

1. Overview

3 Steps: Install Arduino IDE,Reload code to M100,Start to test.

The doc.need to download : The library file is downloaded to the specified path,others to the common folder.

[Arduino IDE](#)

Serial Drivers

Demo source code

Library file: download to the path: computer--document--Arduino--libraries

2. Arduino IDE Environment Setting

2.1 Download Arduino IDE

Downloads



Arduino IDE 2.3.2

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

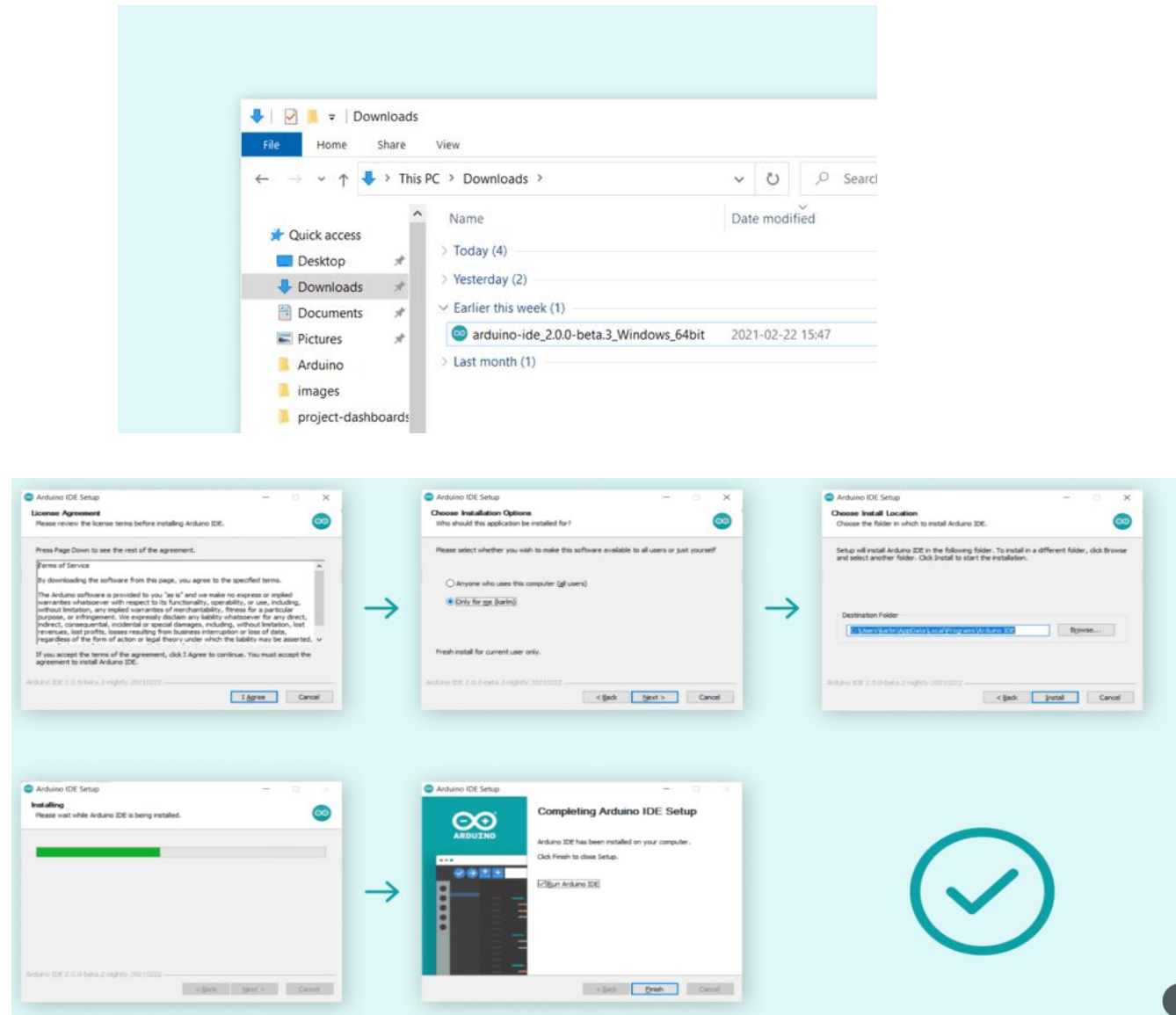
SOURCE CODE

The Arduino IDE 2.0 is open source and its source code is hosted on [GitHub](#).

