Development Kit for E-paper Display

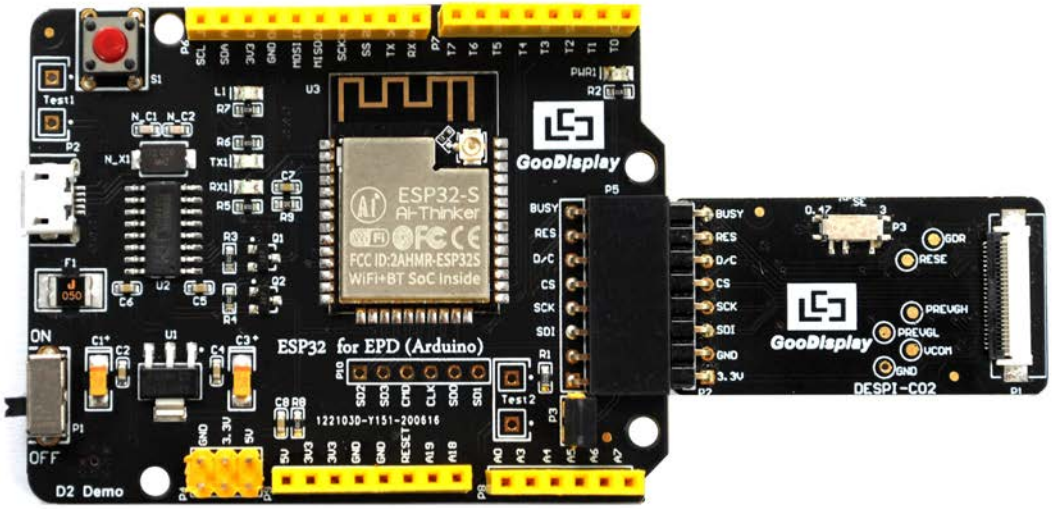
(For 1.54'', 2.04'', 2.13'', 2.6'', 2.7'', 2.9'', 3.71'', 4.2'', 5.83'' and 7.5'')

GooDisplay®

ESP32-02

Dalian Good Display Co., Ltd.

Product Specifications



Customer	**Standard**
Description	**Development Kit for E-paper Display**
Model Name	**ESP32-02**
Date	**2020/07/27**
Revision	**1.0**

	Design Engineering		
	Approval	**Check**	**Design**

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1.Overview

ESP32-02 development kit supports program development using Arduino development platform.This development 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: 1.54'', 2.04'', 2.13'', 2.6'', 2.7'', 2.9'', 3.71'', 4.2'', 5.83'' and 7.5''.

ESP32-02 development kit consists of motherboard ESP32-02 for EPD and connector board DESPI-C02.

ESP32-02 development kit is only for driving the e-paper, WIFI and other functions need to be developed by users according to the project.

2.Mechanical Specifications

Parameter	Specification
Model	ESP32-02
Platform	Arduino
Dimension	70mm x 54mm (ESP32 for EPD) 41mm x 22mm (DESPI-C02)
Power Interface	USB interface
Sample Code	Available (please contact sales)
Operating Temp.	-20°C ~+70°C
Main Function	Learn to drive e-paper display; Test and evaluate e-paper display; For secondary development.
Additional Function	USB to serial port; Indicator light; Reset key; Current measurement.

