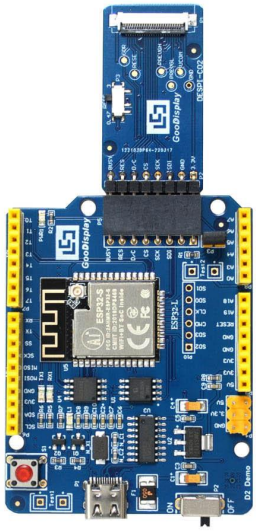
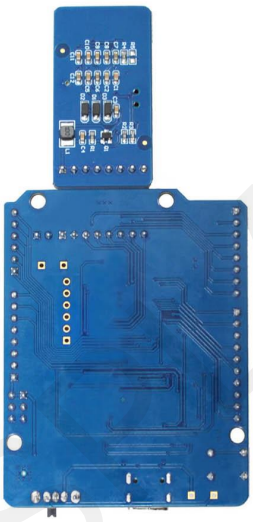
E-Paper Display Evalution Kit for ESP32

ESP32-L(C02)

Dalian Good Display Co., Ltd.

Product Specifications





Customer	**Standard**
Description	Evaluation Kit For E-paper Display
Model Name	ESP**32**-L(C02)
Date	2022/0**7**/0**7**
Revision	**1.0**

	Design Engineering		
	Approval	**Check**	**Design**
	刘宝玉	修燕凤	吴之良

Zhongnan Building, No.18, Zhonghua West ST,Ganjingzi DST,Dalian,CHINA
Tel: +86-411-84619565
Email: info@good-display.com
Website: www.good-display.com

Contents

1.Overview

ESP32-L evaluation kit is used to help users develop e-paper display projects with provided source code to create more differentiated solutions. It is designed for SPI e-paper display. It supports driving Good Display's black-white e-paper display and three-color (black, white and red/Yellow) e-paper display: 0.97'', 1.54'',2.13'', 2.66'', 2.7'', 2.9'', 3.71'', 4.2'', 5.83'' and 7.5''. And it is added the functions of USB serial port and LED indicator light, Reset button, font chip, Flash chip and etc.

ESP32-L (C02) development kit consists of motherboard ESP32-L for EPD and connector board DESPI-C02.
Esp32-L (C02) development kit is only for users to develop and drive electronic paper display screens. The application of WiFi, Bluetooth and other functions requires users to develop on their own according to the project.

2. Structure Specification

Parameter	Specification
Model	ESP32-L（C02）
Platform	Arduino
Dimension	Mother Board：70mm x 54mm (ESP32-L) Adapter：41mm x 22mm (DESPI-C02)
Power Interface	Type-C
Example Code	Available
Operating Temp.	-20 ℃ ~ 70 ℃
Main Function	Learn to drive E-paper display; Test and evaluate e-paper display; Support secondary development
Additional Function	Type-C,LED indicator, Reset button, Font chip, Flash chip, Current detection