DOWNLOAD OPTIONS

Windows	Win 10 and newer, 64 bits
Windows	MSI installer
Windows	ZIP file
Linux	ApplImage 64 bits (X86-64)
Linux	ZIP file 64 bits (X86-64)
macOS	Intel, 10.15: "Catalina" or newer, 64 bits
macOS	Apple Silicon, 11: "Big Sur" or newer, 64 bits
Release Notes	

2.2 Install Arduino IDE

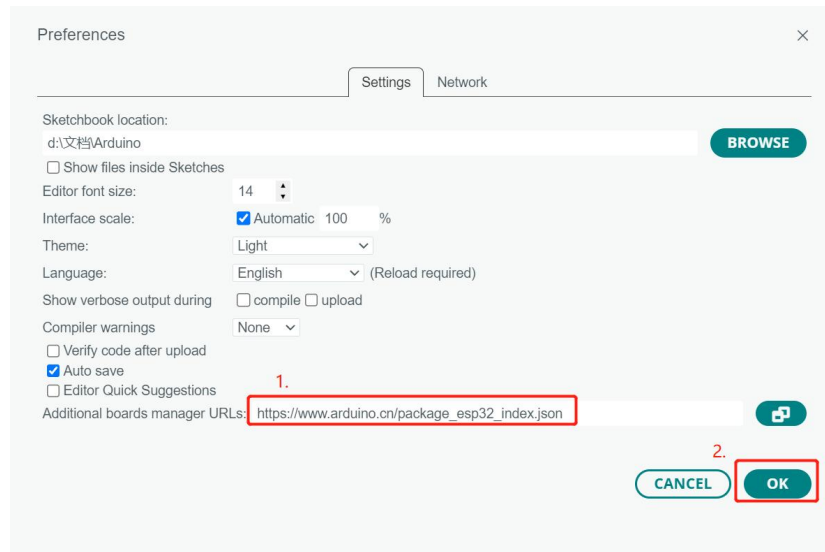


2.3 Install ESP32 development board

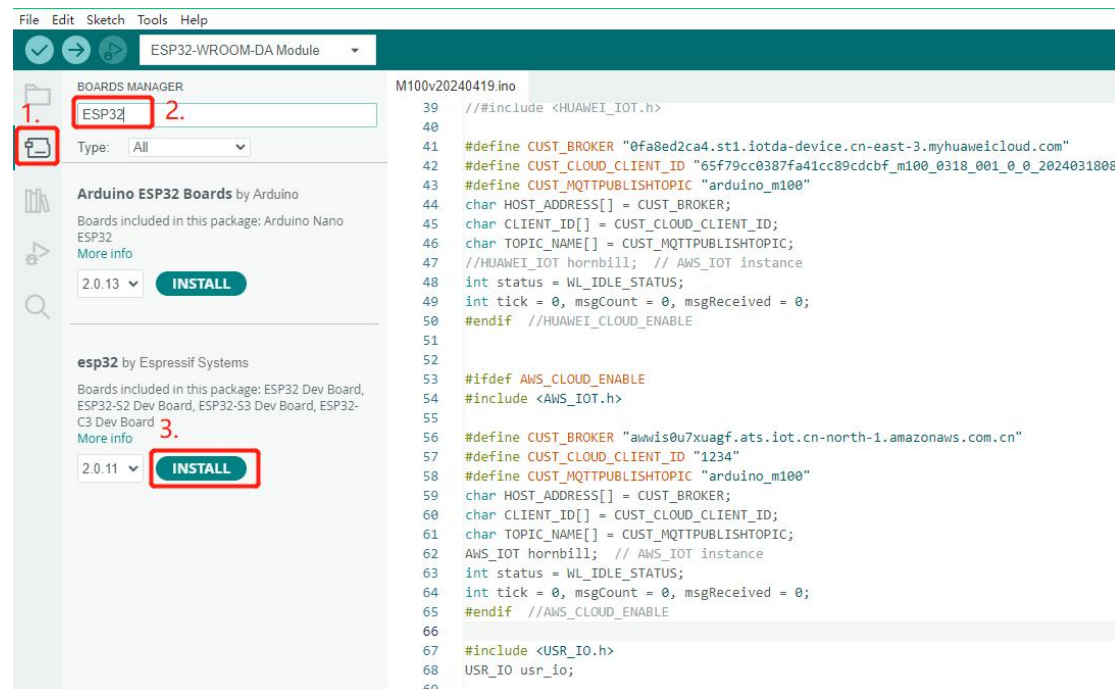
1> Setting Boards Manager URLs

File->Preference->Add Additional Boards Manager URLs:

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



2> Install ESP32 development board: Boards Manager-->Search ESP32-->Install, this will take a few minutes, please wait.



