

1. Overview

3 Steps: Install Arduino IDE, Reload code to EG118, 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

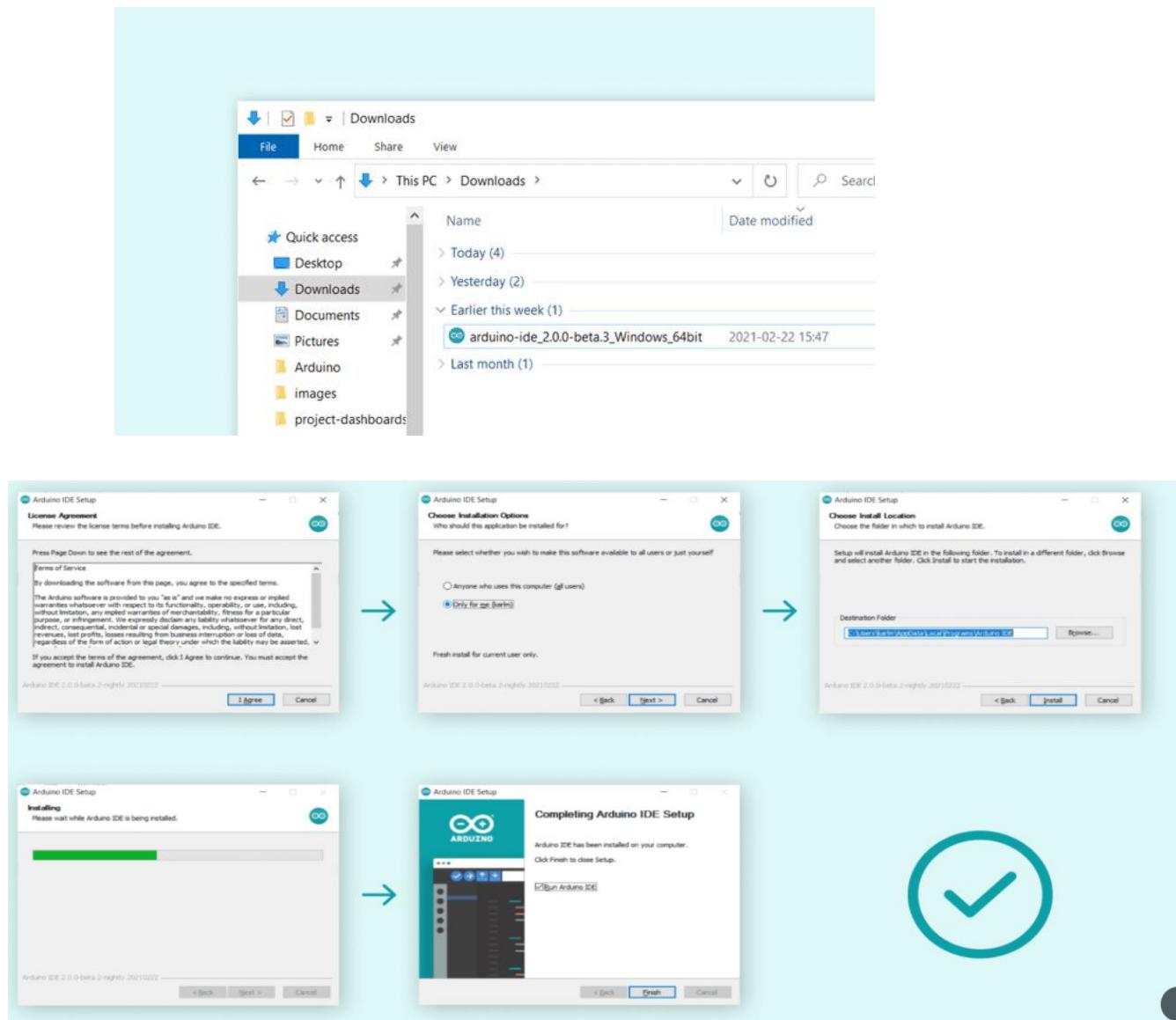
Downloads

The screenshot shows the download page for Arduino IDE 2.3.2. On the left, there's a logo and the text "Arduino IDE 2.3.2". Below it, a paragraph describes the new features of the release. A link to the documentation is provided. On the right, a red box highlights the "DOWNLOAD OPTIONS" section which lists download links for Windows, Linux, and macOS.

