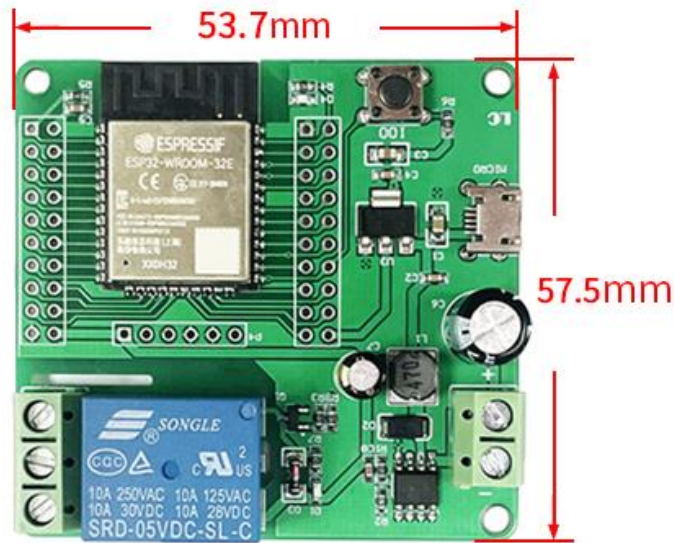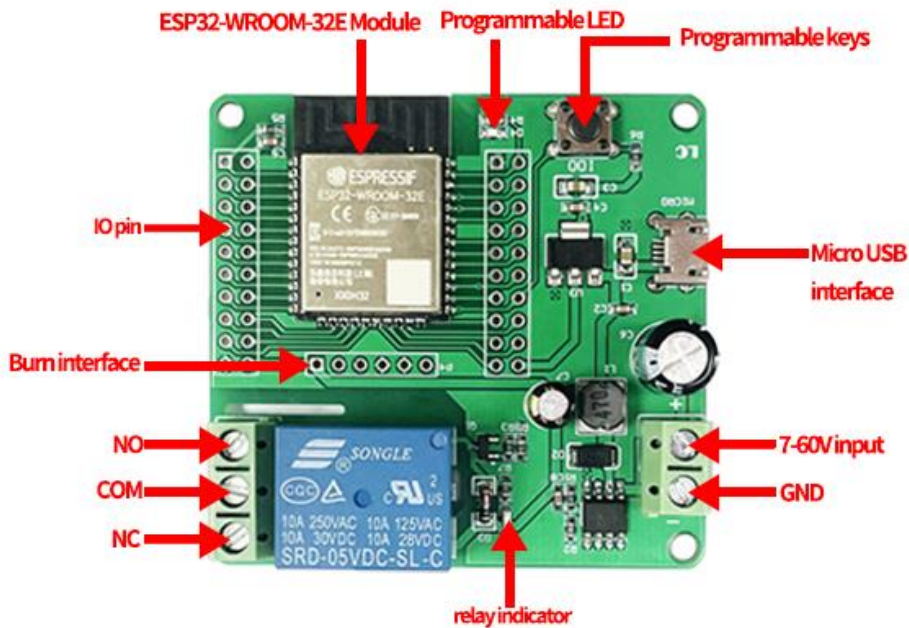# Hardware introduction and description

1.Board size: 57.5*53.7mm   **Weight: 27g**

2.Interfaceintroduction

Programming port: GND, RX, TX, 5V of ESP32 are connected to GND, TX, RX, 5V of external TTL serial port module respectively. IO0 needs to be connected to GND when downloading, and then disconnect the connection between IO0 and GND after downloading;

NC: Normally closed terminal, the relay is short-circuited with COM before it is pulled in, and it is left in the air after it is pulled in;

NO: Normally open, the relay is suspended before closing, and short-circuited with COM after closing.