2.4 Install Library

Download Library: there need 10 library file to compile normally and load code to M100: 3 files from PUSR's library, left 7 doc. From Arduino library:

1> PUSR library files: USR_IO、AWS_IOT、ArduinoRS485.

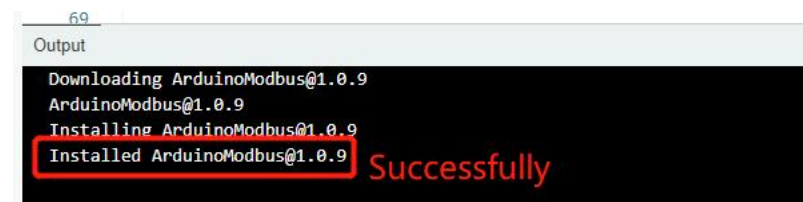
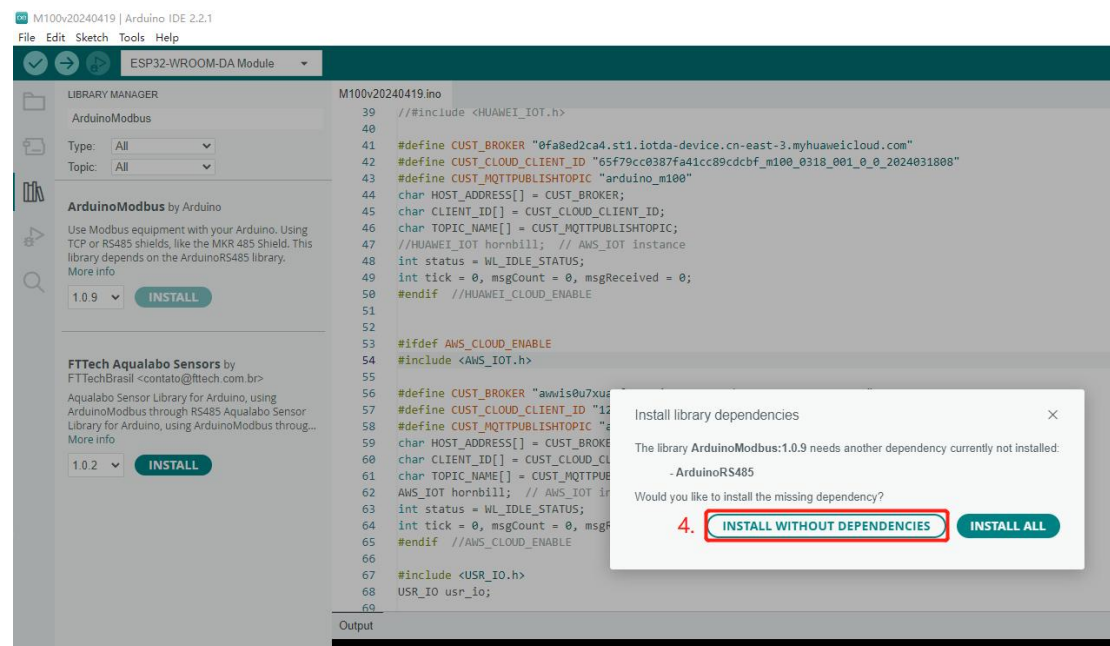
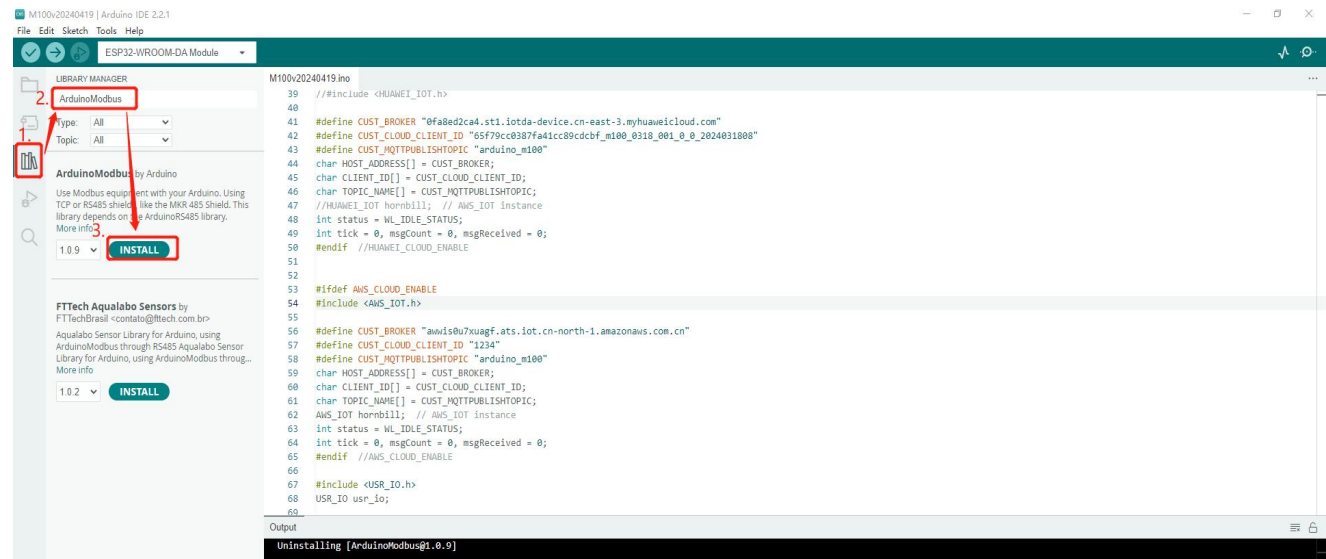
Download the files to the path: computer--document--Arduino--libraries.