DOWNLOAD OPTIONS	
Windows	Win 10 and newer, 64 bits
Windows	MSI Installer
Windows	ZIP file
Linux	AppImage 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

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

2.2 Install Arduino IDE

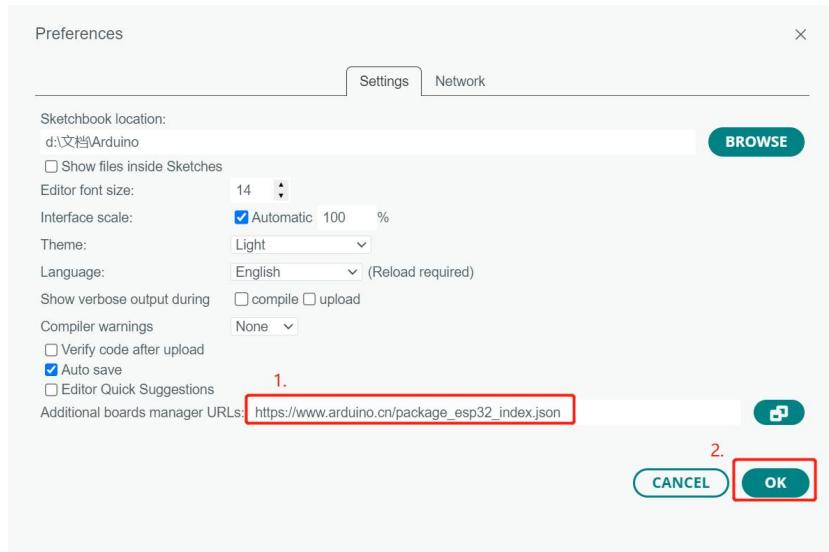


2.3 Install ESP32 development board

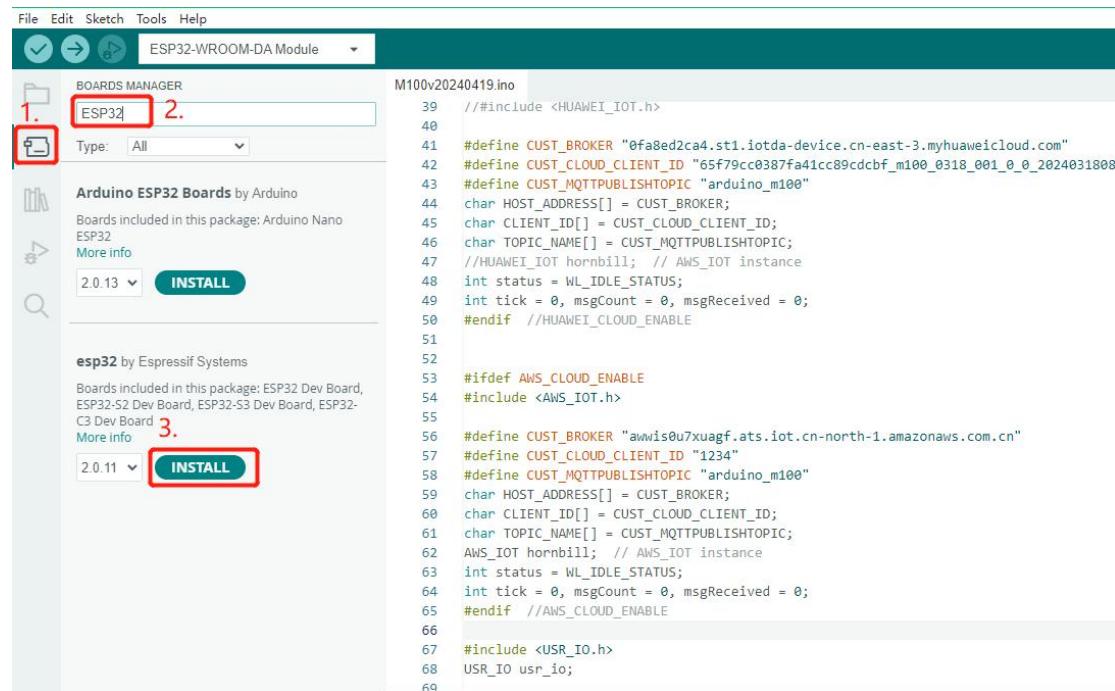
1> Setting Boards Manager URLs

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 minuets, please waiting.