3. Functions

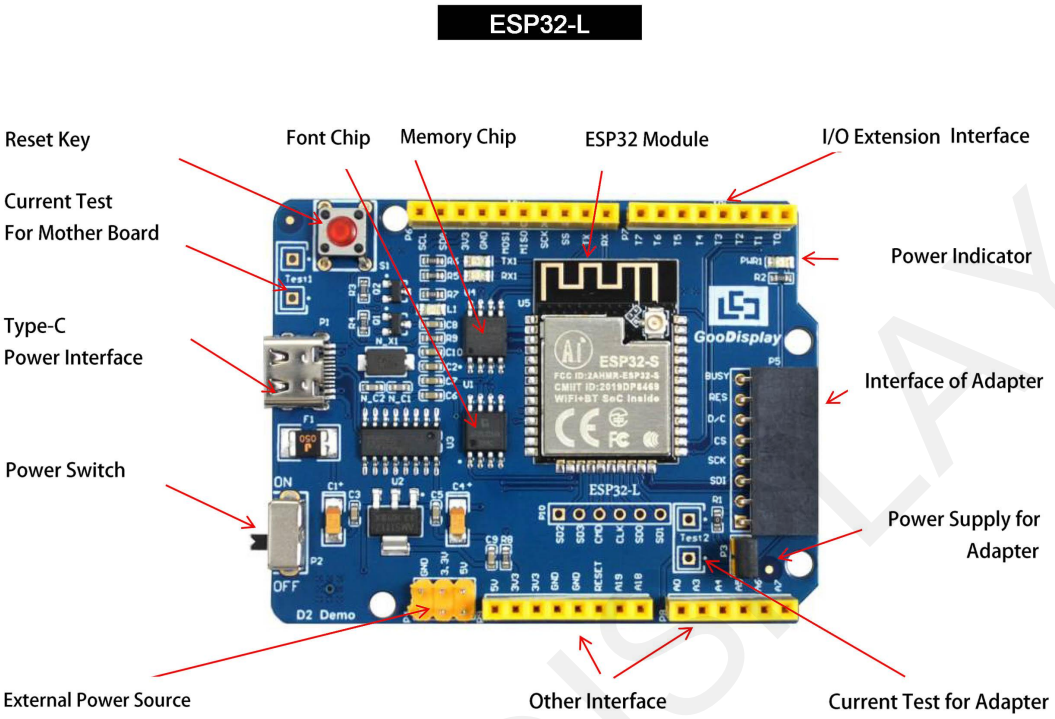


Figure 1 : ESP32-L

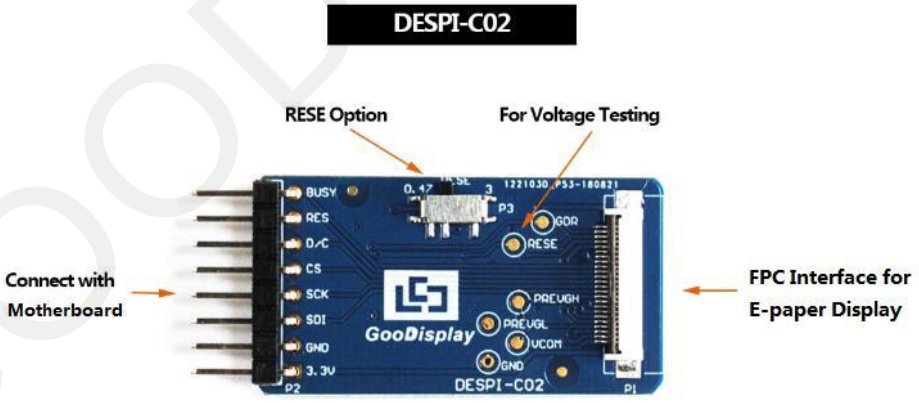


Figure 2 : DESPI-C02

3.1 Power Supply

The input voltage of this board is DC5V, which is powered by the USB port. Since the e-paper is 3.3V powered, it is necessary to connect VCC at P6 to 3.3V when using.

Tips: If you use 5V power supply, the e-paper can be driven theoretically, but it is not recommended, long-term operation will make e-paper damage.

3.2 USB to serial port transmission

This development board uses USB to serial port communication. Users should install CH340 driver on computer before downloading program.

3.3 P3 short-circuit jumper

P3 short-circuit jumper controls DESPI-C02's power supply, which is e-paper's power supply. Be sure to short it when using.

3.4 Current measurement

The development kit supports current measurement of motherboard ESP32-L and DESPI-C02.

1) motherboard ESP32-L: Power off and make series connection between ampere meter and TEST1.
2) DESPI-C02: Power on and take off the short-circuit jumper P3, then make series connection between ampere meter and TEST2. Put on the short-circuit jumper P3 after measurement.

3.5 I/O port extension

This development board led out the digital I/O 0~13 and the analog I/O 0~5 for development.

3.6 LED indicator light

There is a indicator light reserved for developing.

3.7 Reset key

This development board contains a reset key for users operation.

3.8 Expanded Functions

Built-in Chinese font chip GT30L32S4W.
Built-in data storage chip W25Q16.

4. Connection Mode and RESE Selection

4.1 Connection between e-paper and development board

Connect DESPI-C02 to ESP32-L for EPD as shown in Figure 3. Connect e-paper FPC to DESPI-C02 as shown in Figure 4. (Please note the direction of the e-paper.)