2> There need to install all the below files in the Arduino library:

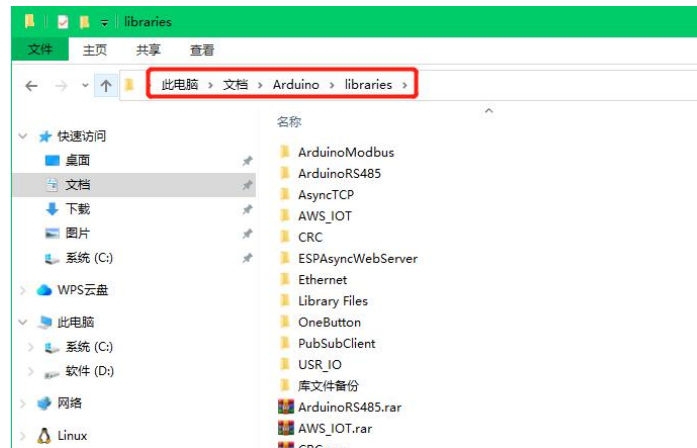
ArduinoModbus、AsyncTCP、CRC、ESPAsyncWebServer、Ethernet、OneButton、PubSubClient。

Install file: take the ArduinoModbus installing for example.

Click "Library Manager"--> Search "ArduinoModbus"--> Click "INSTALL"



After finishing, can find the files in: Computer--Document--Arduino--libraries



2.5 Instructions for Library Files

ArduinoModbus: query/set parameters of M100-ARD through modbus command

ArduinoRS485: RS485/232 communication

AsyncTCP: TCP communication

CRC: CRC verification for Modbus

ESPAsyncWebServer: webpage development

Ethernet: ethernet port communication

OneButton: deal with button activation

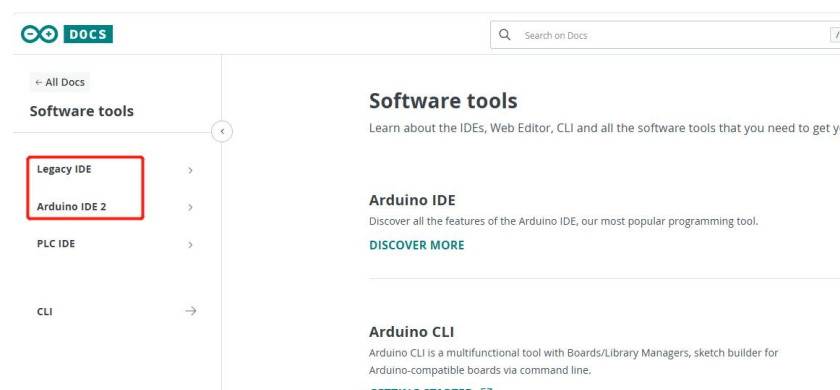
PubSubClient: MQTT Client

USR_IO: test for IO expansion board

AWS_IOT: connection with Amazon platform

2.6 View Arduino Official Document

In Arduino website, view more instructions of Arduino IDE.