2.4 Install Library

Download Library: there need 10 library file to compile normally and load code to EG118: 3 files from PUSR's library, left 7 doc. From Arduino library:

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

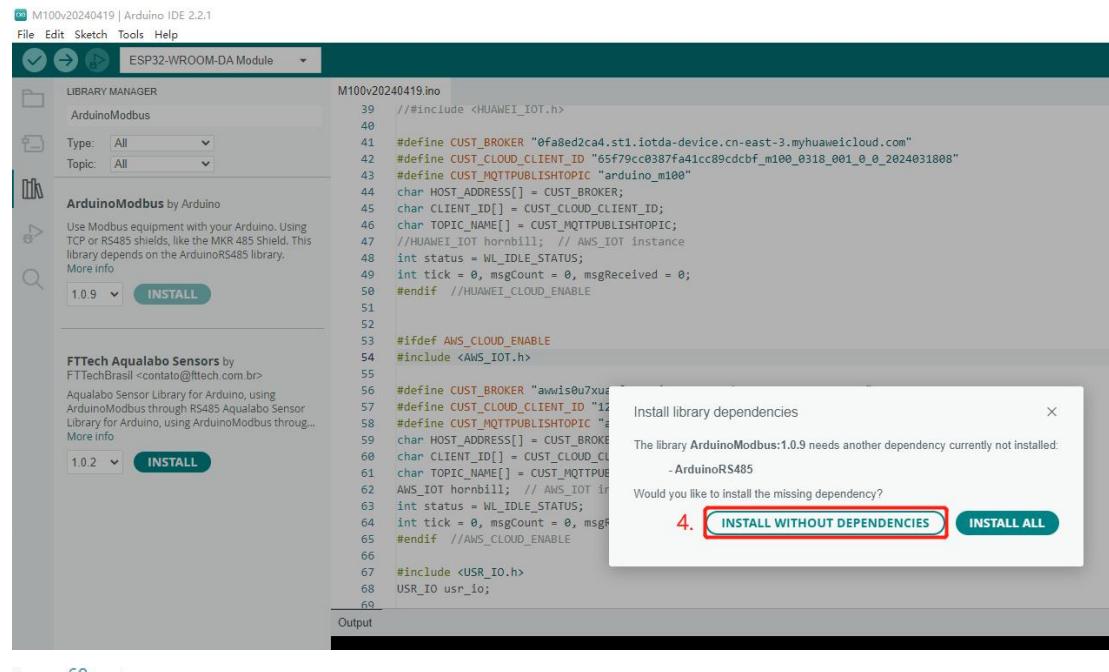
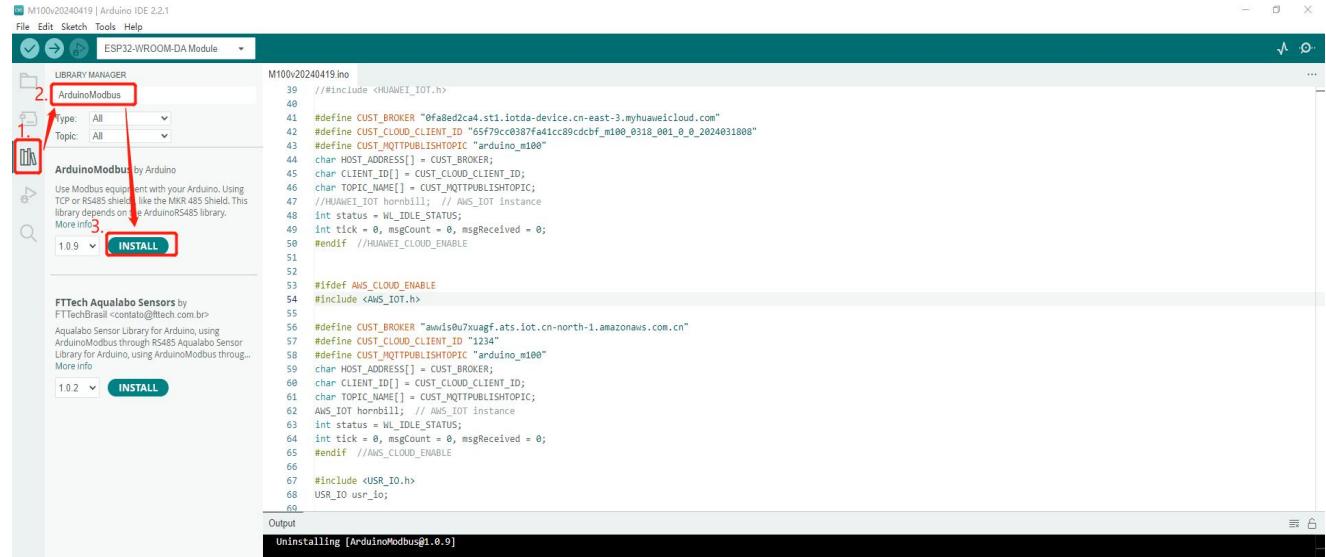
Download the files to the path: computer--document--Arduino--libraries.