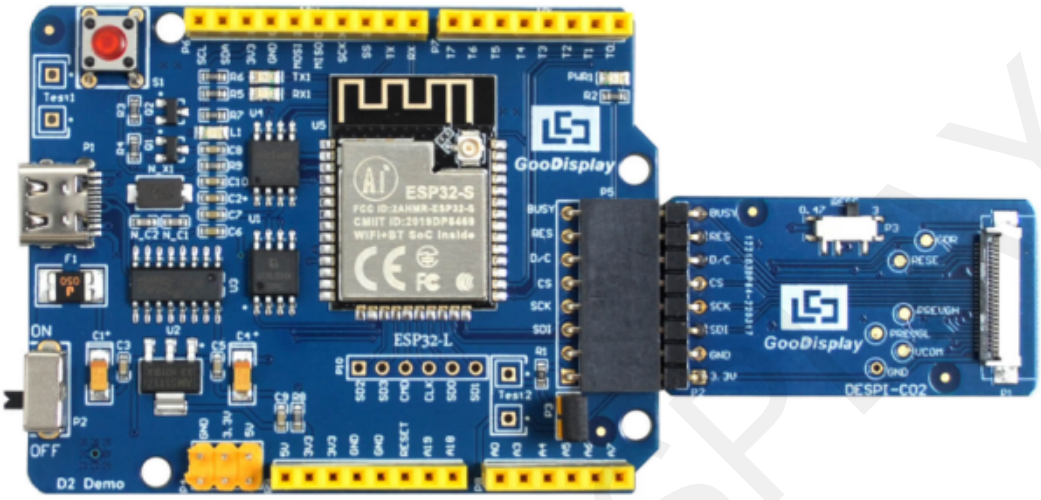


Figure 3 : Connection between ESP32-L for EPD and DESPI-C02

4.2 Connection between e-paper and adapter board

1) Identify the front and back sides of the e-paper, and insert the e-paper into the adapter plate with the front side facing up

Note: The mirror side of the e-paper is facing down and the display side is facing up.

Figure 4 Schematic diagram of e-paper and adapter board plugging

2) Insert the e-paper FPC gold finger upward into the P1 connector of the adapter board as shown in Figure 4.

(1) FPC connector	
(2) Open the connector	
(3) Insert the FPC	
(4) Close the connector	

Figure 5 : Connection between DESPI-C02 and e-paper

4.2 RESE resistor selection of DESPI-C02

The switch on DESPI-C02 is used to select the RESE resistor,different e-papers need to match different RESE resistors, a wrong RESE resistor will cause the e-paper cannot be refreshed.

Note: when designing the actual product, users should strictly follow the circuit in the electronic paper product specification.

1）When RESE is set to 0.47 ： Applicable to ULTRACHIP series driver ICs (starting with UC), fitipower series driver ICs (starting with JD)

1.54 inch GDEW0154T8D、GDEW0154I9FD、GDEW0154M09、GDEW0154M10
2.13 inch：GDEW0213T5D、GDEW0213I5FD、GDEW0213M21
2.6 inch：GDEW026M01
2.7 inch：GDEW027W3
2.9 inch：GDEW029M06、GDEW029Z13
3.71 inch：GDEW0371W7、GDEY037T03、GDEY037Z03
4.2 inch：GDEW042T2、GDEQ042Z21
5.83 inch：GDEW0583T8、GDEW0583Z83
7.5 inch：GDEY075T7、GDEY075Z08

2）When RESE is set to 3：Applicable to Solomon series driver ICs (starting with SSD)

1.54 inch：GDEY0154D67、GDEY0154D90LT、GDEY0154Z90、GDEY0154T94
2.13 inch：GDEY213B74、GDEY213B75、GDEY0213D32LT
2.66 inch：GDEY0266T90、GDEY0266Z90
2.7 inch： GDEY027T91
2.9 inch：GDEY029T94
4.2 inch：GDEY042T91

5. Program Downloading

This development board adopts serial port to download programs, which requires Arduino programming software, type-C cable, CH340 driver and esp32_ package_ v1_ 0_ 2 firmware package and python-2.7.17 plug-in. The operation steps are as follows:

For the first download, install CH340 driver and ESP32 on the computer_ package_ v1_ 0_ 2 firmware package, python-2.7.17 plug-in.

Firmware package: esp32_ package_ v1_ 0_ 2. The unzipped file name is espressif. Unzip the espressif folder and put it in the arduino/hardware directory. During installation, the Arduino programming software must be closed, and the firmware package can also be searched directly in the Arduino library manager.

Use the default installation path for CH340 driver and python-2.7.17 plug-in.