3. Load the code onto M100

3.1 Hardware Prepare

1. 12V/1A power adaptor*1
2. USB to TTL cable*1
3. WiFi antenna*1
4. USB to 485/232 serial cable*1
5. USR-M100-ARD*1

Ports Indicate:



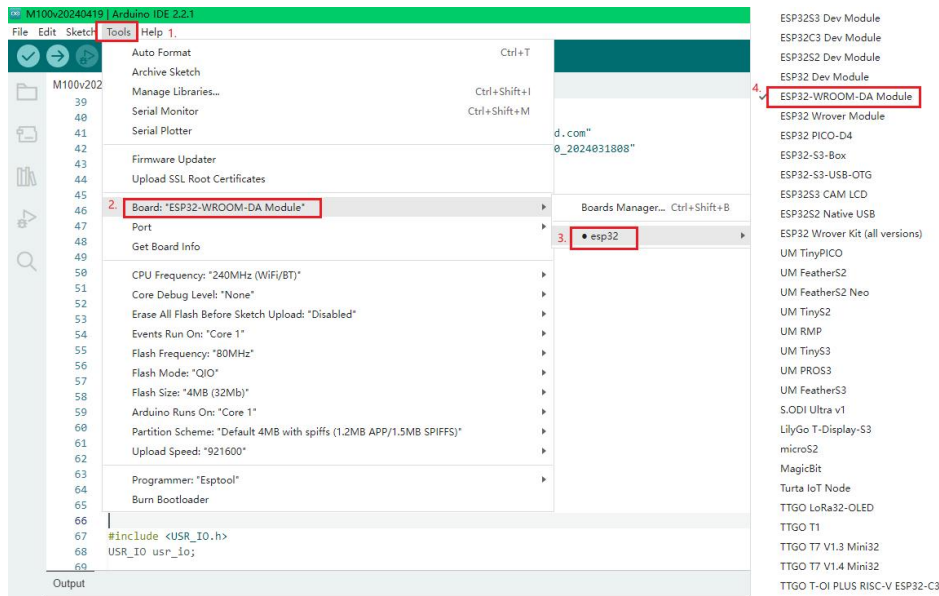
Power M100-ARD, indicator blinking, the device successfully started

Connect M100-ARD and computer through USB to TTL cable, work indicator keep light.

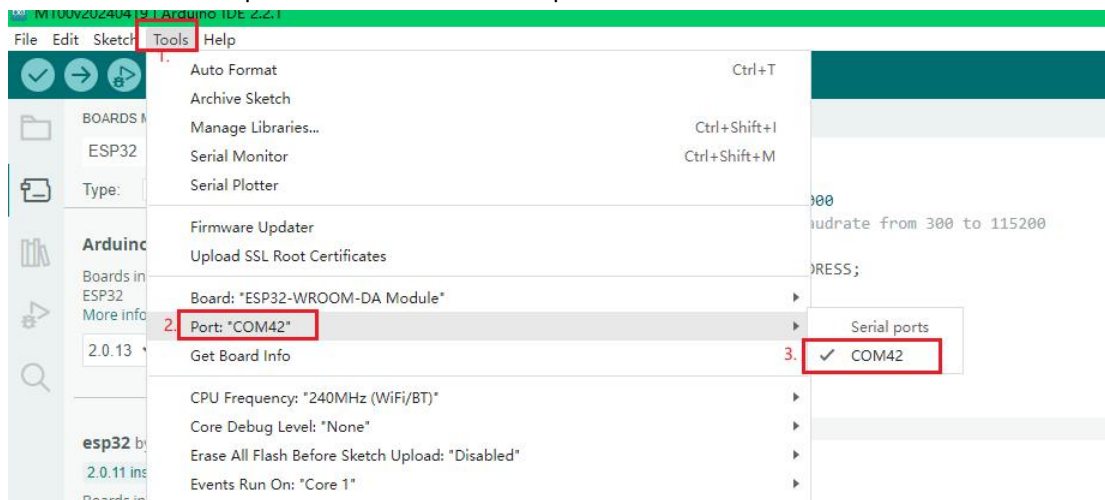
In the device manager, you can find the COM port which will be used for the program download. There need to install serial drive if no COM port.