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

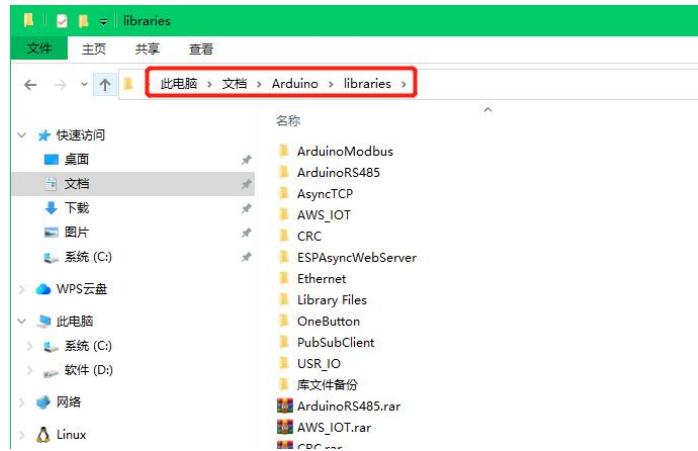
`ArduinoModbus`、`AsyncTCP`、`CRC`、`ESPAsyncWebServer`、`Ethernet`、`OneButton`、`PubSubClient`。

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 EG118 through modbus command

ArduinoRS485: RS485/232 communication

AsyncTCP: TCP communication

CRC: CRC verification for Modubs

ESPAsyncWebServer: webpage developement

Ethernet: ethernet port communication

OneButton: deal with button activition

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.

Software tools

Learn about the IDEs, Web Editor, CLI and all the software tools that you need to get yo

Legacy IDE

Arduino IDE 2

PLC IDE

Arduino IDE

Discover all the features of the Arduino IDE, our most popular programming tool.

DISCOVER MORE

Arduino CLI

Arduino CLI is a multifunctional tool with Boards/Library Managers, sketch builder for Arduino-compatible boards via command line.

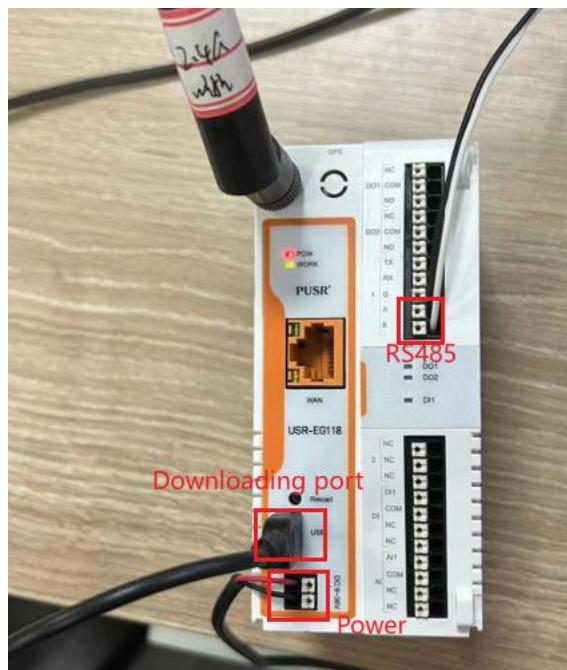
GETTING STARTED ↗

3. Load the code onto EG118

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-EG118*1

Ports Indicate:



