SLC1602M Series
LCD MODULE USER MANUAL

Please click the following image to buy the sample

Business Card | WhatsAPP | 카카오톡 | LINE (ライン) | WeChat

Shenzhen Surenoo Technology Co.,Ltd.
www.surenoo.com
Skype: Surenoo365

Reference Controller Datasheet

Character LCD Selection Guide

AiP31068L **Test 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)

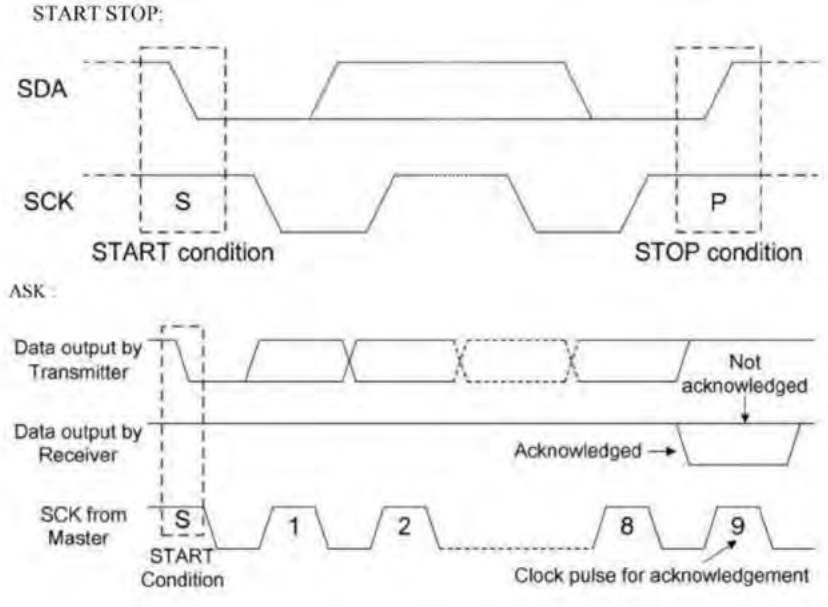
>> Parameters

- 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)

