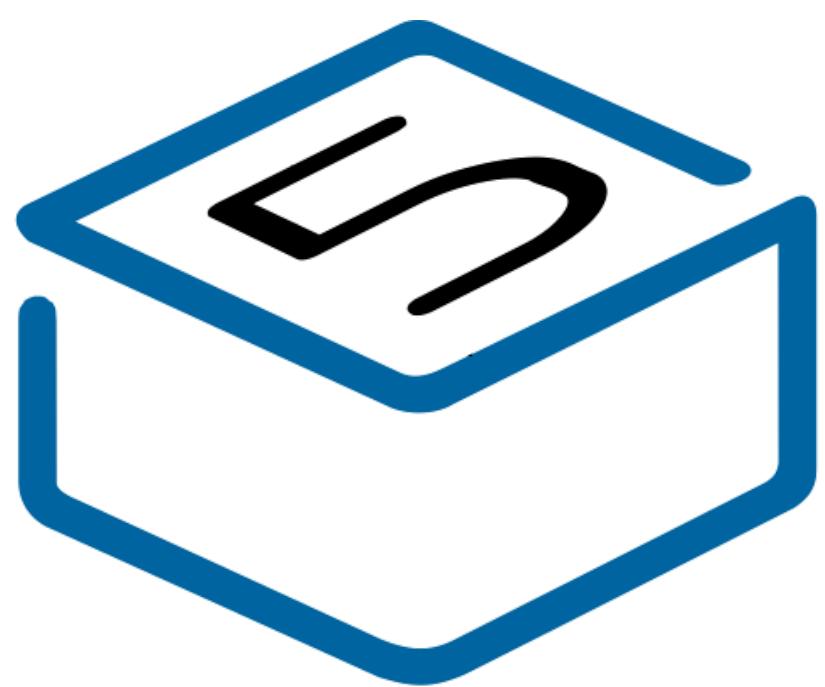


Core2.75



M5 STACK

2025

CONTENTS

1. OUTLINE	3
1.1. Core2.75.....	3
2. SPECIFICATIONS.....	4
2.1. Module Size.....	7
3. QUICK START.....	6
3.1. SCAN Wi-Fi.....	7
3.2 SCAN BLE	8
4. FCC Warning.....	9
Arduino Install.....	10

1. OUTLINE

Basic v2.75 is a cost-effective IoT entry-level main controller. It uses the Espressif ESP32 chip, equipped with 2 low-power Xtensa® 32-bit LX6 microprocessors, with a main frequency of up to 240 MHz. It has onboard 16 MB FLASH memory, integrated with a 2.0-inch full-color high-definition IPS display panel, speaker, TFCard slot, and other peripherals. The full-cover casing ensures the stability of circuit operation even in complex industrial application scenarios. The internal bus provides multiple common interface resources (ADC/DAC/I2C/UART/SPI, etc.), with 15 x IO leads on the bottom bus, offering strong expandability. It is suitable for various product prototype development, industrial control, and smart building application scenarios.

1.1. Core2.75

1. Communication Capabilities

- Wireless: Wi-Fi (802.11 b/g/n) & BLE
- Wired: USB-C port for programming, power and serial (UART) communication
- Internal Bus Interfaces: ADC, DAC, I²C, UART, SPI via 15 I/O leads on the bottom bus

2. Processor and Performance

- SoC: ESP32-D0WDQ6-V3 dual-core Xtensa® 32-bit LX6, up to 240 MHz, 600 DMIPS, 520 KB SRAM
- Flash Memory: 16 MB onboard
- Power Input: 5 V @ 500 mA

3. Display and Input

- Display: 2.0" 320 × 240 ILI9342C IPS panel (max brightness 853 nit)
- Buttons: 3 × user-programmable physical buttons (A/B/C)
- Speaker: 1W-0928 audio output

4. GPIO Pins and Programmable Interfaces

- I/O Pins: 15 GPIOs (G21, G22, G23, G19, G18, G3, G1, G16, G17, G2, G5, G25, G26, G35, G36)
- Expansion:
 - 1 × HY2.0-4P Grove ports (Port A)
 - TF-card slot (microSD, up to 16 GB)
- Bus Resources: ADC1 (8 channels), ADC2 (10 channels), DAC1/2 (2 channels each), I²C ×1, SPI ×1, UART ×2

