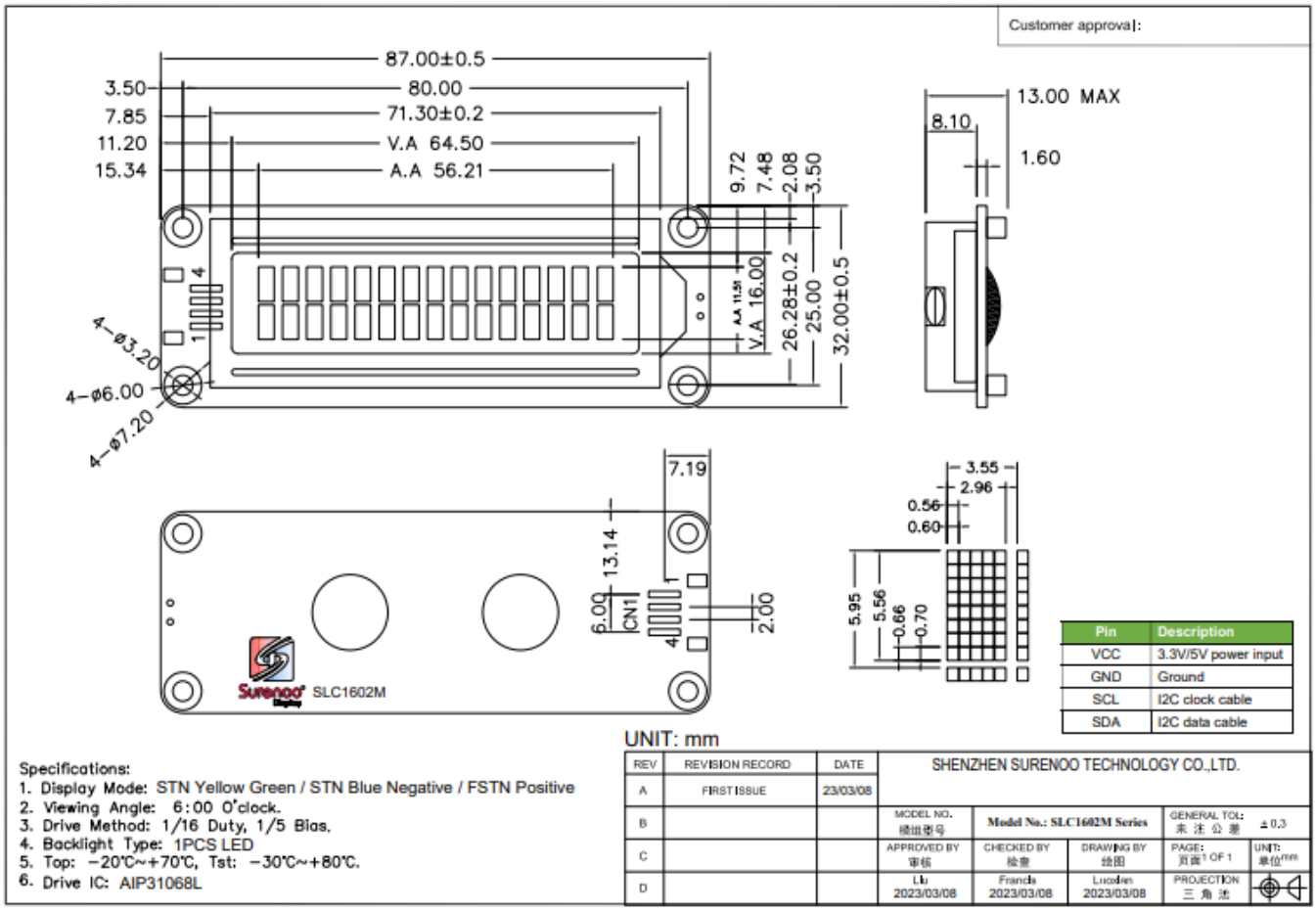
Interface Description

Pin	Description
VCC	3.3V/5V power input
GND	Ground
SCL	I2C clock cable
SDA	I2C data cable