3.GPIO lead port introduction

For details, please refer to "esp32-wroom-32e_esp32-wroom-32ue_datasheet_cn"

4. Arduino development environment to build

ESP32 supports development tools such as Eclipse/Arduino IDE. It is relatively simple to use Arduino. The following is how to build an Arduino development environment:

1. Install Arduino IDE 1.8.9 or the latest version;

2. Go to the espressif repository https://github.com/espressif/arduino-esp32 , package and download all the files
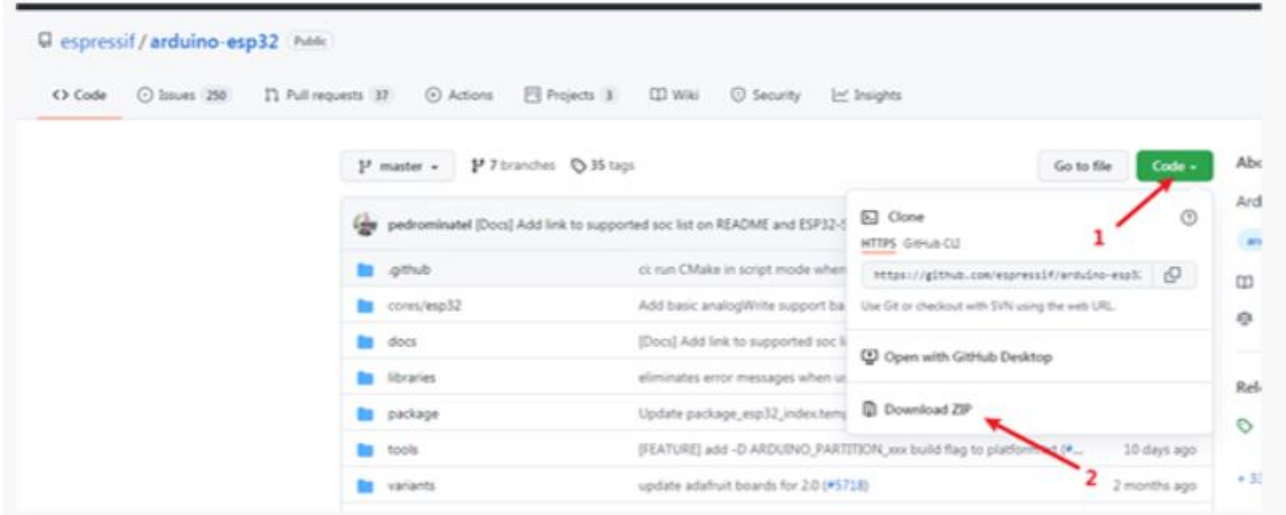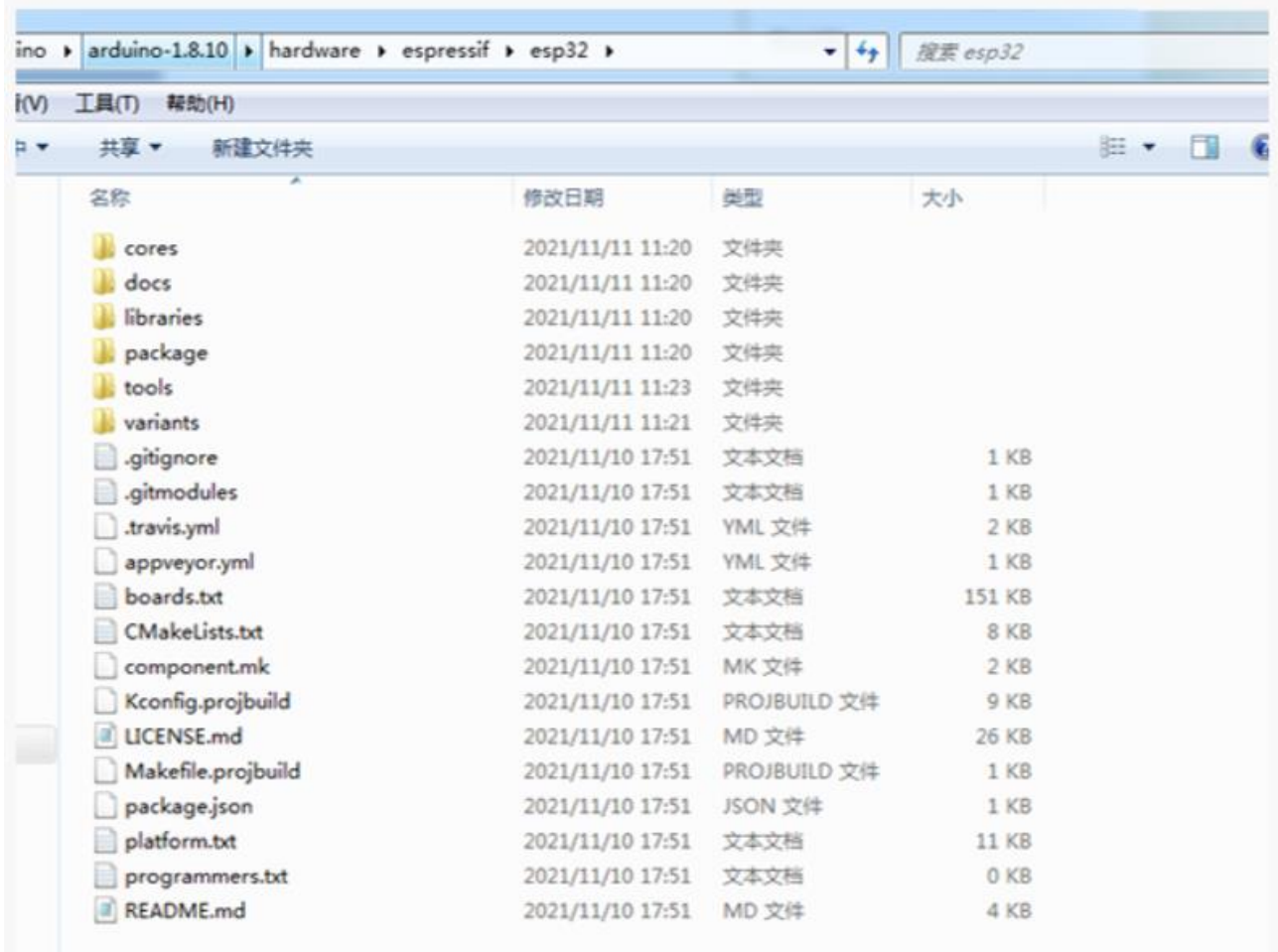