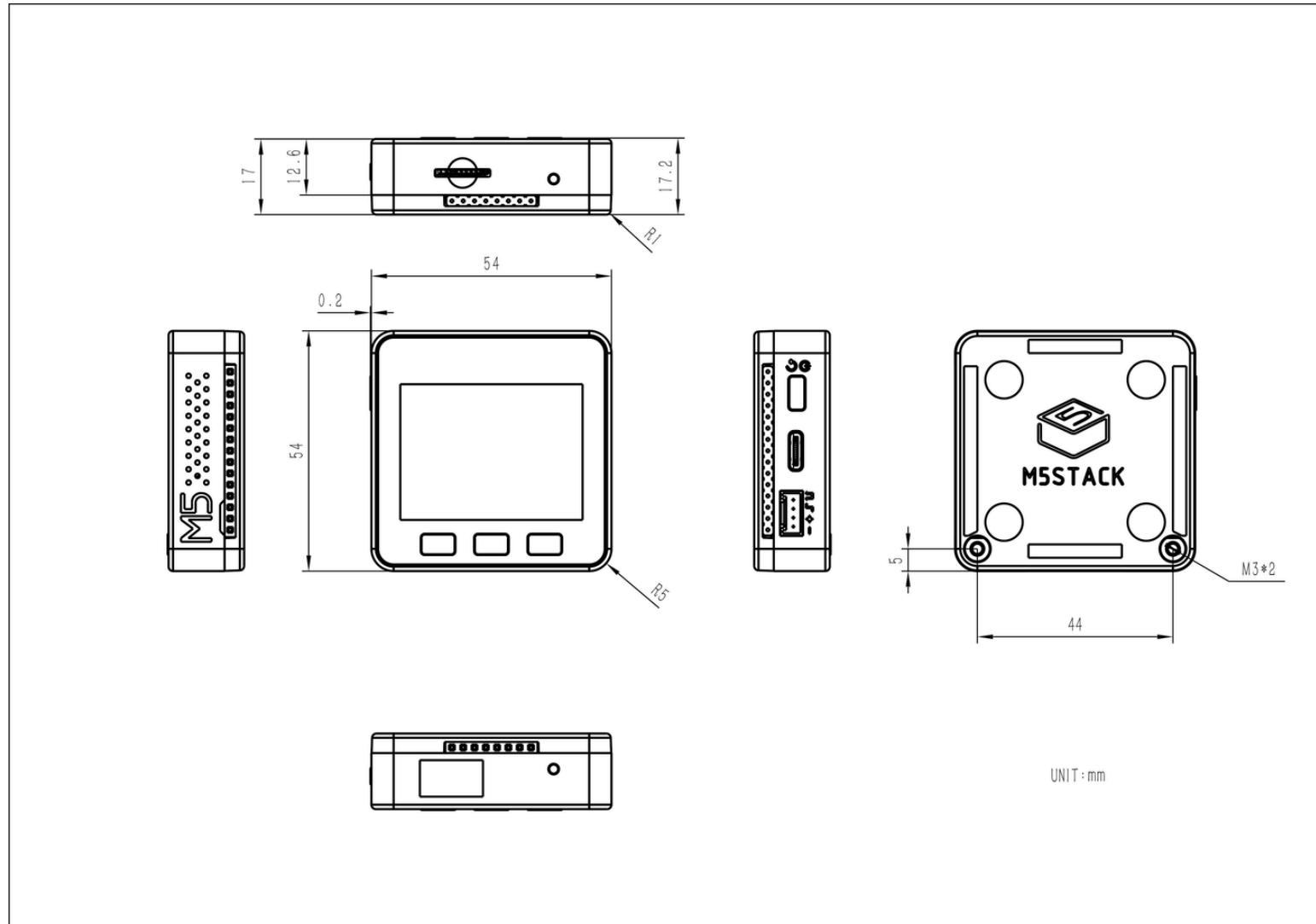
5. Others

- Battery & Power Management: Built-in 110 mAh @ 3.7 V Li-ion cell; IP5306 charge/discharge management
- USB–Serial Bridge: CH9102F
- Antenna & Enclosure: 2.4 GHz 3D antenna; PC full-cover plastic housing