Communication Protocol



Outline Dimension



Working with Raspberry Pi

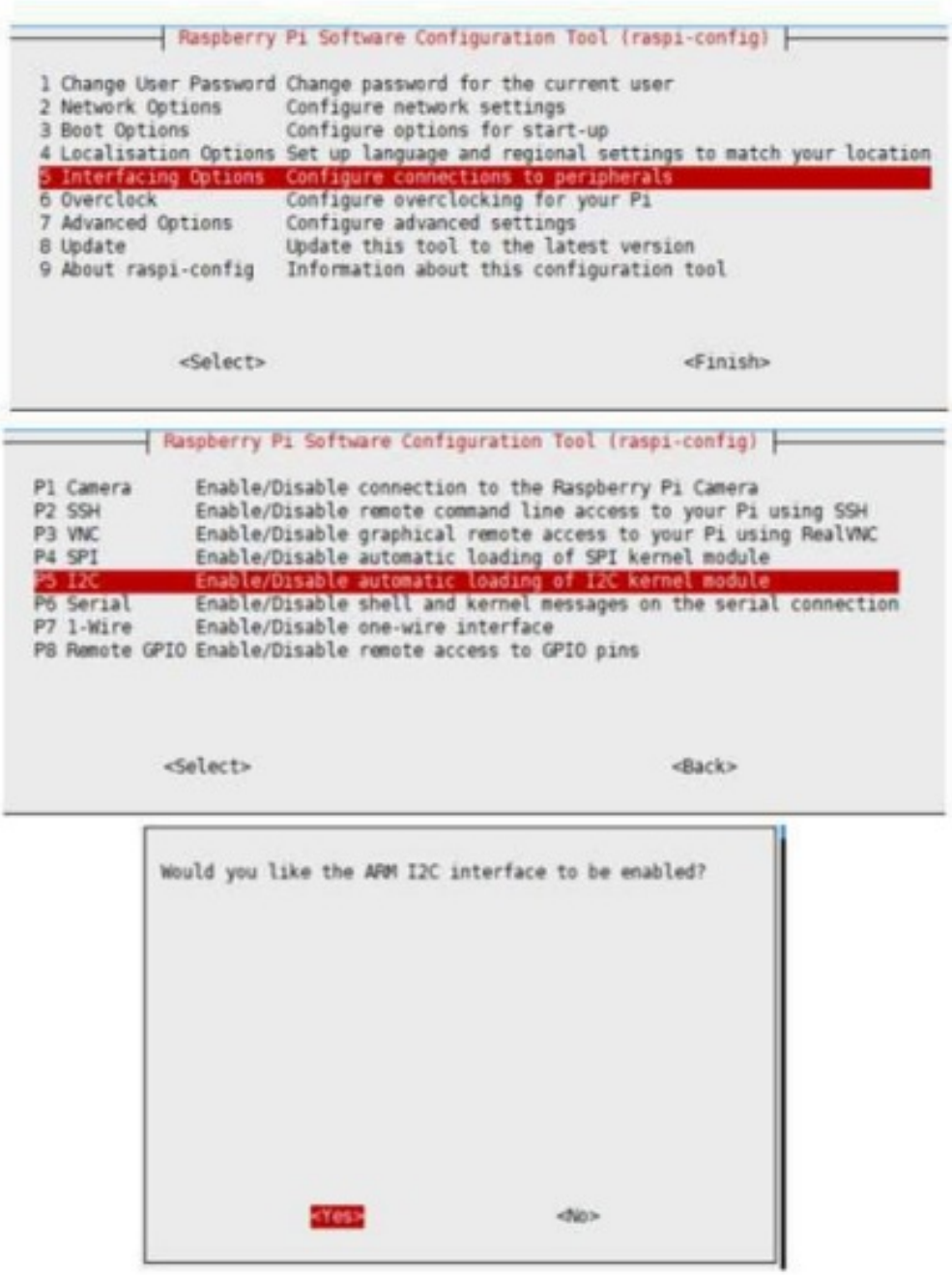
Hardware Setting

Enable I2C Interface

Open the Raspberry Pi terminal, enter the following command to enter the configuration interface.

- sudo raspi-config

  Select Interfacing Options -> I2C ->yes to start the i2C kernel driver



And then reboot the Raspberry Pi.

- sudo reboot

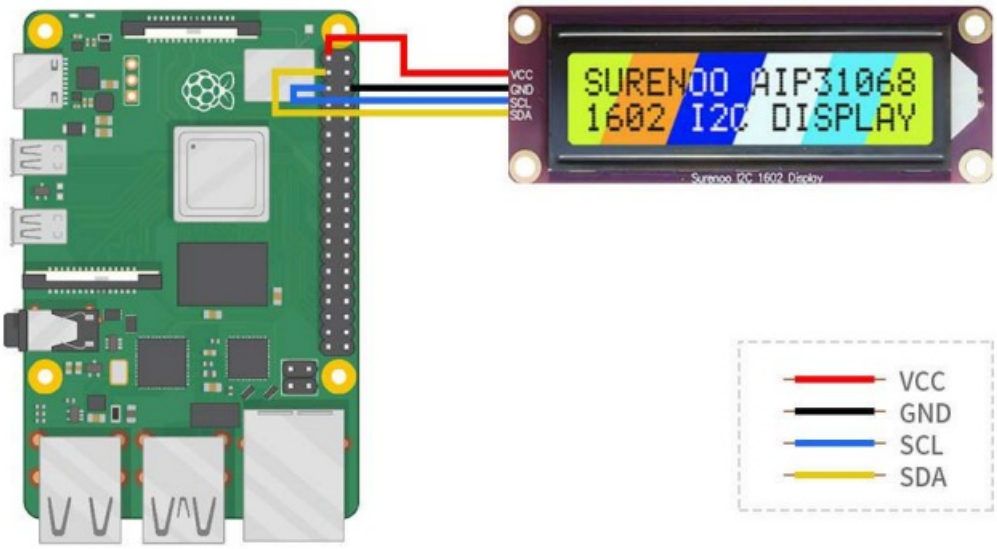
Hardware Connection

When connecting the Raspberry Pi, choose to connect with a 4PIN cable, please refer to the pin correspondence table below.

If you are using a pin header or PH2.0 4PIN interface, you need to connect according to the following table.

Raspberry Pi Pin Connection Correspondence		
LCD	Raspberry Pi	
	BCM2835	Board Pin No.
VCC	3.3V	3.3V
GND	GND	GND
SCL	SCL.1	5
SDA	SDA.1	3

Take the LCD1602 Module using the PH2.0 4PIN interface as an example, and connect it to the Raspberry Pi according to the above table:
(Please connect according to the pin definition table. The color of the cable in the picture is for reference only, and the actual color shall prevail.)