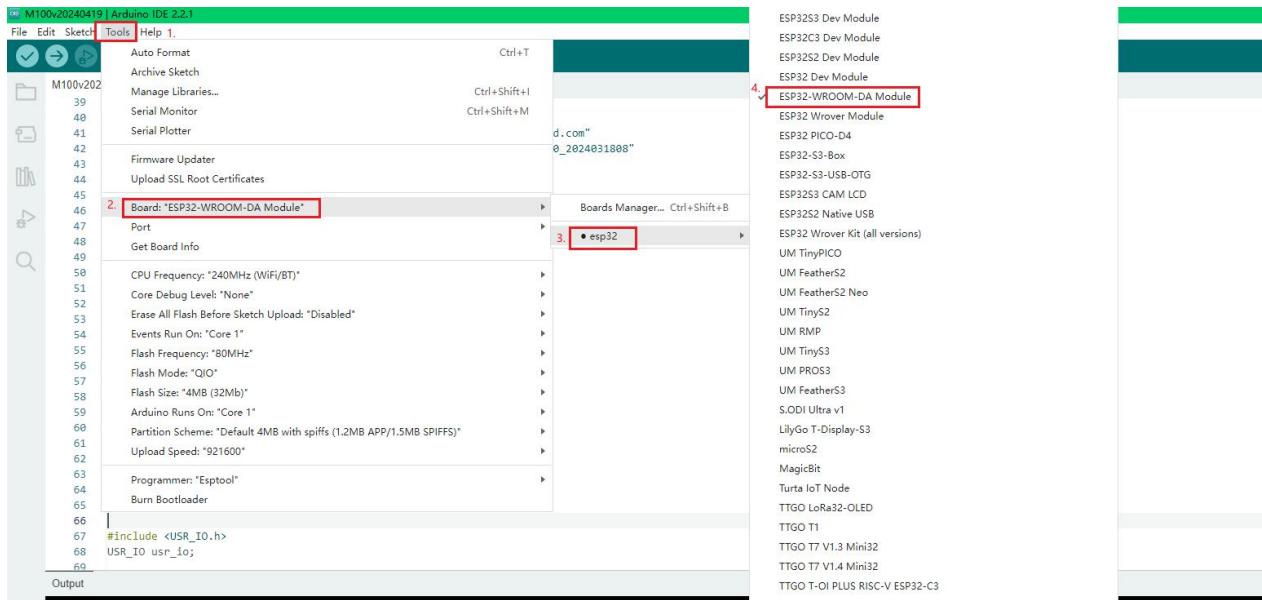
Power EG118, indicator blinking, the device successfully started

Connect EG118 and computer through USB to TTL cable, work indicator keep light.

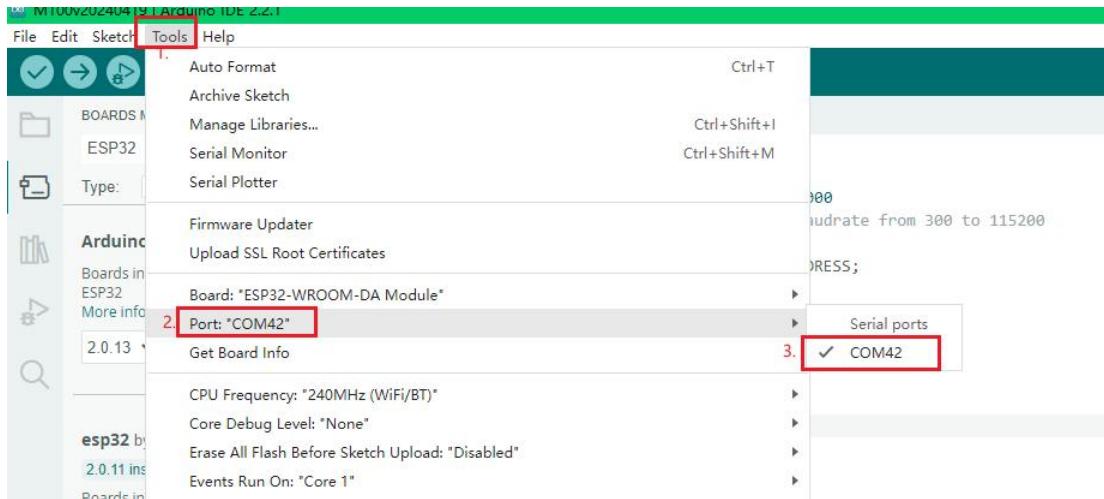
In the device manager, you can find the COM port which will be used for the program download. There need to install serial driver if no COM port.