3.Functions

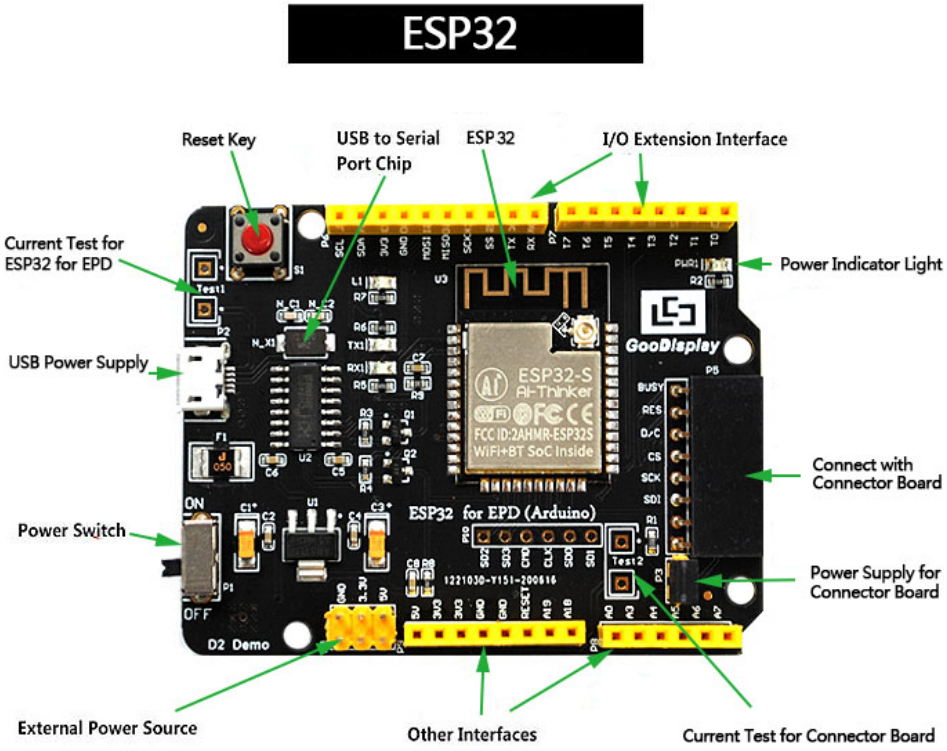

Figure 1 : ESP32 for EPD

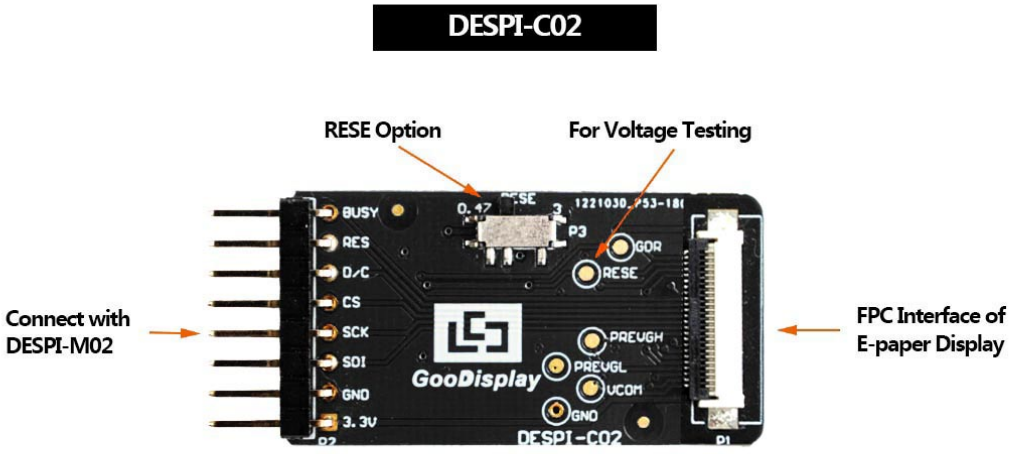

Figure 2 : DESPI-C02

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 ESP32 for EPD and DESPI-C02.

1) ESP32 for EPD: 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 D0~D12 and the analog I/O A0 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.

4.Connection Mode and RESE Selection

4.1 Connection between e-paper and development board

Connect DESPI-C02 to ESP32 for EPD as shown in Figure 3.

Connect e-paper FPC to DESPI-C02 as shown in Figure 4. (Pay attention to the direction of the e-paper.)

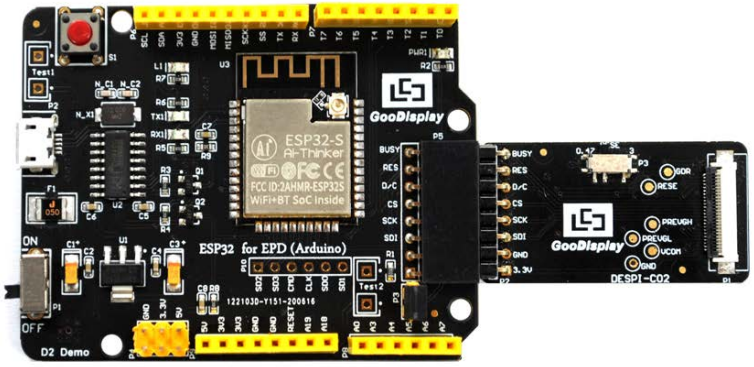

Figure 3 : Connection between ESP32 for EPD and DESPI-C02

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

Figure 4 : 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.