Example Demo

```
#Download sample demo

cd ~

wget https://www.surenoo.tech/download/SLC1602M_I2C_Code.zip

unzip LCD1602_I2C_Module_code.zip

cd ~/LCD1602_I2C_Module_code/Raspberry

sudo chmod 777 *

cd python/

sudo python test.py #Display two lines of characters on the LCD

sudo python time_test.py #Automatically obtains the local time and displays
it on the LCD
```

Demo analysis (test.py)

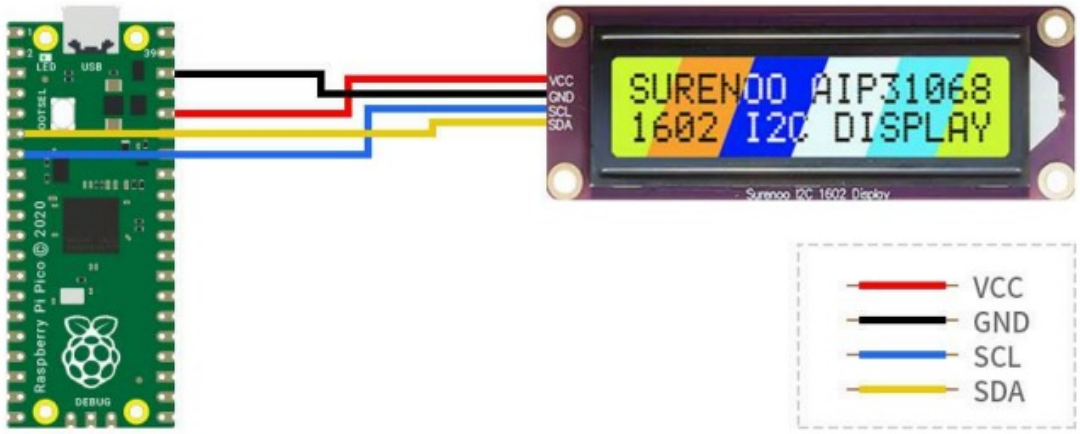
```
lcd.setCursor(0, 0) #Set the cursor position

#Print the number of seconds since reset:

lcd.printout("Waveshare") #Write characters

lcd.setCursor(0, 1) #Set the cursor position to the zeroth column of the sec
ond row

lcd.printout("Hello, World!")#Write characters
```

Working with Pico

Hardware Connection

Pico Pin Connection Correspondence	
Module Interface	Pico Pin
VCC	3.3V
GND	GND
SCL	GP5
SDA	GP4

The physical connection diagram is as follows:



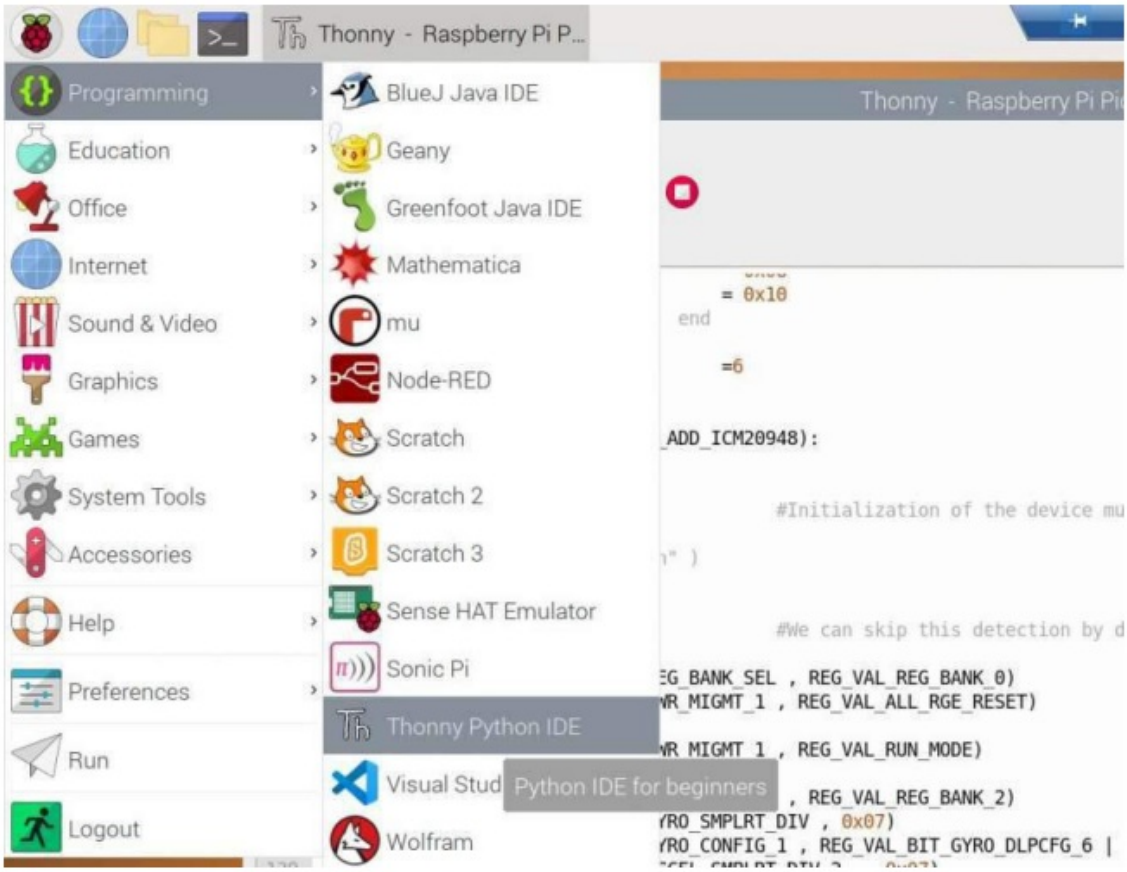
Raspberry Pi

1. Use SSH to log in to the Raspberry Pi terminal or press Ctrl+Alt+T while using the screen to open the terminal.
2. Download and decompress the demo to the Pico C/C++ SDK directory, and the users who have not installed SDK can refer to tutoria