Run the program file get.exe in esp32/tools(you must have installed the python plug-in), as shown in Figure 6.

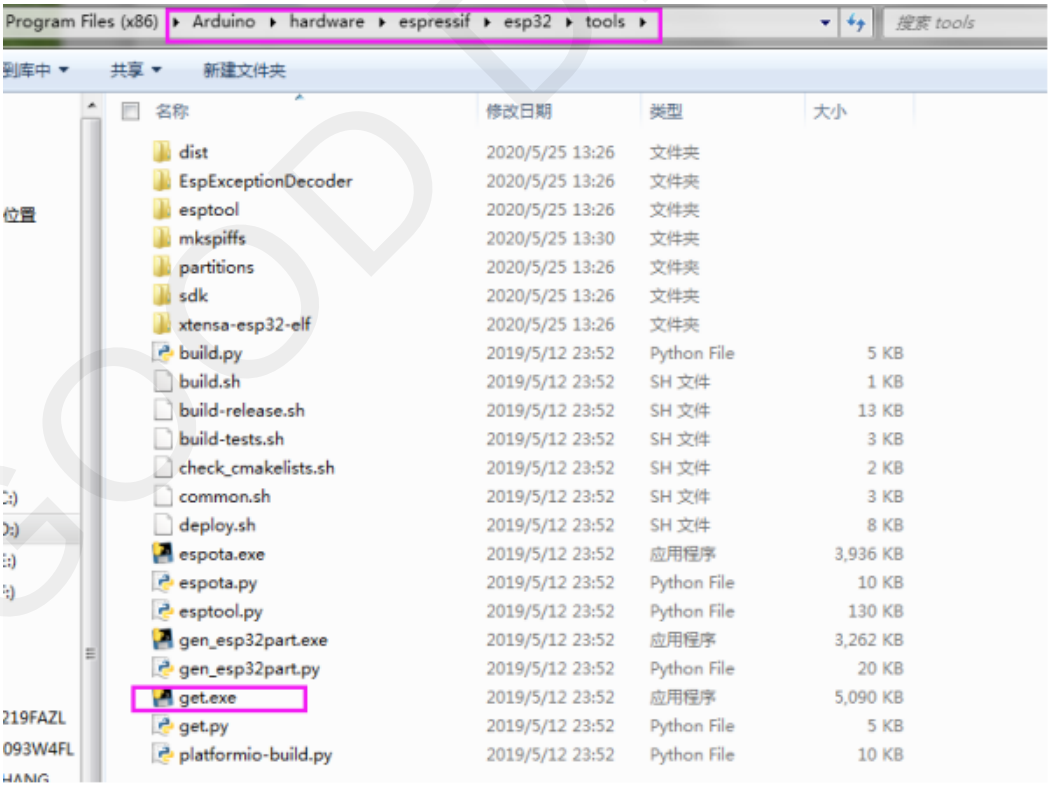


Figure 6 Run get.exe

1. Connect the Type-C interface of the development board to the computer with USB cable.

2. Open Arduino in the driver folder shown in Figure 7 with Arduino 1.8.6 ino engineering document.

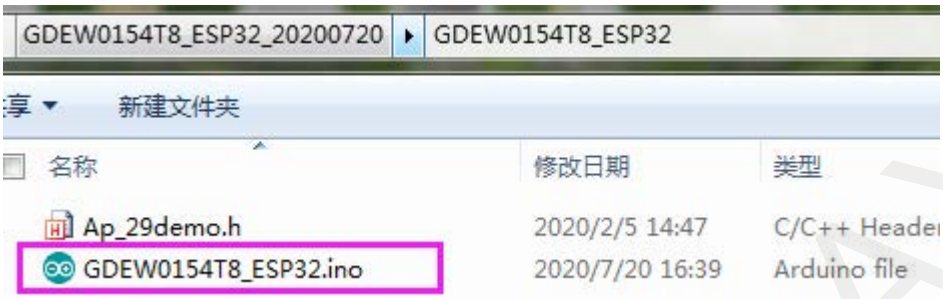


Figure 7 : Open Arduino.ino

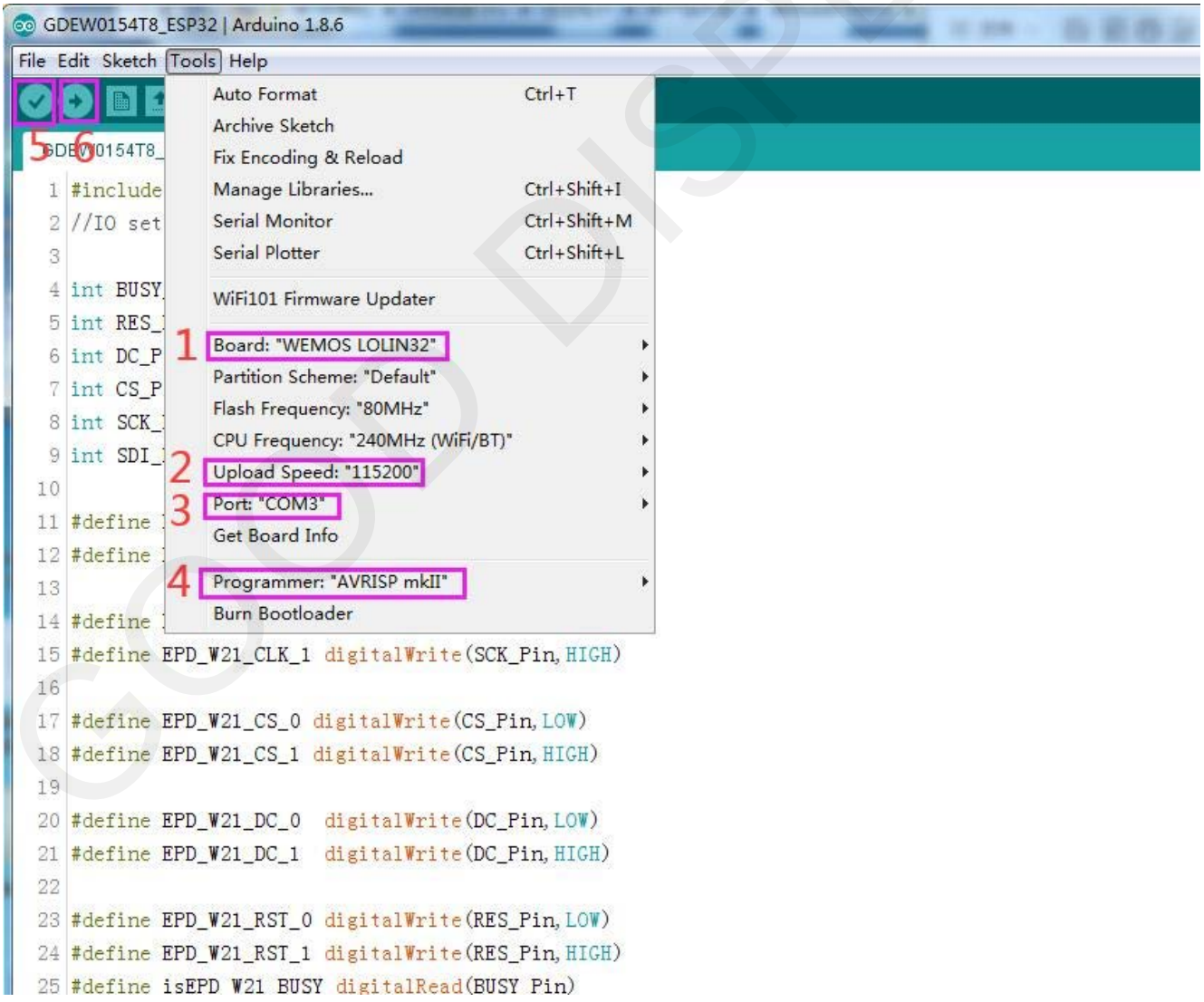


Figure 8 : Steps of downloading program

4. Set in "tools".
5. Click position 1 to select the development board model "WEMOS LOLIN32".
6. Click position 2 to select serial port baud rate "115200".
7. Click position 3 to select COM port.
8. Click position 4 to select the programmer model, and here select "AVRISP mkII".
9. Click position 5  to compile the program.
10. Click position 6  to download the program to the development board.
11. After the downloading, first power off the development board, connect the electronic paper display screen to the adapter board, and then power on again so that E-paper can display normally.

Note: if the compiler prompts "invalid library found" during program compilation, please ignore this prompt, which will not affect the actual program download.