When RESE is set to 0.47 :

1.54 inch：GDEW0154T8、GDEW0154I9F、GDEW0154C39、GDEW0154M09、GDEW0154M10、GDEW0154Z17

2.13 inch：GDEW0213T5、GDEW0213I5F、GDEW0213C38、GDEH0213Z19、GDEW0213V7LT

2.6 inch：GDEW026T0

2.7 inch：GDEW027W3、GDEW027C44

2.9 inch：GDEW029T5、GDEW029I6F、GDEW029C32、GDEH029Z13 、GDEH029Z13

3.71 inch：GDEW0371W7、GDEW0371Z80、GDEW0371Z01

4.2 inch：GDEW042T2、GDEW042C37、GDEH042Z21

5.83 inch：GDEW0583T8、GDEW0583Z83

7.5 inch：GDEW075T7、GDEW075Z08

When RESE is set to 3 :

1.54 inch：GDEH0154D67、GDEM0154E97LT、GDEH0154Z90、GDEM0154C90

2.13 inch：GDEH0213B72、GDEH0213B73、GDEH0213D30LT、GDEH0213Z98、GDEM0213C90

2.9 inch：GDEH029A1、GDEH029D57LT、GDEH029Z92、GDEM029E97、GDEM029C90

4.2 inch：GDEH042Z96

7.5 inch：GDEH075Z90

11.6 inch：GDEH116T91、GDEH116Z91

5.Program Downloading

This development board uses serial port to download the program, need to use data cable with micro USB interface, CH340 driver, esp32_package_v1_0_2 firmware package,python-2.7.17 plug-in and Arduino programming software, the operation steps are as follows:

1. Install CH340 driver,esp32_package_v1_0_2 firmware package and python-2.7.17 plug-in in computer befor downloading for the first time.

1) The unzipped file for the esp32_package_v1_0_2 firmware package is named espressif,unzip the espressif folder and put it in the Arduino/hardware directory,the Arduino programming software must be turned off during installation,the firmware package can also be searched directly in the Arduino Library manager.

2) CH340 driver and python-2.7.17 plug-in can use the default installation path.

3) Run “get.exe” in esp32/tools(the premise is that the python plug-in is installed.) as shown in Figure 5.