#Pay attention to your own directory, the default installation directory of the SDK installation tutorial is ~/pico/, if the user customizes other directories, change it by yourself
wget **https://www.surenoo.tech/download/SLC1602M_I2C_Code.zip**
unzip LCD1602_I2C_Module_code.zip cd LCD1602_I2C_Module_code/Pico

micro python

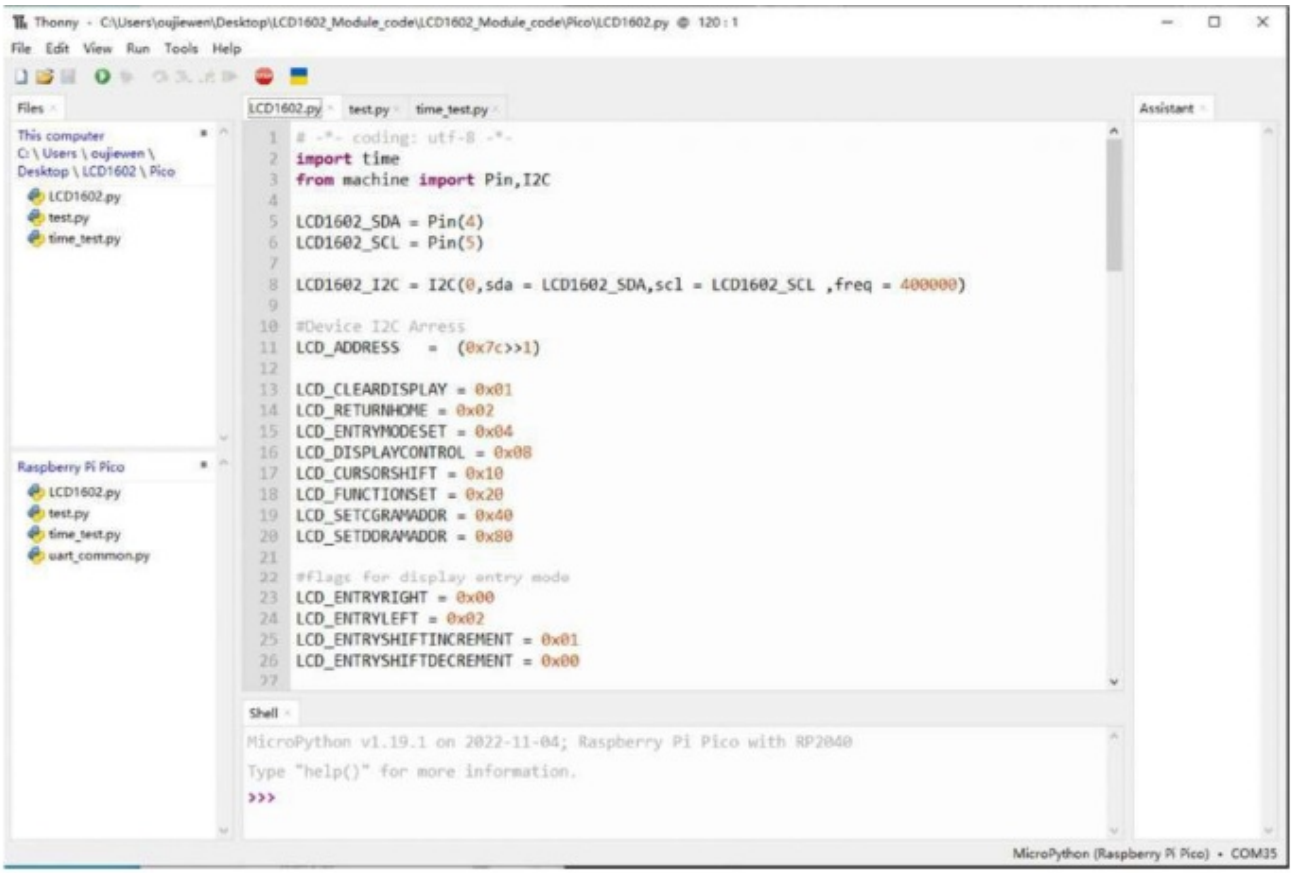
1. Configure settings according to the python environment, using the Raspberry Pi desktop system.
2. Open the Thonny IDE of the Raspberry Pi system, pull the code file into the IDE, and save LCD1602.py to the Pico file system (refer to the Window operation module below), as shown in the figure.