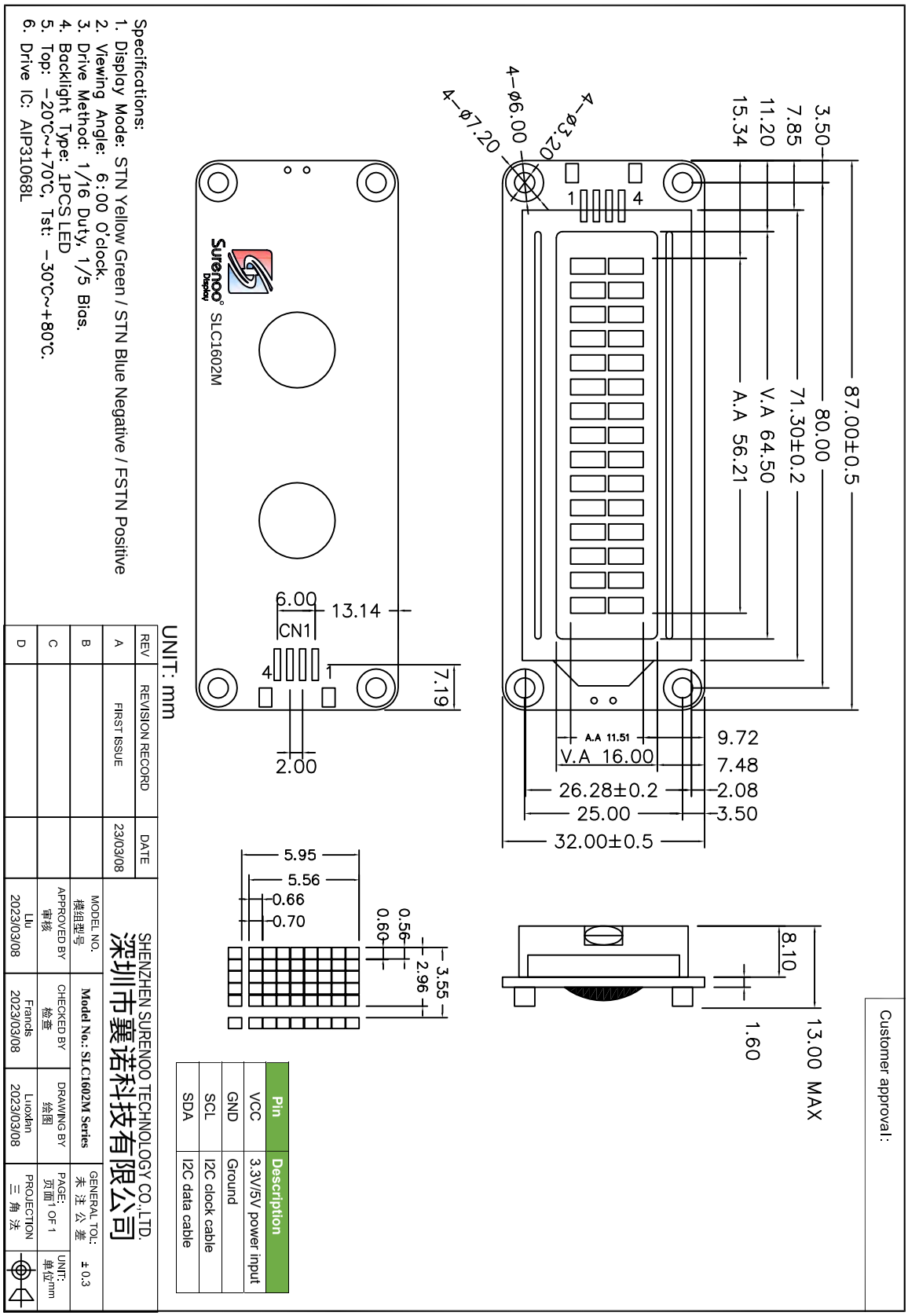
>> Interface Description

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

>> Communication Protocol



>> Outline Dimension



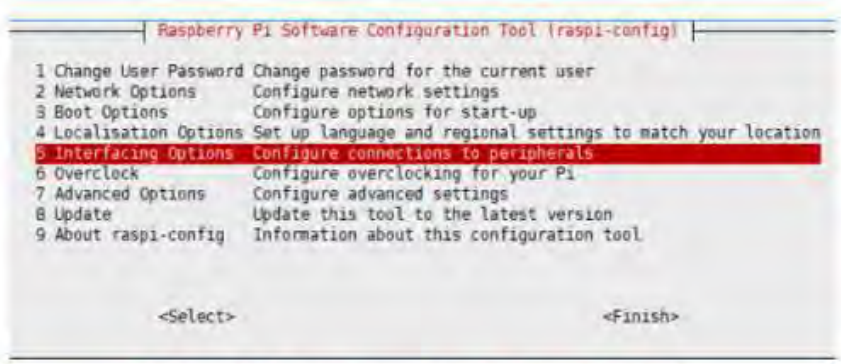
Working with Raspberry Pi

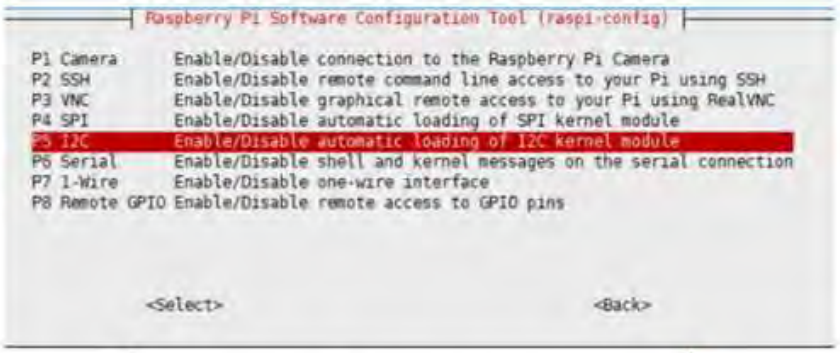
>> Hardware Setting