3.2 Compile and Load the program

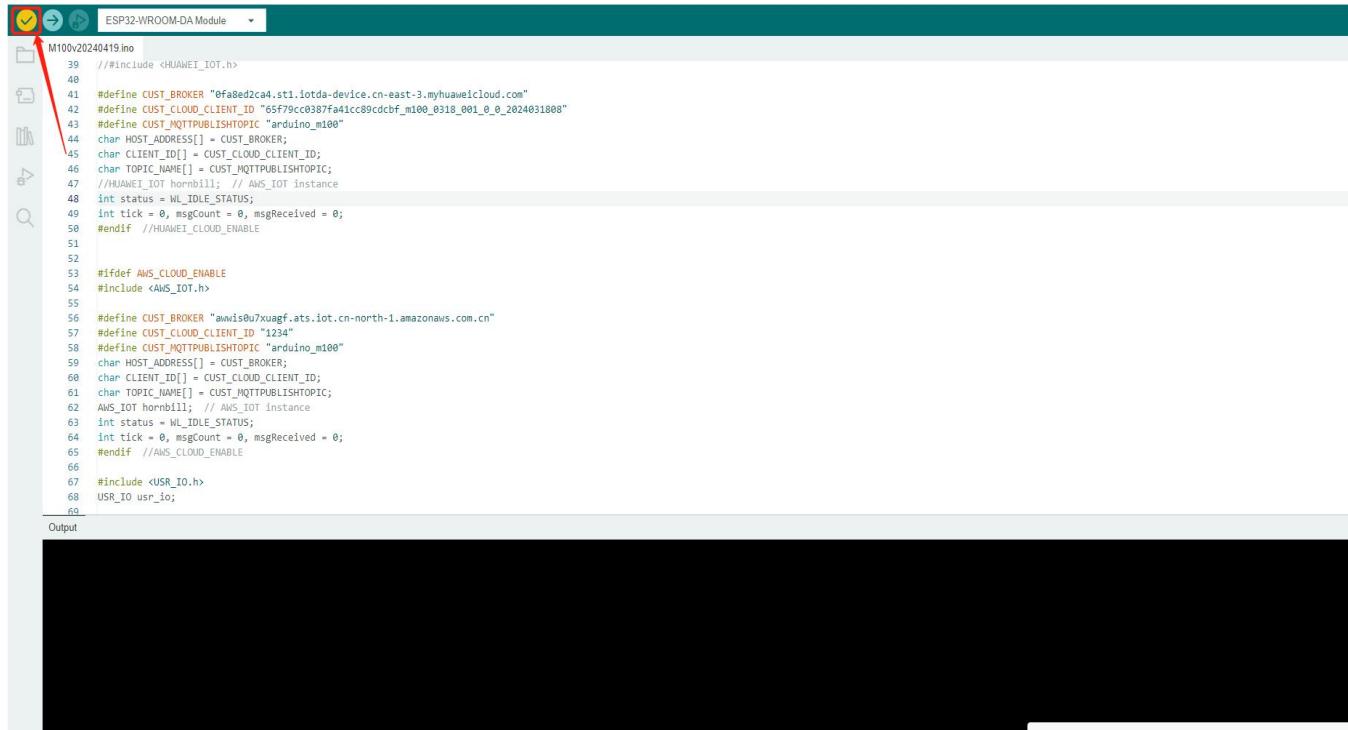
- 1> Open source demo code
- 2> Select the right ESP32 development board: Tools-->Board-->ESP32-->ESP32-WROOM-DA Module