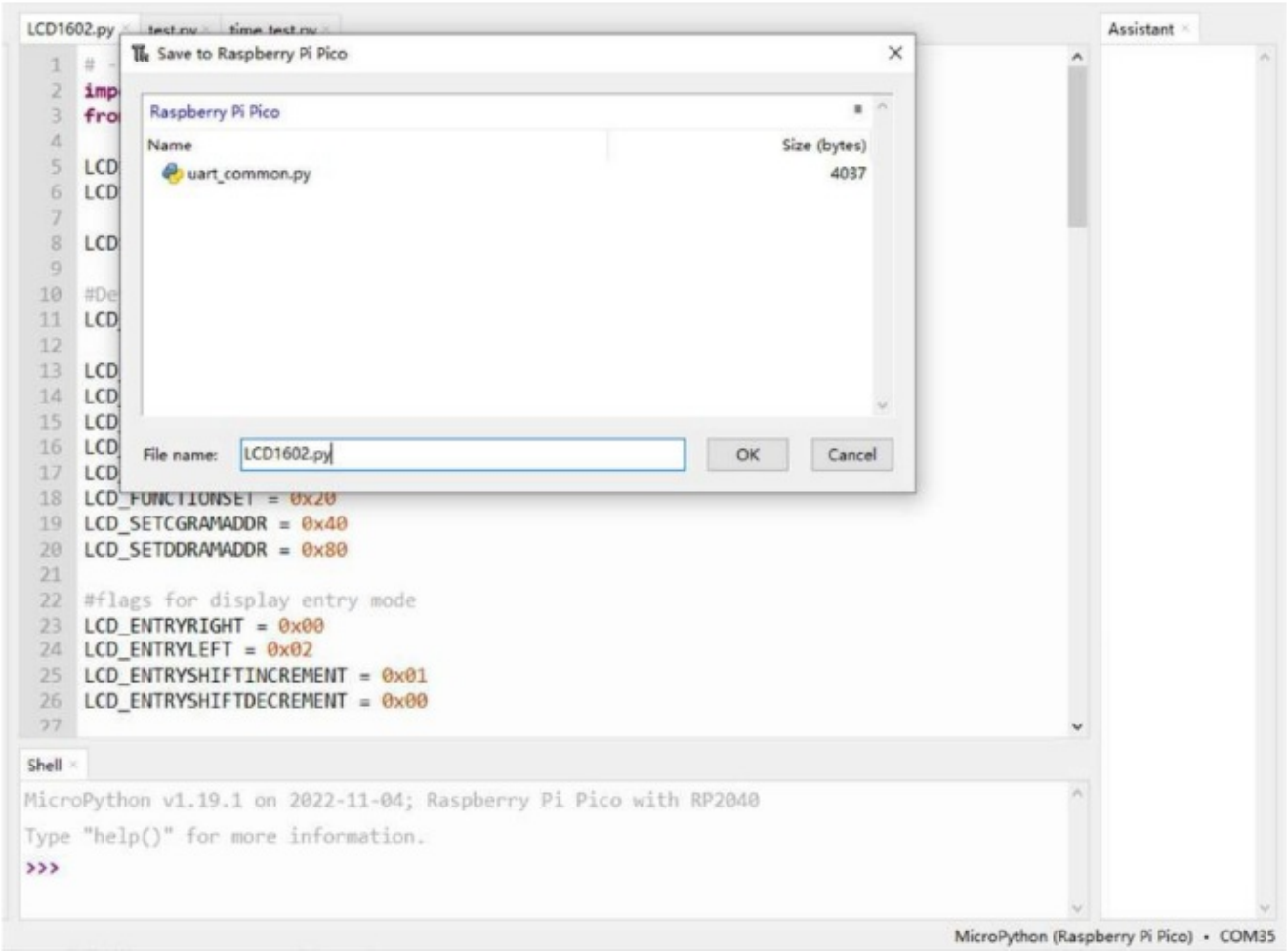
Windows

micro python

1. Download and decompress the sample program to the Windows desktop, open the pico corresponding file, refer to the Windows software environment settings.
2. Open the downloaded sample program in Thonnty, as shown in the figure below



Here you also need to save LCD1602.py to PICO, select LCD1602.py, save it as Raspberry pi pico, and name it LCD1602.py.



Finally, just run the demo under test.py or time_test.py.

Demo analysis: (test.py)

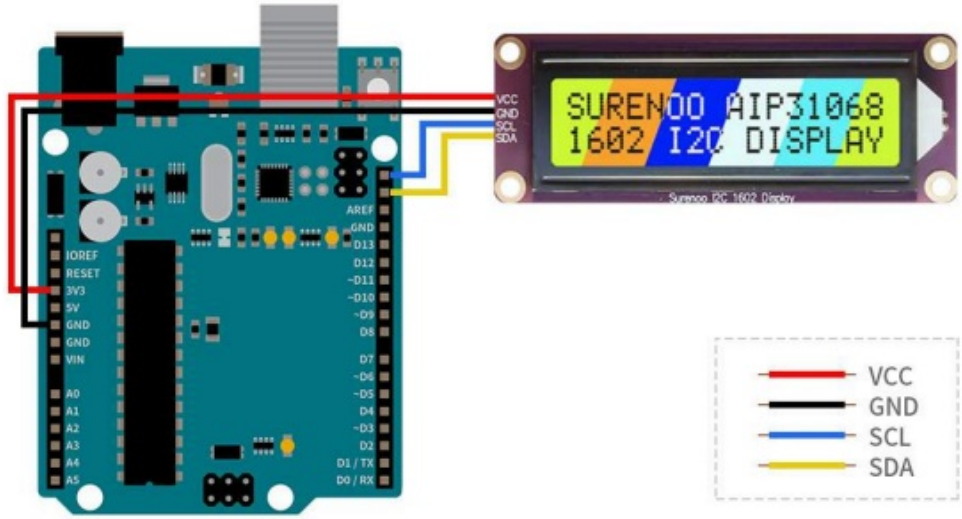
```
lcd.setCursor(0, 0) #Set the cursor position

# print the number of seconds since reset:

lcd.printout("Waveshare") #write characters

lcd.setCursor(0, 1) #Set the cursor position to the zeroth column of the second row

lcd.printout("Hello, World!")#write characters
```