◆ **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

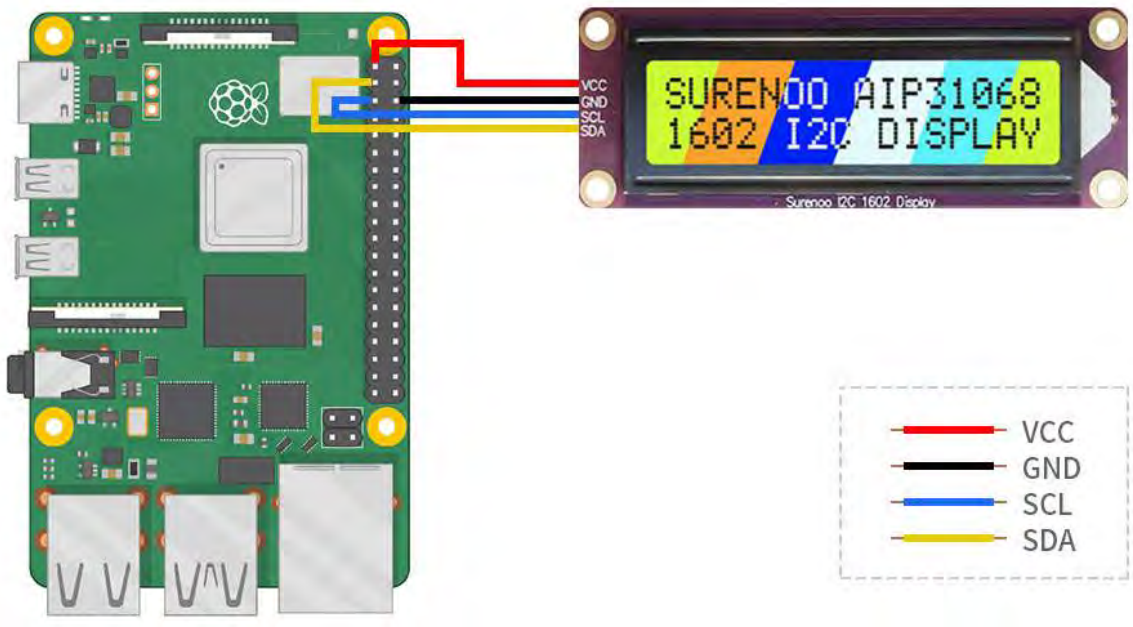
When connecting the Raspberry Pi, choose to connect with a 4PIN cable, please refer to the pin correspondence table below.

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)

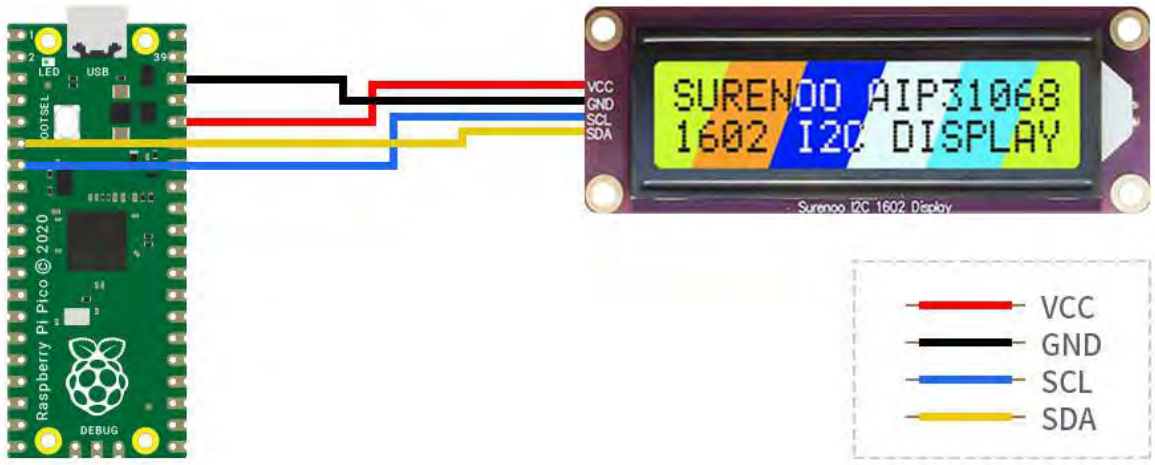