2. SPECIFICATIONS

Specification	Parameter
SoC	ESP32-D0WDQ6-V3, dual-core Xtensa® LX6 @ 240 MHz, 600 DMIPS, 520 KB SRAM, Wi-Fi
Flash	16 MB
Input Power	5 V @ 500 mA
Interfaces	USB-C × 1; I ² C × 1
GPIO Pins	G21, G22, G23, G19, G18, G3, G1, G16, G17, G2, G5, G25, G26, G35, G36
Buttons	3 × physical buttons (A/B/C)
LCD Screen	2.0" 320 × 240 ILI9342C IPS
Speaker	1W-0928 audio output
USB Chip	CH9102F
Antenna	2.4 GHz 3D antenna
Battery	110 mAh @ 3.7 V Li-ion
TF Card Slot	microSD, up to 16 GB
Casing Material	Plastic (PC)
Product Dimensions	54.0 × 54.0 × 17.0 mm
Product Weight	51.1 g
Packaging Dimensions	94.8 × 65.4 × 25.3 mm
Gross Weight	91.1 g
Manufacturer	M5Stack Technology Co., Ltd

2.1 Module Size

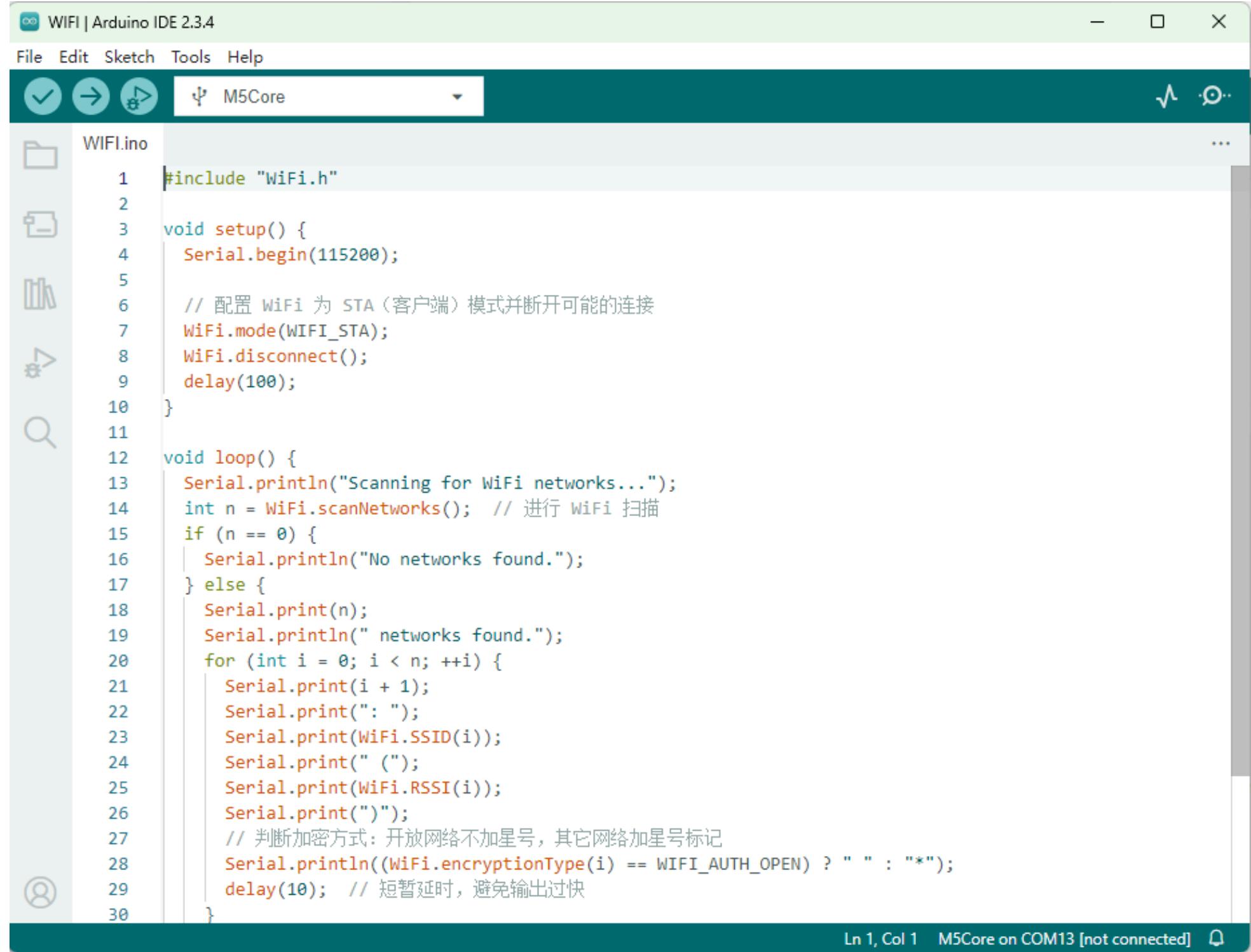


3. QUICK START

Before you do this step, look at the text in the final appendix: Installing Arduino

3.1. Print WiFi information

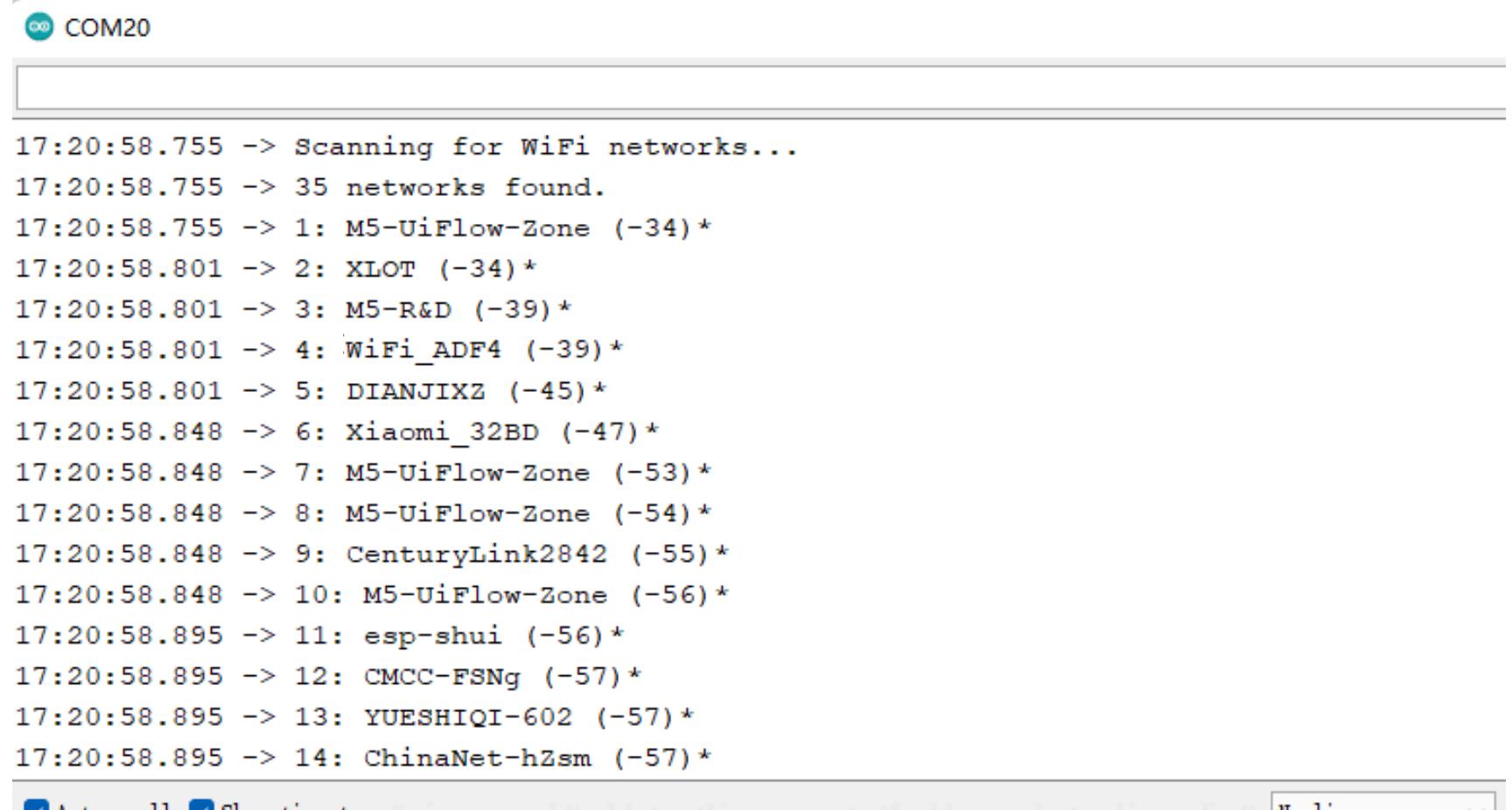
1. Open Arduino IDE (Refer to https://docs.m5stack.com/en/arduino/arduino_ide for the installation guide for the development board and software)
2. Select the **M5Core** board and the corresponding port, then upload the code
3. Open the serial monitor to display the scanned WiFi and signal strength information