Working with Arduino

Hardware Connection

Arduino Pin Connection Correspondence	
Module Interface	Arduino Pin
VCC	5V/3.3V
GND	GND
SCL	SCL
SDA	SDA

Connection diagram:



Arduino IDE

Download this sample demo in the Resource, enter the Arduino folder, and double-click to open the test.ino file, Arduino IDE will automatically load the driver library under the same folder, select the correct driver board model and its corresponding port number, click the upload button to automatically start compiling and uploading the demo, and the demo will run automatically after the upload is successful.

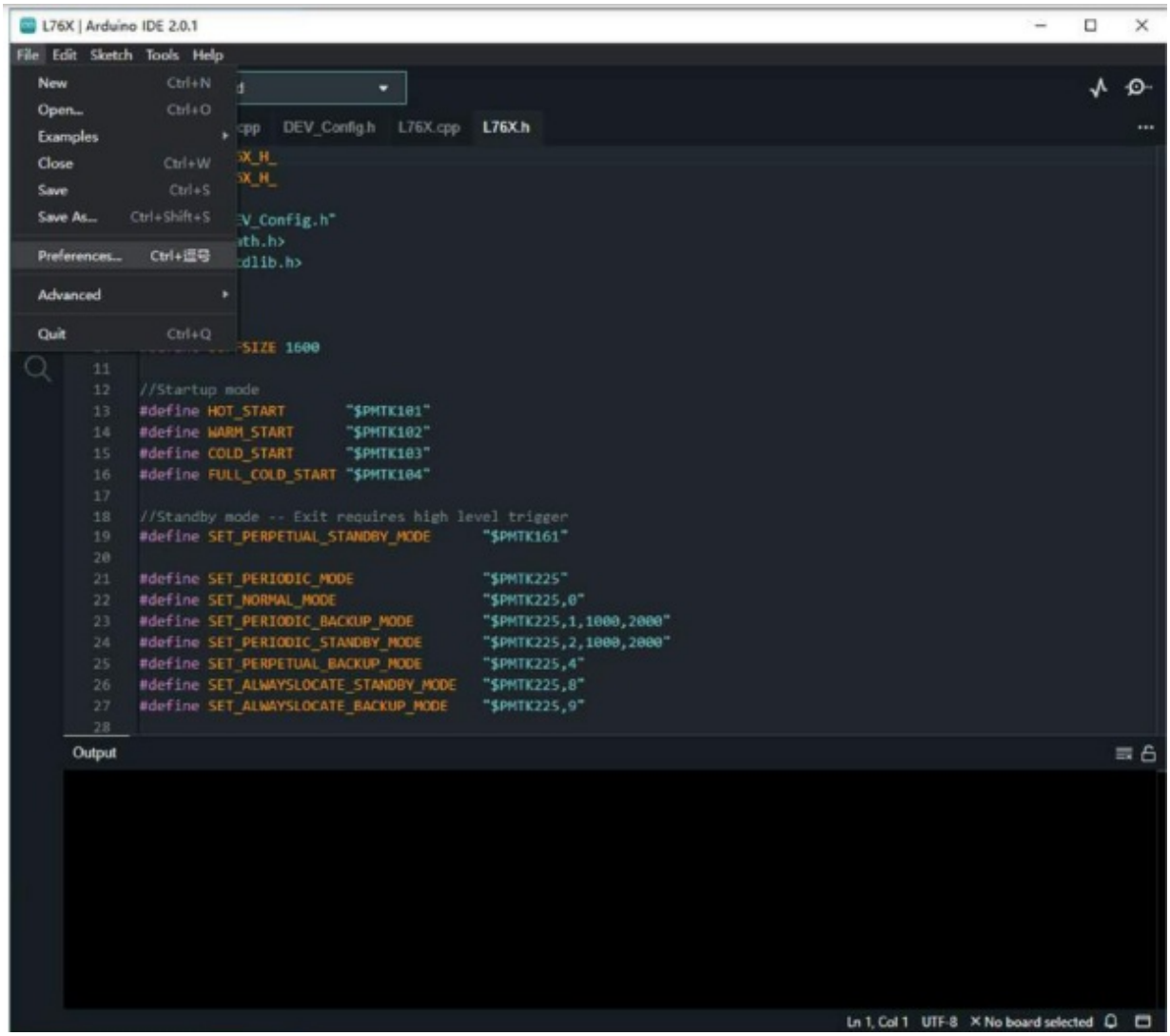
This demo has been tested and run on Arduino uno development board and Arduino mega2560 development board.