```
lcd.setCursor(0, 0) #Set the cursor position

#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 second 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:



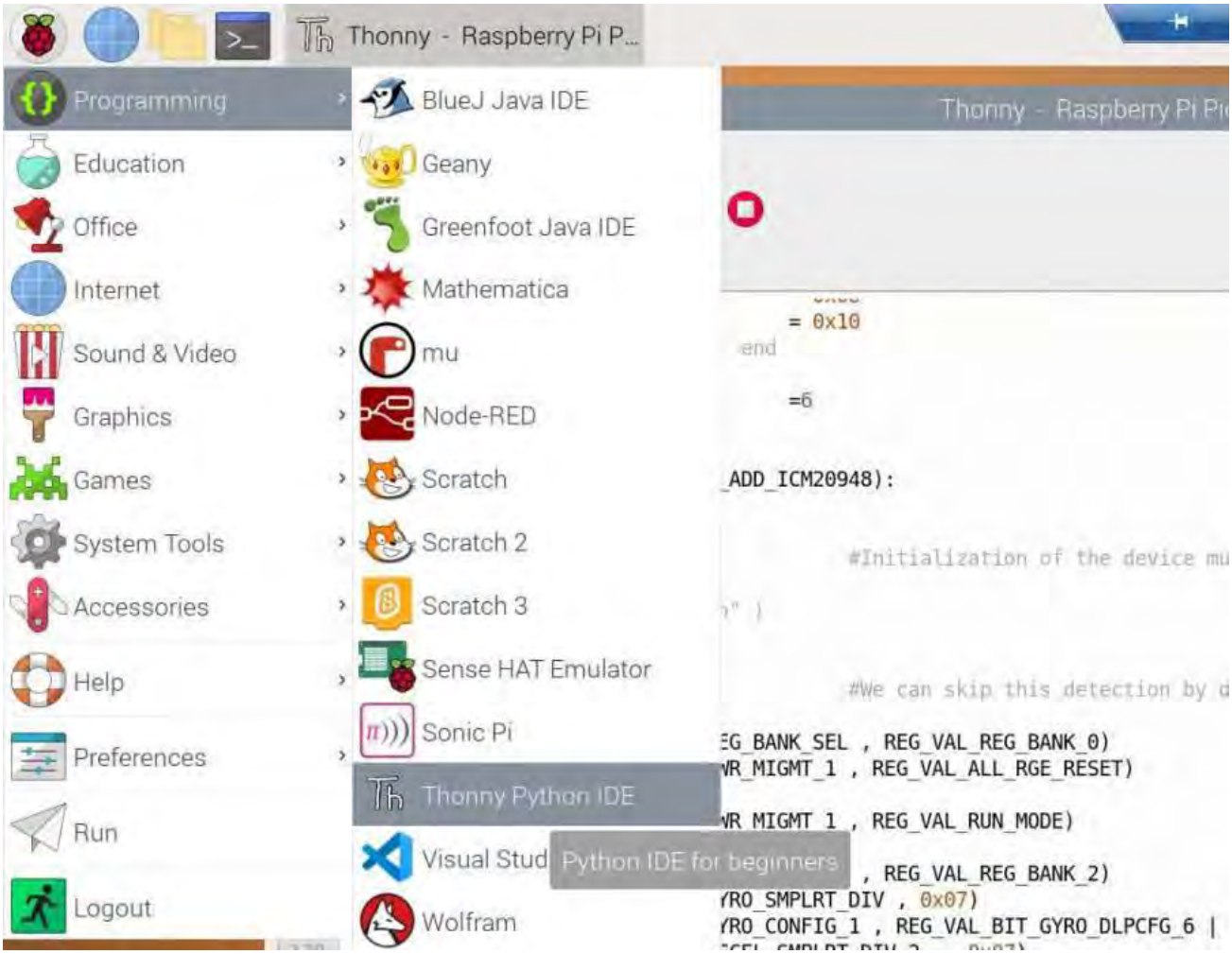
>> Raspberry Pi

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 tutorial.