3.2 Compile and Load the program

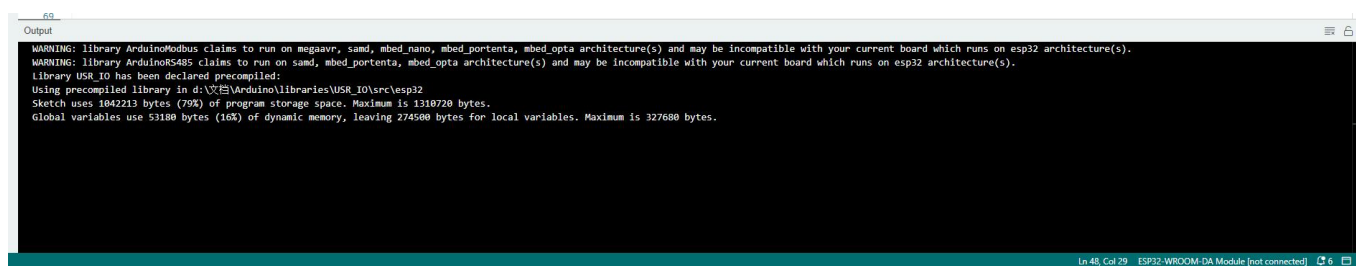
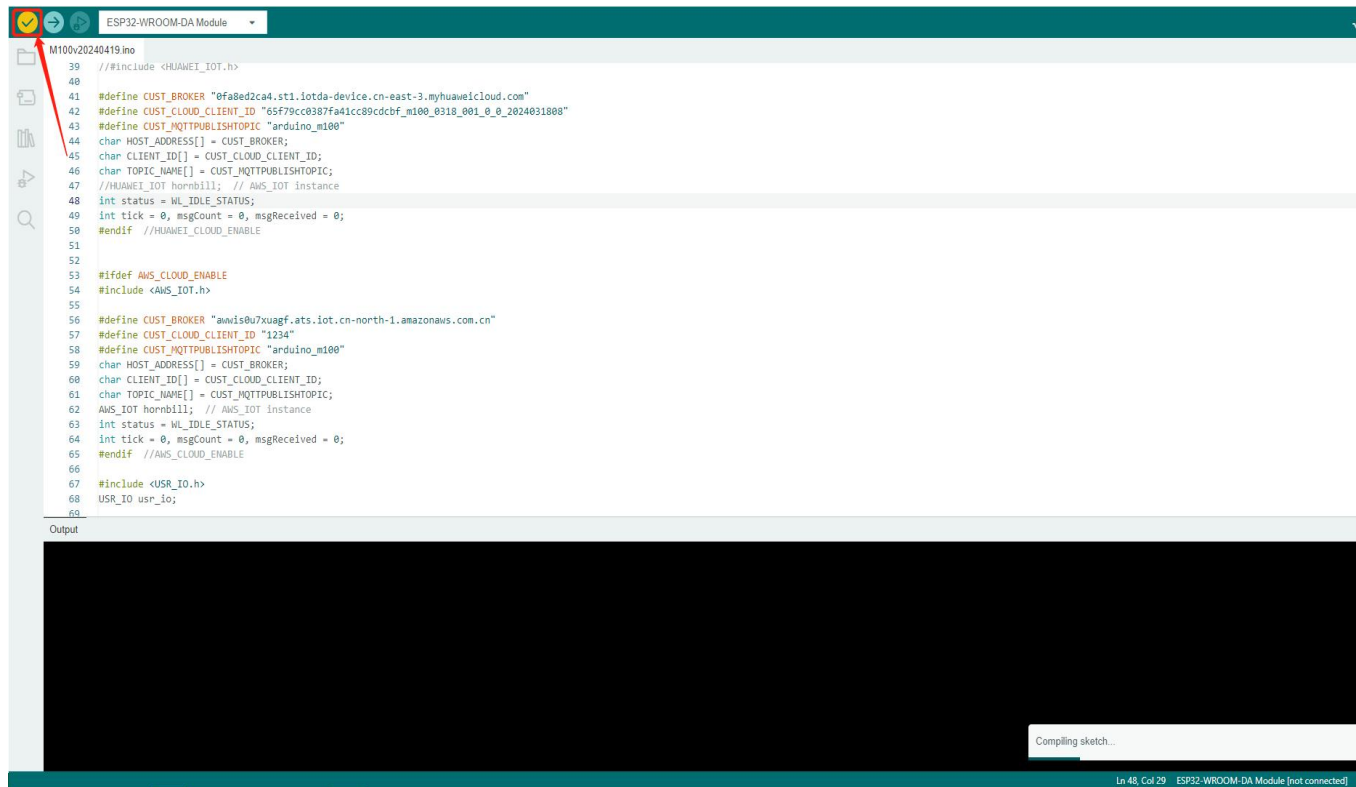
- 1> Open source demo code
- 2> Select the right ESP32 development board: Tools-->Board-->ESP32-->ESP32-WROOM-DA Module