Working with ESP32

Environment Setting

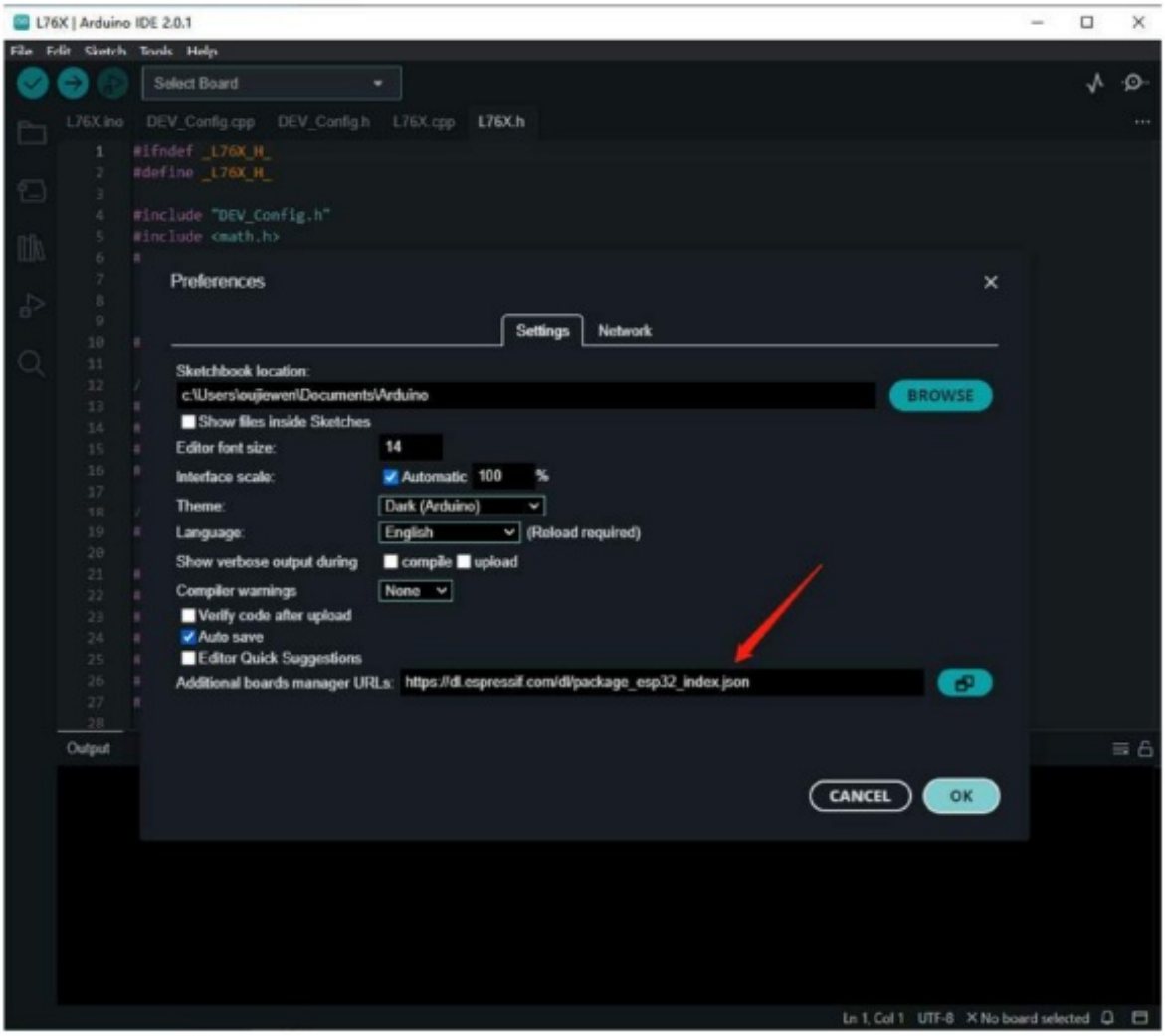
Install the ESP32 Plug-in in the Arduino IDE

1. Open the Arduino IDE, click on the file in the upper left corner, select Preferences:



2. . Add the following link in the additional development board manager URL, then click OK.

https://dl.espressif.com/dl/package_esp32_index.json



Note: If you already have the ESP8266 board URL, you can separate the URLs with commas like this: https://dl.espressif.com/dl/package_esp32_index.json, http://arduino.esp8266.com/stable/package_esp8266com_index.json
Download the packages compressed package and copy the decompressed packages file to the following path: C:\Users\surenoo\AppData\Local\Arduino15

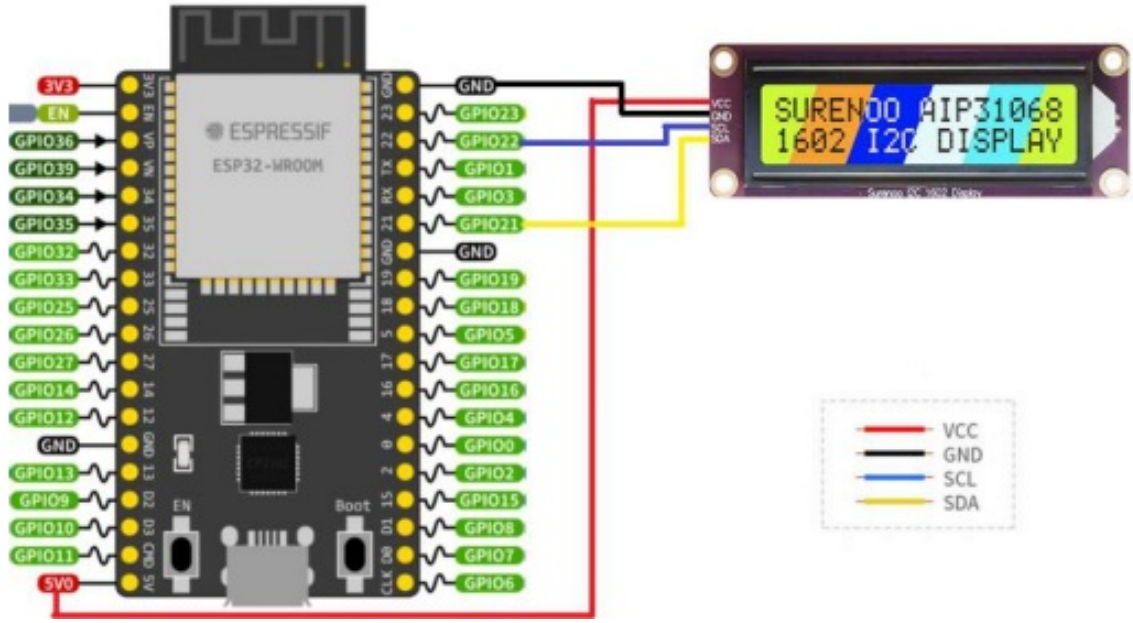
Note: Replace the username: surenoo with your own username.