```
#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.

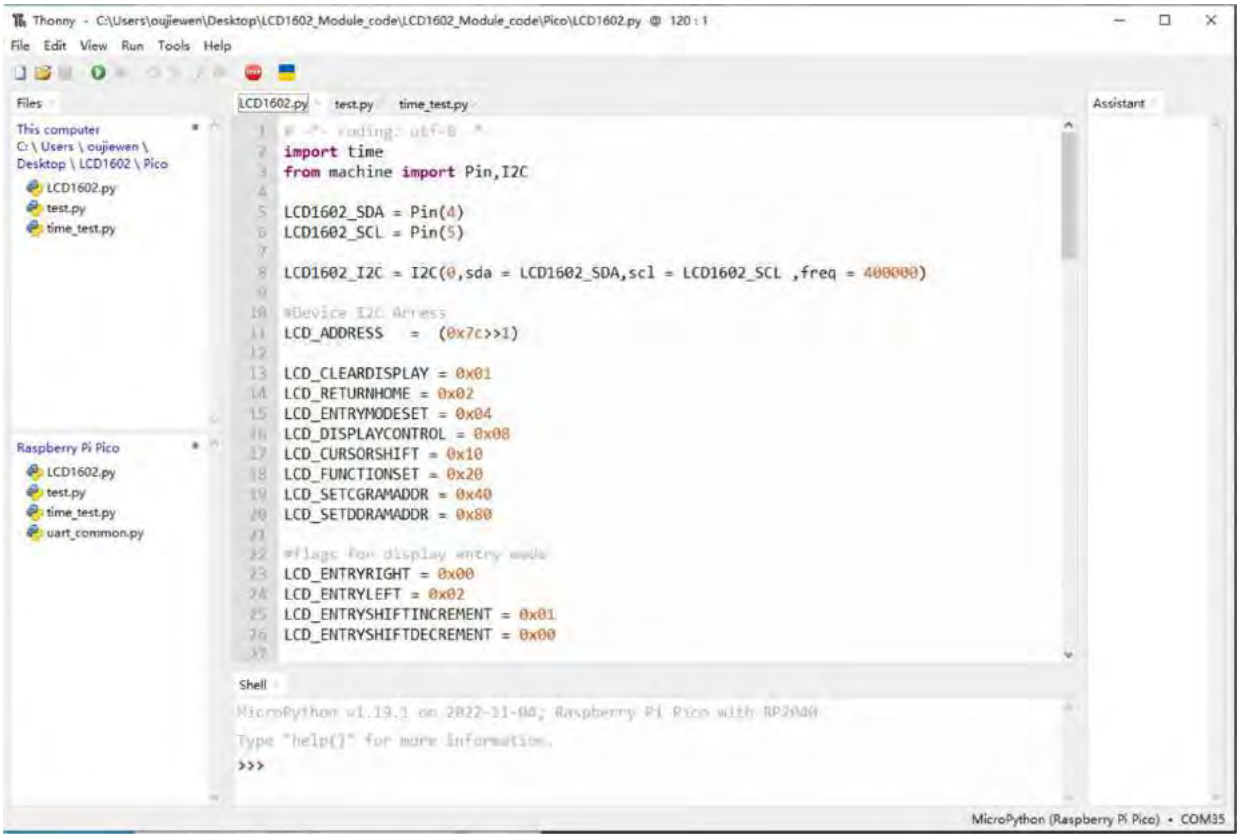


>> Windows

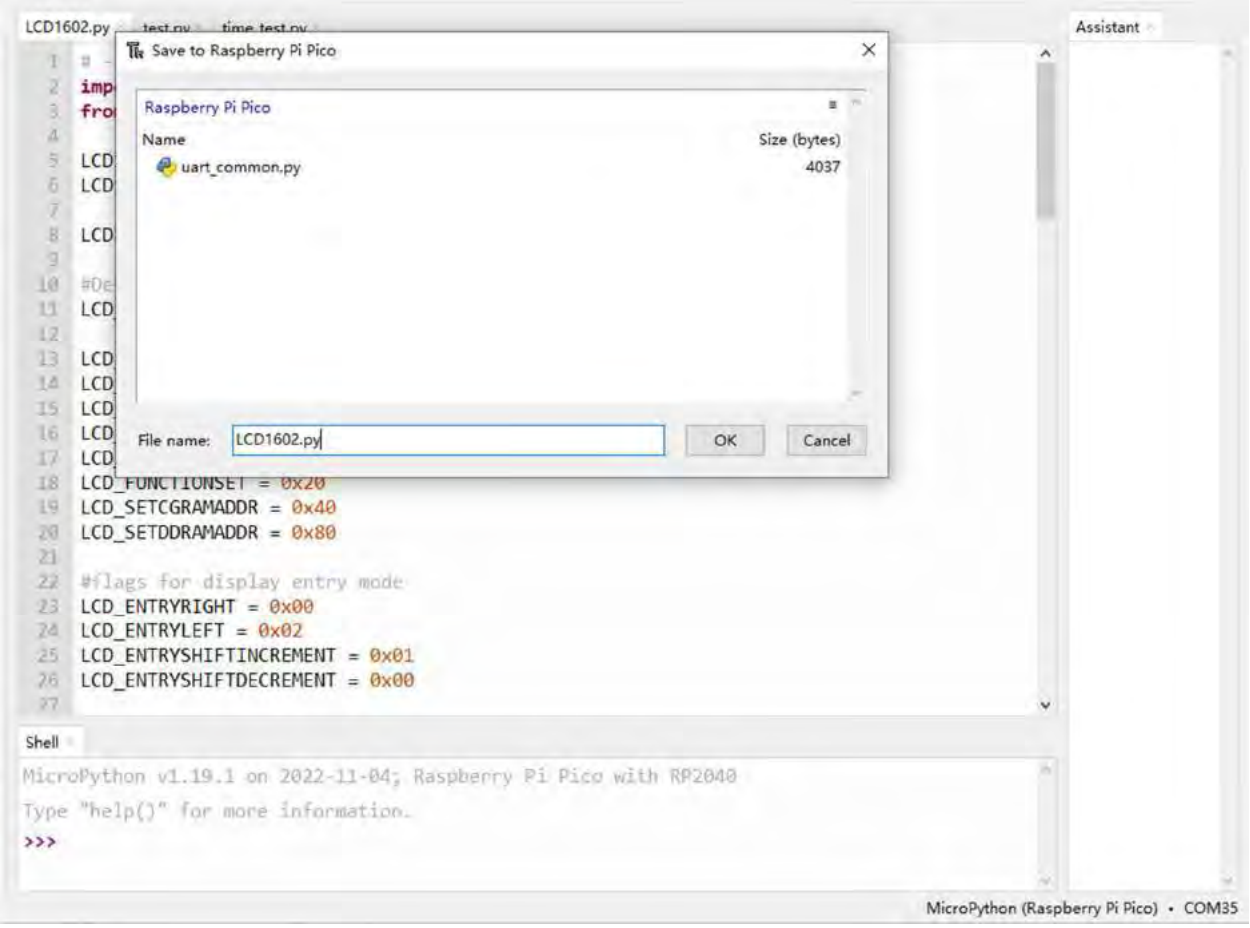
◆ **micro python**

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 Thonny, 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)**