3> Select download port: Tools-->Port-->COM port



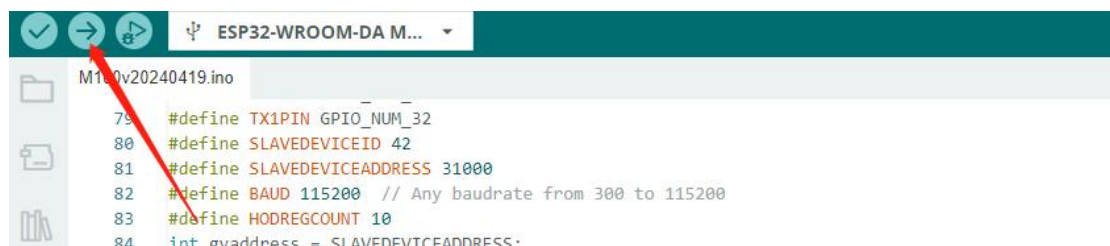
4> Click Verify: recheck the code



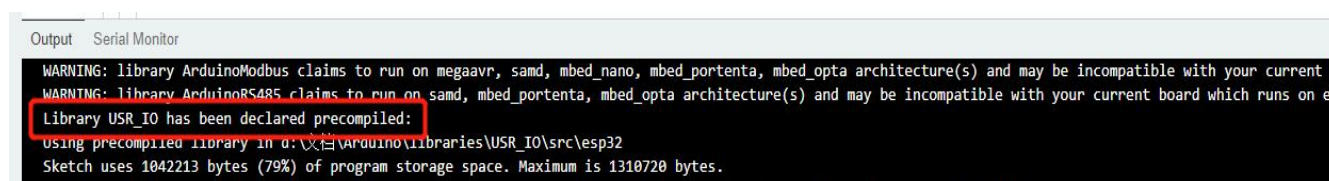
5> Upload: Compile the code and upload to M100-ARD which will take about several min.

a. Power off the M100-ARD

b. Click Upload button



c. While it appears the content in the red frame, holding the reload button and power on the device, then keep hold the reload button. This needs to be tried several times until it is workable.



d. Once the downloading starts normally like below, can release the reload button.


```
Output Serial Monitor
Compressed 8192 bytes to 47...
Writing at 0x0000e000... (100 %)
Wrote 8192 bytes (47 compressed) at 0x0000e000 in 0.2 seconds (effective 427.3 kbit/s)...
Hash of data verified.
Compressed 1047968 bytes to 655895...
Writing at 0x00010000... (2 %)
Writing at 0x0001b27a... (4 %)
Writing at 0x000287d1... (7 %)
Writing at 0x000317fa... (9 %)
Writing at 0x0004220d... (12 %)
```

Wait until the programm is loaded.

```

98 static bool eth_connected = false;
99
100
101 //bebebus app_bletest; // AWS_IOT instance
102
103
104 void WiFiEvent(WiFiEvent_t event) {
105     switch (event) {
106         case ARDUINO_EVENT_ETH_START:
107             // Serial.println("ETH Started");
108             ETH.setHostname("esp32-ethernet"); //set eth hostname here

```

Output Serial Monitor

```

Writing at 0x000da7e0... (80 %)
Writing at 0x000e0128... (82 %)
Writing at 0x000e896f... (85 %)
Writing at 0x000f0e57... (87 %)
Writing at 0x000f5f64... (90 %)
Writing at 0x000ff192... (92 %)
Writing at 0x00104a3f... (95 %)
Writing at 0x00109e22... (97 %)
Writing at 0x0010fa99... (100 %)

Wrote 1047968 bytes (655895 compressed) at 0x00010000 in 10.7 seconds (effective 783.1 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...

```

- e. Disconnect the download cable, power on M100-ARD. Wait until it starts successfully. (WORK light blinking), then proceed to the functional test.

4. Demo Function Test

4.1 WiFi connection

PC connect wifi of M100-ARD

SSID: USR-M100-ARD xxxx, xxxx means the last four numbers of MAC address.

Password: 012345678



4.2 Login Webpage

Enter 192.168.1.1 in the browser,login webpage.