Hardware Connection
When connecting to ESP32, choose to connect with a 4PIN cable, please refer to the pin correspondence table below:

If you are using a pin header or PH2.0 4PIN interface, you need to connect according to the following table.

ESP32 Pin Connection Correspondence	
LCD Interface	ESP32 Pin No
VCC	5V/3.3V
GND	GND
SCL	GPIO22
SDA	GPIO21

Take the LCD1602 Module using the PH2.0 4PIN interface as an example, and connect it to the ESP32 according to the above table:
(Please connect according to the pin definition table. The color of the wiring in the picture is for reference only, and the actual color shall prevail.)
Connect to ESP32 as shown in the figure below.



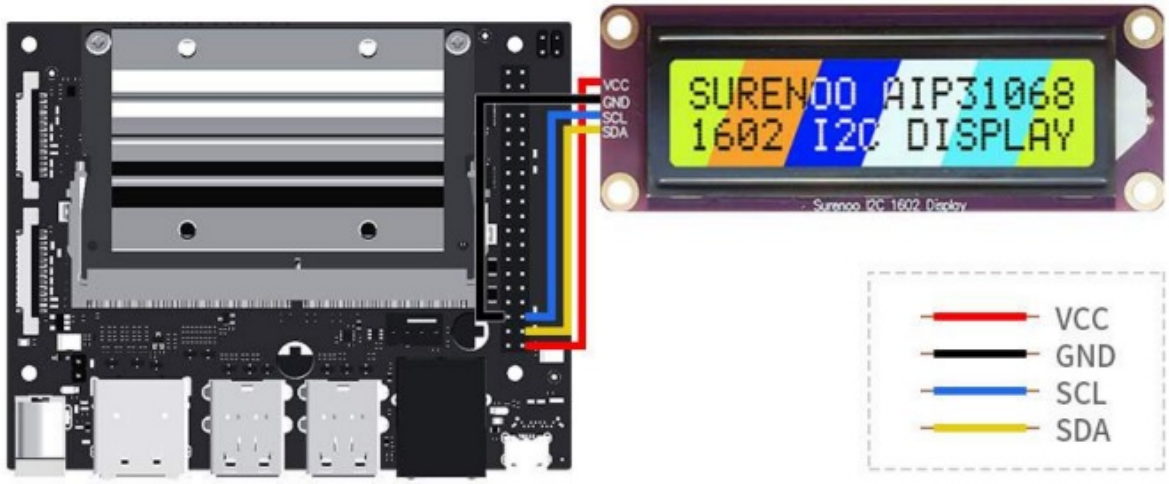
Use With Arduino IDE
Download this sample demo in the Resource, enter the ESP32 folder, double-click to open the test.ino file, Arduino IDE will automatically load the driver library under the same folder, select the correct driver board model and its corresponding port number, click the upload button to automatically Start compiling and uploading the demo, and the demo will run automatically after the upload is successful.

Working with Jetson Nano

Hardware Connection
When connecting Jetson nano, choose to connect with 4PIN cable, please refer to the pin correspondence table below:
If you are using a pin header or PH2.0 4PIN interface, you need to connect according to the following table

Jetson nano Pin Connection Correspondence		
LCD	Jetson nano	
	BCM2835 Pin	Board Pin No.
VCC	3.3V	3.3V/5V
GND	GND	GND
SCL	SCL.1	5
SDA	SDA.1	3

Take the LCD1602 Module using the PH2.0 4PIN interface as an example, and connect it to the Jetson nano according to the above table:
(Please connect according to the pin definition table. The color of the wiring in the picture is for reference only, and the actual color shall prevail.)
Connect to Jetson nano as shown below:



Sample Demo
cd ~
wget https://www.surenoo.tech/download/SLC1602M_I2C_Code.zip
unzip LCD1602 I2C Module_code.zip cd ~/LCD1602 I2C Module_code/Jetson\ Nano sudo chmod 777 * cd python/
sudo python time_test.py #Automatically obtains the local time and displays it on the LCD
SHENZHEN SURENOO TECHNOLOGY CO.,LTD.
www.surenoo.com

Documents / Resources

	Shenzhen Surenoo Technology SA3 LC1602M LCD Module [pdf] User Manual SA3 LC1602M, SLC1602M Series, SA3 LC1602M LCD Module, LCD Module

References

- esp8266 Arduino site placeholder | esp8266.github.io
- Surenoo Tech: Professional LCD Module Supplier Since 2005
- dl.espressif.com/dl/package_esp32_index.json