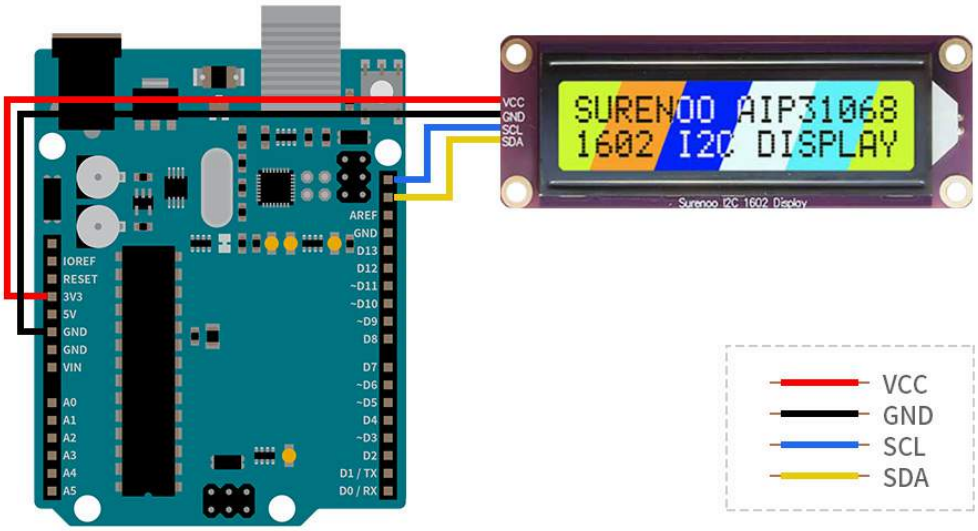
```
lcd.setCursor(0, 0) #Set the cursor position

# 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.

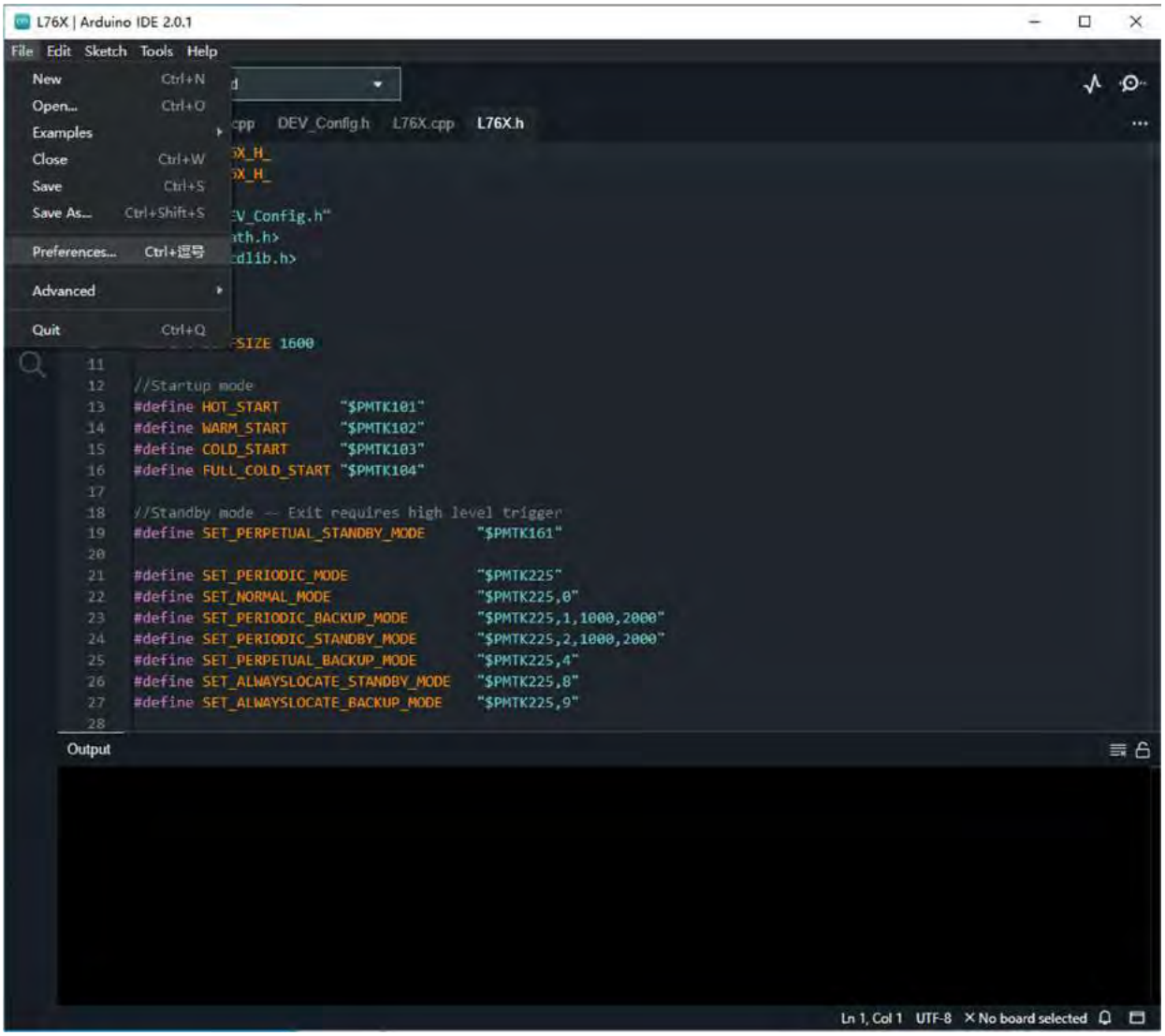
This demo has been tested and run on Arduino uno development board and Arduino mega2560 development board.