3. Find the installation path of the Arduino software, enter the hardware folder, and create a new blank folder named espressif
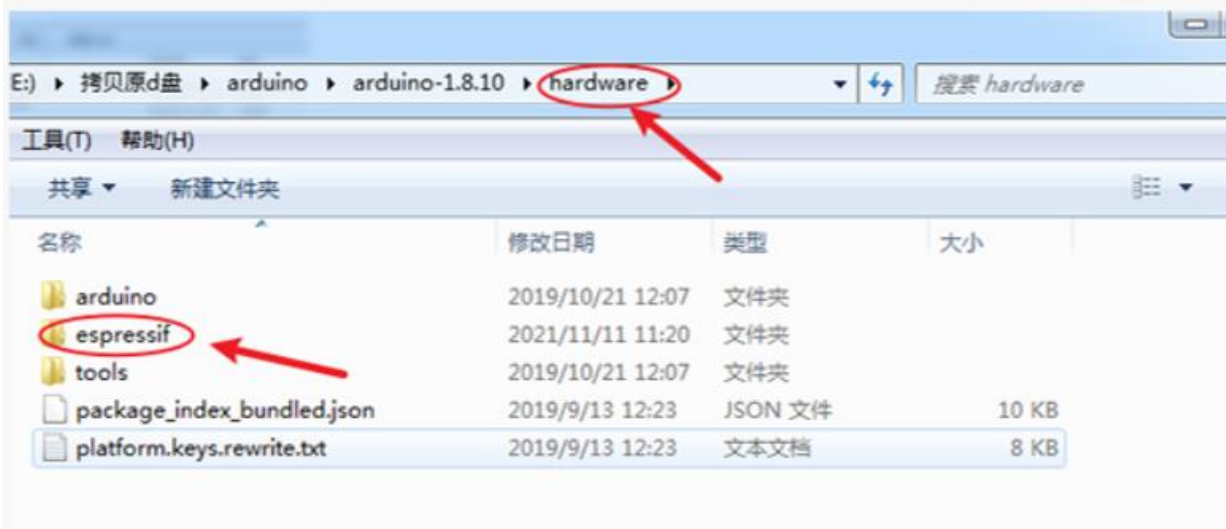