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



4> Click Verify: recheck the code



```

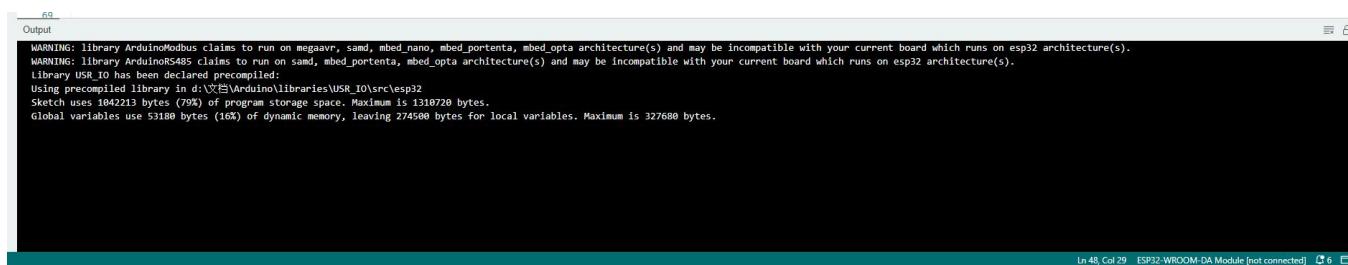
M100v20240419.ino
39 //Include <HUAWEI_IOT.h>
40
41 #define CUST_BROKER "0fa8ed2ca4.st1.iotda-device.cn-east-3.myhuaweicloud.com"
42 #define CUST_CLOUD_CLIENT_ID "65f79cc0387fa41cc89cdcbf_m100_0318_001_0_2024031808"
43 #define CUST_MQTPUBLISHTOPIC "arduino_m100"
44 char HOST_ADDRESS[] = CUST_BROKER;
45 char CLIENT_ID[] = CUST_CLOUD_CLIENT_ID;
46 char TOPIC_NAME[] = CUST_MQTPUBLISHTOPIC;
47 //HUAWEI_IOT hornbill; // AWS_IOT instance
48 int status = WL_IDLE_STATUS;
49 int tick = 0, msgCount = 0, msgReceived = 0;
50 #endif //HUAWEI_CLOUD_ENABLE
51
52
53 #ifdef AWS_CLOUD_ENABLE
54 #include <AWS_IOT.h>
55
56 #define CUST_BROKER "awwis0u7xuagf.ats.iot.cn-north-1.amazonaws.com.cn"
57 #define CUST_CLOUD_CLIENT_ID "1234"
58 #define CUST_MQTPUBLISHTOPIC "arduino_m100"
59 char HOST_ADDRESS[] = CUST_BROKER;
60 char CLIENT_ID[] = CUST_CLOUD_CLIENT_ID;
61 char TOPIC_NAME[] = CUST_MQTPUBLISHTOPIC;
62 AWS_IOT hornbill; // AWS_IOT instance
63 int status = WL_IDLE_STATUS;
64 int tick = 0, msgCount = 0, msgReceived = 0;
65 #endif //AWS_CLOUD_ENABLE
66
67 #include <USR_IO.h>
68 USR_IO usr_io;
69

```

Output

Compiling sketch...

In 48, Col 29 ESP32-WROOM-DA Module [not connected]



```

Output
WARNING: library ArduinoModbus claims to run on megaavr, samd, mbed_nano, mbed_portenta, mbed_opta architecture(s) and may be incompatible with your current board which runs on esp32 architecture(s).
WARNING: library ArduinoRS485 claims to run on samd, mbed_portenta, mbed_opta architecture(s) and may be incompatible with your current board which runs on esp32 architecture(s).
Library USR_I0 has been declared precompiled:
Using precompiled library in d:\我的\Arduino\libraries\USR_I0\src\esp32
Sketch uses 1042213 bytes (7%) of program storage space. Maximum is 1310720 bytes.
Global variables use 53180 bytes (16%) of dynamic memory, leaving 274500 bytes for local variables. Maximum is 327680 bytes.

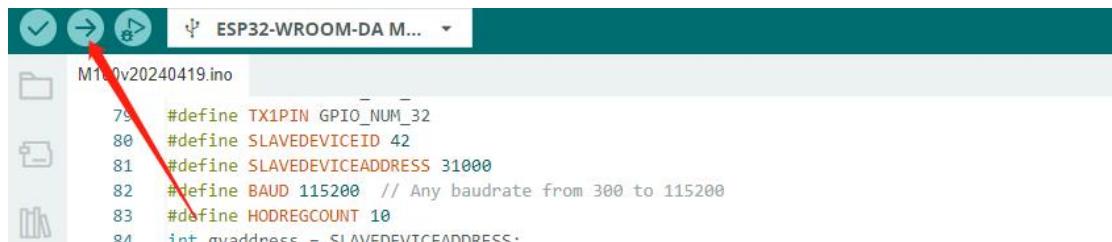
In 48, Col 29 ESP32-WROOM-DA Module [not connected] 6