Working with ESP32

>> Environment Setting

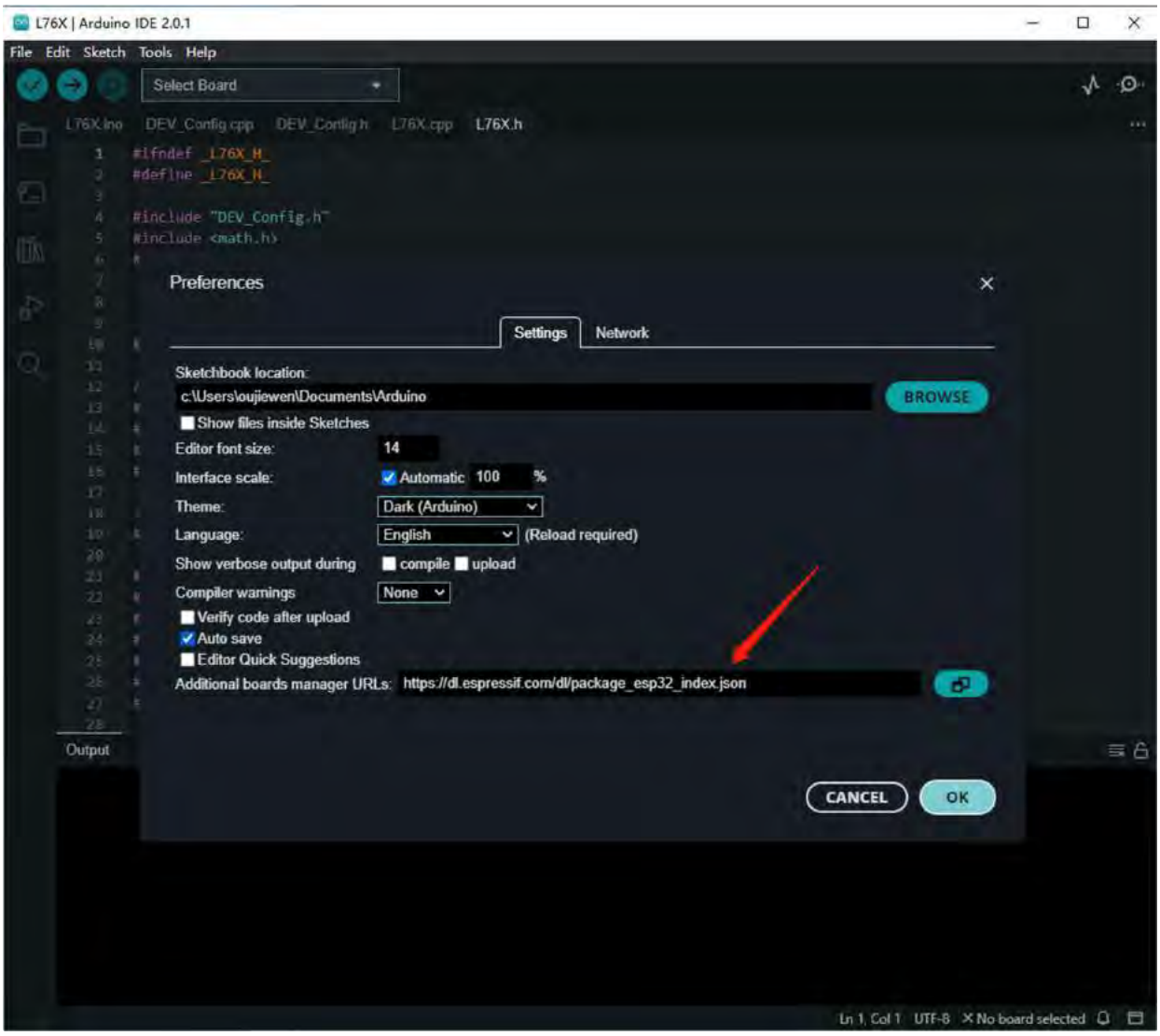
◆ **Install the ESP32 Plug-in in the Arduino IDE**

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:

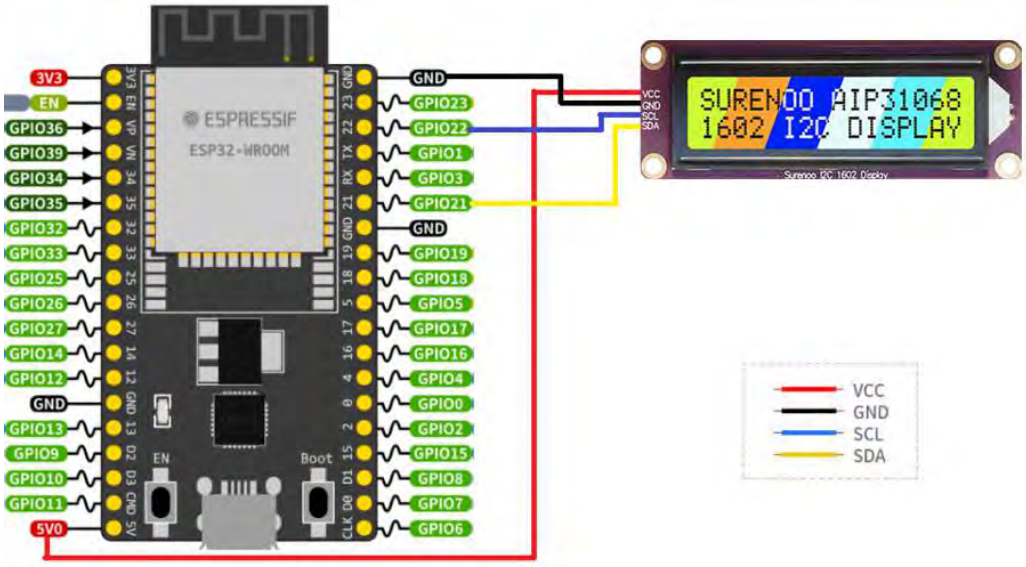
If you are using a pin header or PH2.0 4PIN interface, you need to connect according to the following table.