4, and then create a new blank folder named esp32 under the espressif folder
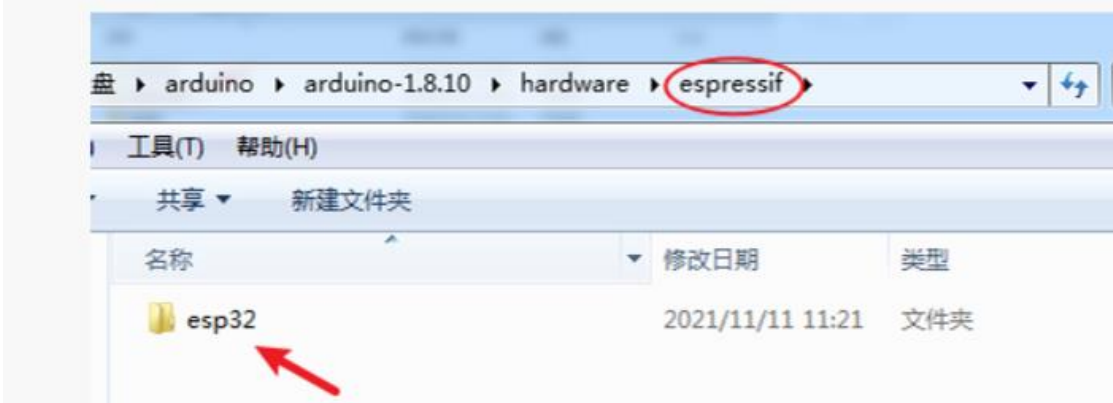
5. Unzip the downloaded compressed package and copy the content to the esp32 folder.

名称	修改日期	类型	大小
cores	2021/11/11 11:20	文件夹	
docs	2021/11/11 11:20	文件夹	
libraries	2021/11/11 11:20	文件夹	
package	2021/11/11 11:20	文件夹	
tools	2021/11/11 11:23	文件夹	
variants	2021/11/11 11:21	文件夹	
.gitignore	2021/11/10 17:51	文本文档	1 KB
.gitmodules	2021/11/10 17:51	文本文档	1 KB
.travis.yml	2021/11/10 17:51	YML 文件	2 KB
appveyor.yml	2021/11/10 17:51	YML 文件	1 KB
boards.txt	2021/11/10 17:51	文本文档	151 KB
CMakeLists.txt	2021/11/10 17:51	文本文档	8 KB
component.mk	2021/11/10 17:51	MK 文件	2 KB
Kconfig.projbuild	2021/11/10 17:51	PROJBUILD 文件	9 KB
LICENSE.md	2021/11/10 17:51	MD 文件	26 KB
Makefile.projbuild	2021/11/10 17:51	PROJBUILD 文件	1 KB
package.json	2021/11/10 17:51	JSON 文件	1 KB
platform.txt	2021/11/10 17:51	文本文档	11 KB
programmers.txt	2021/11/10 17:51	文本文档	0 KB
README.md	2021/11/10 17:51	MD 文件	4 KB

6. Enter the tools folder and click get.exe to run the program. (provided that your computer has Python installed)
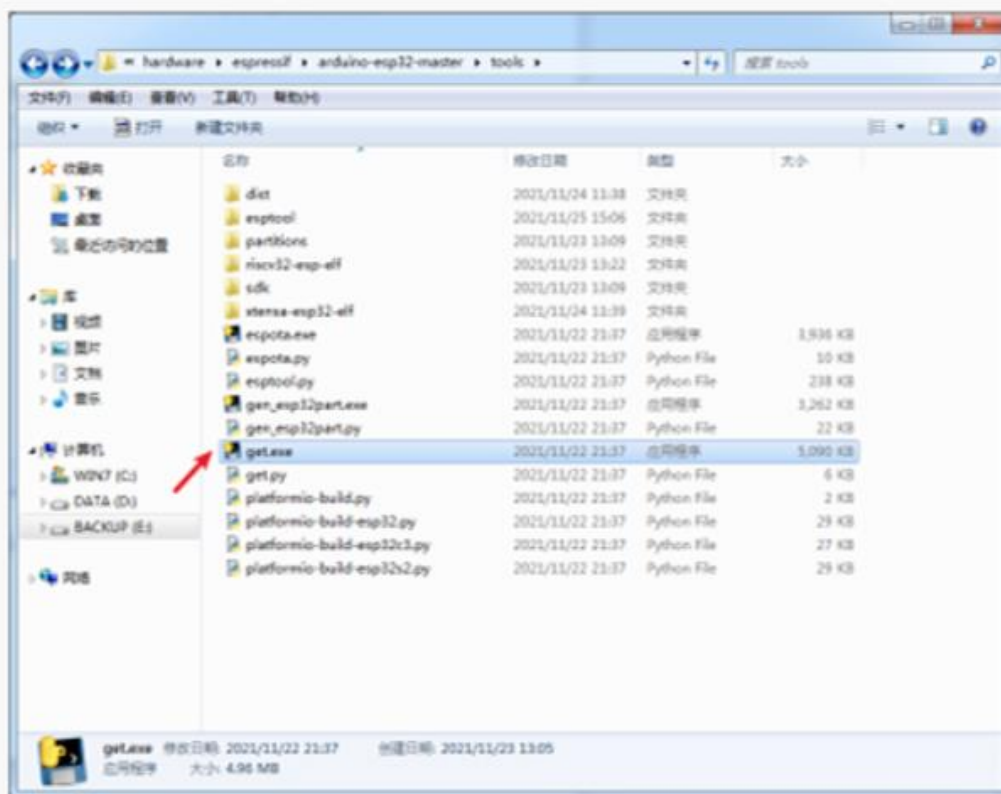
Restart the Arduino software, open the tool, development board, and select ESP Dev Module as the development board to indicate that the installation is successful.