```

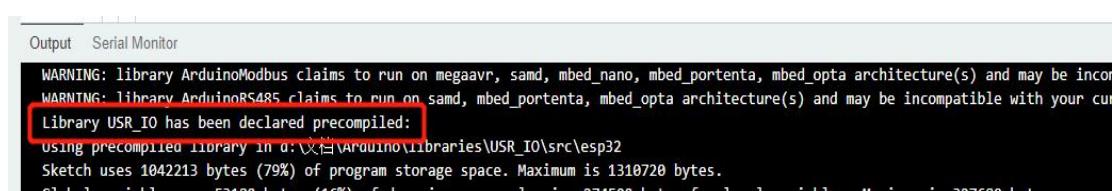
5> Upload: Compile the code and upload to EG118 which will take about several min.

a. Power off the EG118

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 need to try several time 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 0x000e000... (100 %)
Wrote 8192 bytes (47 compressed) at 0x000e000 in 0.2 seconds (effective 427.3 kbit/s)...
Hash of data verified.
Compressed 1047968 bytes to 655895...
Writing at 0x0010000... (2 %)
Writing at 0x001b27a... (4 %)
Writing at 0x00287d1... (7 %)
Writing at 0x00317fa... (9 %)
Writing at 0x004220d... (12 %)

```

Wait until the programm is loaded.

```

98 static bool eth_connected = false;
99
100 //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 0x0010000 in 10.7 seconds (effective 783.1 kbit/s)...
Hash of data verified.

Leaving...
Hard resetting via RTS pin...
|
```

- e. Disconnect the download cable,powe on EG118.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 EG118

SSID: USR-EG118_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.

USR-EG118: config

[1 dout config] [2 wifi_sta_mode] [3 wifi_softap_mode] [4 rs485at_mode] [5 rs485tcpdalu_mode] [6 rs485mqqtdu_mode] [7 huawei_iot_sample] [8 aws_iot_sample] [9 rs485pcmodbusdemo] [10 0device_info] [11 connect to net] [12 rs485TH485PE_DEMO]

- 1 dout config: control DO on/off
- 2 wifi_sta_mode: set EG118 as STA mode to connect the AP
- 3 wifi_SOFTP_AP_mode: set EG118 as AP mode
- 4 TCP mode: set EG118 to TCP
- 5 MQTT mode: set EG118 to MQTT

4.3 DO Controlling Test

Click OUT1_ON, control DO1 to on/off.

USR-EG118: 1set DOUT0 ON OFF DOUT1 ON OFF get ai current

[**OUT1_ON**] [**OUT1_OFF**] [**OUT2_ON**] [**OUT_2OFF**] [**GETcurrent**] [**return**]

Check that the DO1 indicator on the EG118 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 a terminal window titled "Output". The text output is as follows:

```
D:\下载\fffde2e84764b53c9b462be8d8e434fd\Demo code and reference document\M100v20240222v2\M100v20240222v2.ino:38:10: fatal error  
compilation terminated.  
exit status 1  
  
Compilation error: AWS_IOT.h: No such file or directory
```

A modal dialog box is displayed, containing the error message "Compilation error: AWS_IOT.h: No such file or directory" and a "COPY ERROR MESSAGES" button.

At the bottom of the terminal window, the text "Ln 38, Col 1 ESP32-WROOM-DA Module on COM3 5" is visible.

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