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:

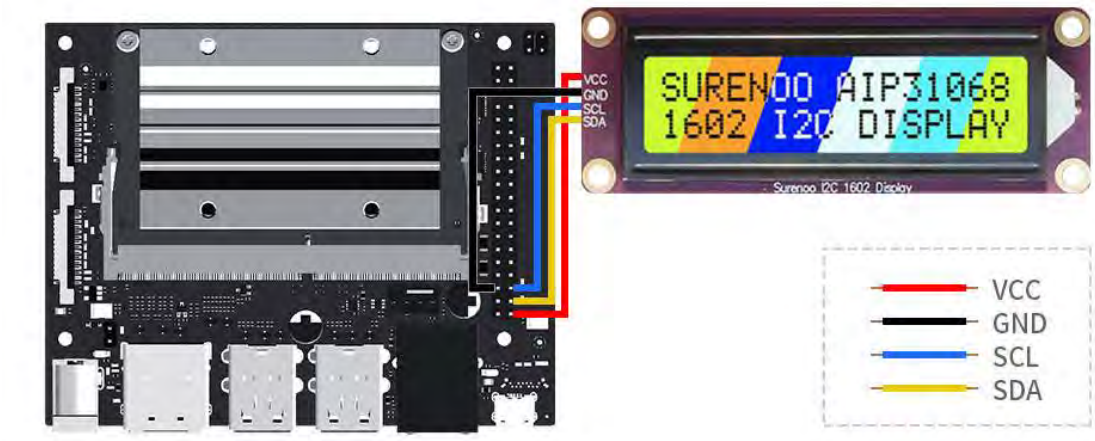
If you are using a pin header or PH2.0 4PIN interface, you need to connect according to the following table:

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 t
he LCD
```