5. Program download

1.Use the jumper cap to connect the IO0 and GND pins, prepare a TTL serial port module (for example: FT232) and plug it into the computer USB. The connection method between the serial port module and the development board is as follows:

TTL serial port module	ESP32 development board
GND	GND
TX	RX
RX	TX
5V	5V

2. Click Tools - Development Board in the menu bar, select the development board as ESP32 Dev Module

3. Open the program to be downloaded, click Tools--Port in the menu bar and select the correct port number

4. After clicking "Upload", the program will be automatically compiled and downloaded to the development board, as follows:
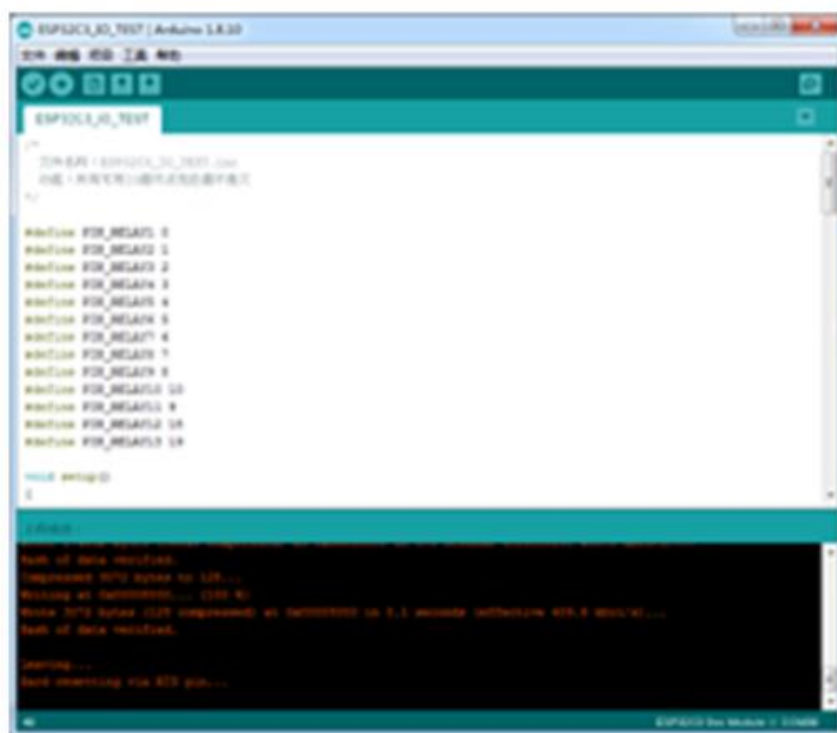
5. Finally, disconnect the connection between IO0 and GND, power on the development board again or press the reset button to run the program.

*The above is from: https://blog.csdn.net/Naisu_kun/article/details/84958561#_35

*tools burning: https://blog.csdn.net/qq_23940143/article/details/89841134