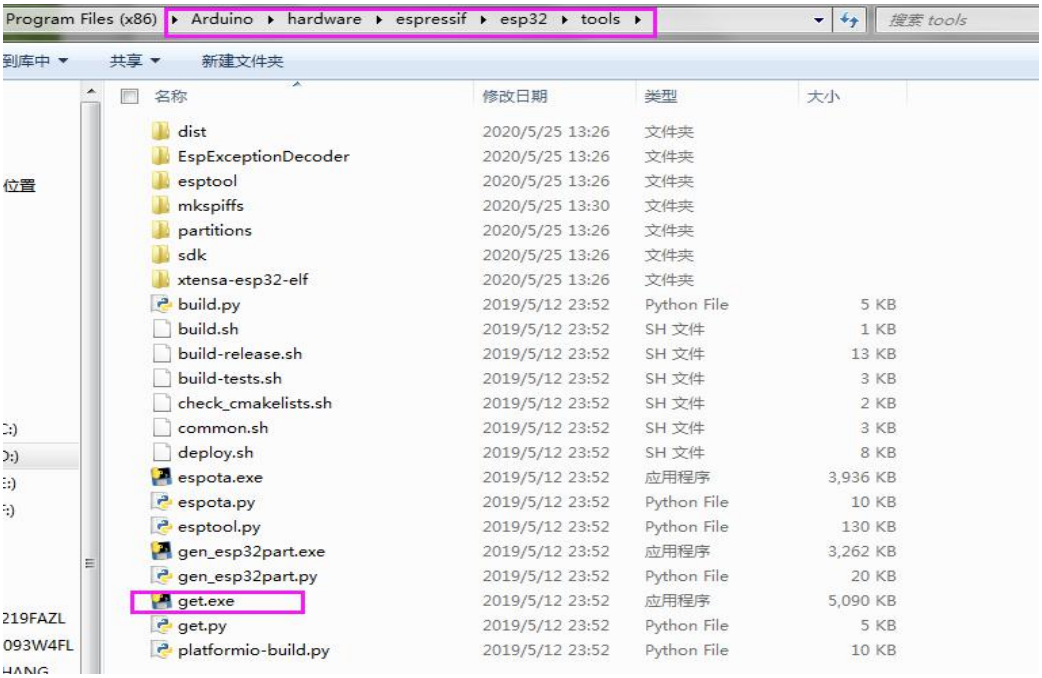

Figure 5 : Run the "get.exe" file

2. Connect the micro USB port of the development board to computer with a USB data cable.

3. Open the Arduino file in the folder shown in Figure 6 with Arduino 1.8.6.

Figure 6 : Open Arduino file

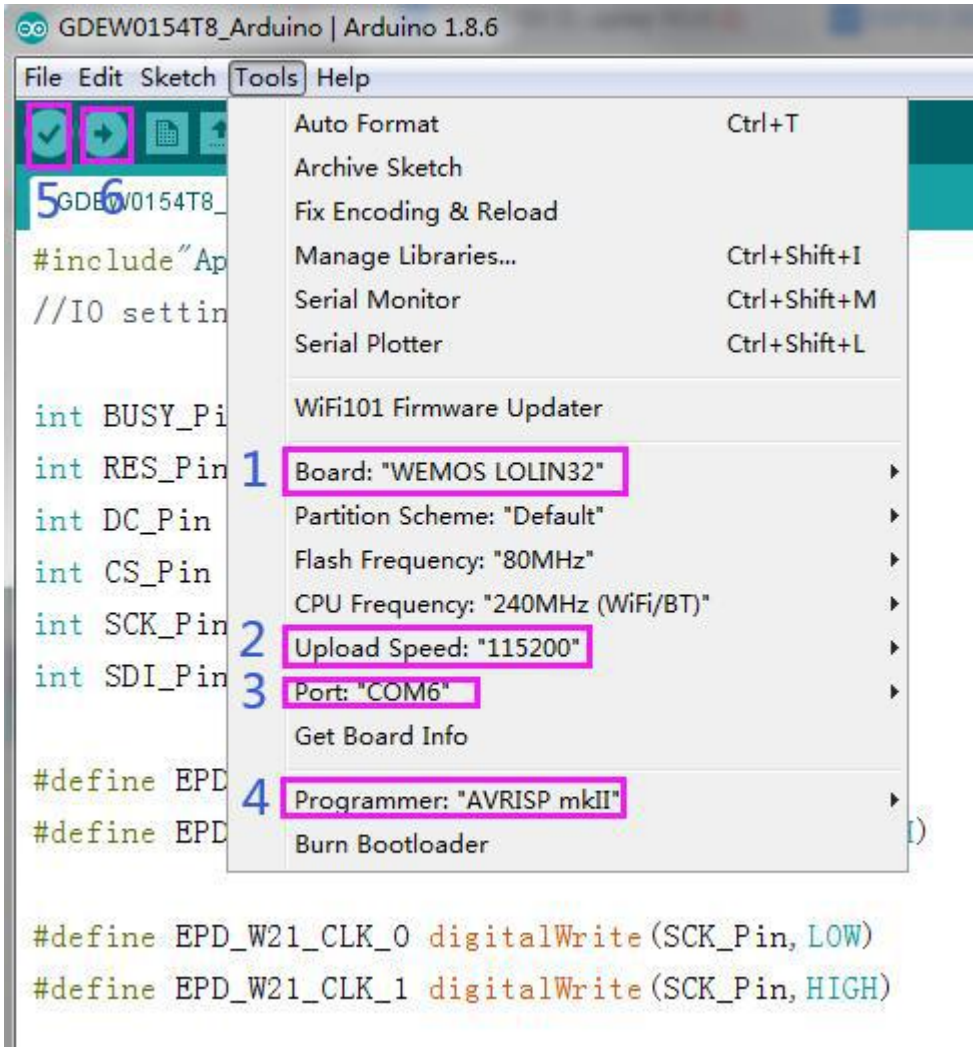

Figure 7 : Steps of downloading program

4. Configure in “Tools” in Figure 7.
5. Select development board model “WEMOS LOLIN32” in position 1 of Figure 7.
6. Select upload speed “115200” in position 2 of Figure 7.
7. Select COM port in position 3 of Figure 7.
8. Select programmer model “AVRISP MKII” in position 4 of Figure 7.
9. Click position 5 of Figure 7 to compile the program.
10. Click position 6 of Figure 7 to download the program to

development board.

11. After downloading successfully, power off the development board, connect the e-paper to DESPI-C02 and power the development board. Then the e-paper can display the image normally.

Note: If the compiler prompts "Invalid library found" during program compilation, please ignore the prompt. This will not affect the actual program download.