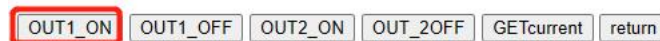


- 1 dout config: control DO on/off
- 2 wifi_sta_mode: set M100-ARD as STA mode to connect the AP
- 3 wifi_SOFT_AP_mode: set M100-ARD as AP mode
- 4 TCP mode: set M100-ARD to TCP
- 5 MQTT mode: set M100-ARD to MQTT

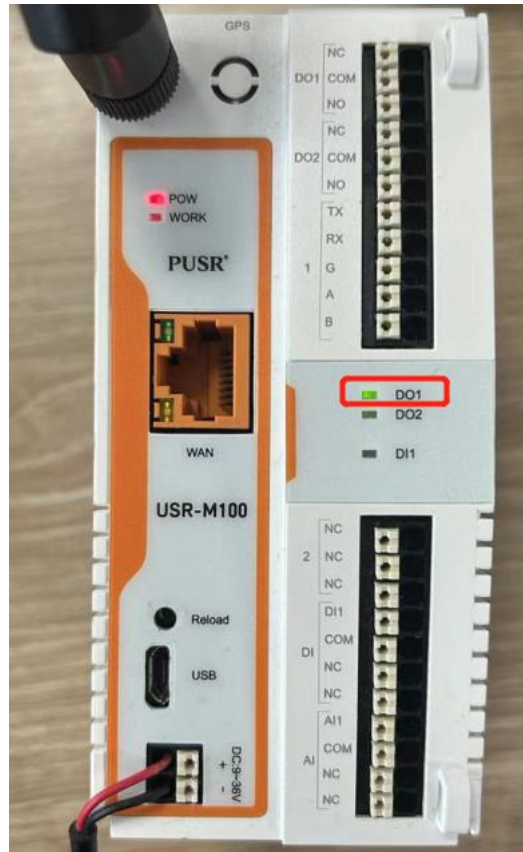
4.3 DO Controlling Test

Click OUT1_ON, control DO1 to on/off.

M100: 1set DOUT0 ON OFF DOUT1



Check that the DO1 indicator on the M100-ARD is light.



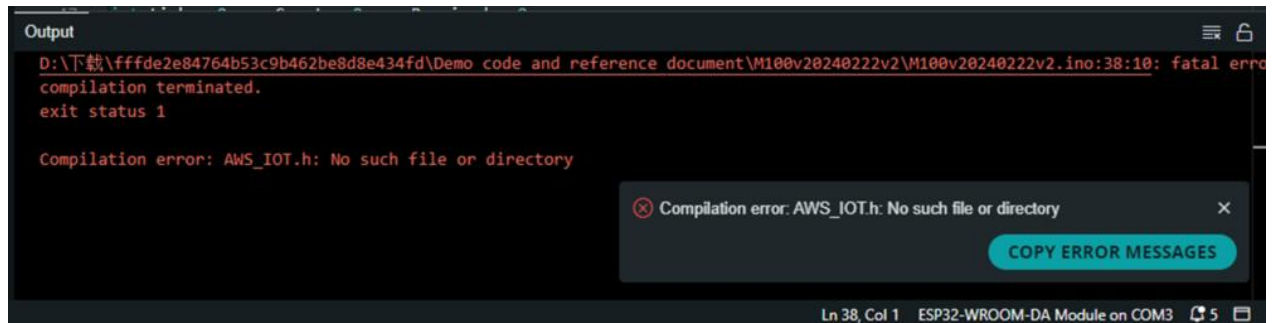
4.4 STA mode

Click "wifi_sta_mode"-->"sta_wifisetting"-->set AP's ssid and password-->submit



5. Common Questions

An error as shown in the following figure occurs during the compilation process. How to solve it?



The screenshot shows the 'Output' window of an IDE. The text is as follows:

```
D:\下载\ffffde2e84764b53c9b462be8d8e434fd\Demo code and reference document\M100v20240222v2\M100v20240222v2.ino:38:10: fatal error: AWS_IOT.h: No such file or directory
compilation terminated.
exit status 1

Compilation error: AWS_IOT.h: No such file or directory
```

A modal dialog box is displayed over the error message, containing the text 'Compilation error: AWS_IOT.h: No such file or directory' and a button labeled 'COPY ERROR MESSAGES'. The status bar at the bottom indicates 'Ln 38, Col 1' and 'ESP32-WROOM-DA Module on COM3'.

This error indicates that the corresponding library file is missing, Install the corresponding library in the following path by following instructions in 2.4 Installing a Library :

D:\Document\Arduino\libraries