The screenshot shows the Arduino IDE interface. The title bar says "WIFI | Arduino IDE 2.3.4". The menu bar includes File, Edit, Sketch, Tools, and Help. The toolbar has icons for file operations and a "M5Core" board selector. The left sidebar shows a file tree with "WIFI.ino" selected. The main code editor window contains the following sketch:

```
1 #include "WiFi.h"
2
3 void setup() {
4     Serial.begin(115200);
5
6     // 配置 WiFi 为 STA (客户端) 模式并断开可能的连接
7     WiFi.mode(WIFI_STA);
8     WiFi.disconnect();
9     delay(100);
10 }
11
12 void loop() {
13     Serial.println("Scanning for WiFi networks...");
14     int n = WiFi.scanNetworks(); // 进行 WiFi 扫描
15     if (n == 0) {
16         Serial.println("No networks found.");
17     } else {
18         Serial.print(n);
19         Serial.println(" networks found.");
20         for (int i = 0; i < n; ++i) {
21             Serial.print(i + 1);
22             Serial.print(": ");
23             Serial.print(WiFi.SSID(i));
24             Serial.print(" (");
25             Serial.print(WiFi.RSSI(i));
26             Serial.print(")");
27             // 判断加密方式: 开放网络不加星号, 其它网络加星号标记
28             Serial.println((WiFi.encryptionType(i) == WIFI_AUTH_OPEN) ? " " : "*");
29             delay(10); // 短暂延时, 避免输出过快
30         }
31     }
32 }
```

The status bar at the bottom right shows "Ln 1, Col 1 M5Core on COM13 [not connected]".



The screenshot shows the serial monitor window. The title bar says "COM20". The text area displays the output of the WiFi scan:

```
17:20:58.755 -> Scanning for WiFi networks...
17:20:58.755 -> 35 networks found.
17:20:58.755 -> 1: M5-UiFlow-Zone (-34)*
17:20:58.801 -> 2: XLOT (-34)*
17:20:58.801 -> 3: M5-R&D (-39)*
17:20:58.801 -> 4: WiFi_ADF4 (-39)*
17:20:58.801 -> 5: DIANJIXZ (-45)*
17:20:58.848 -> 6: Xiaomi_32BD (-47)*
17:20:58.848 -> 7: M5-UiFlow-Zone (-53)*
17:20:58.848 -> 8: M5-UiFlow-Zone (-54)*
17:20:58.848 -> 9: CenturyLink2842 (-55)*
17:20:58.848 -> 10: M5-UiFlow-Zone (-56)*
17:20:58.895 -> 11: esp-shui (-56)*
17:20:58.895 -> 12: CMCC-FSNG (-57)*
17:20:58.895 -> 13: YUESHIQI-602 (-57)*
17:20:58.895 -> 14: ChinaNet-hZsm (-57)*
```

The bottom of the window has checkboxes for "Autoscroll", "Show timestamp", and "Newline", and a dropdown menu.

3. QUICK START

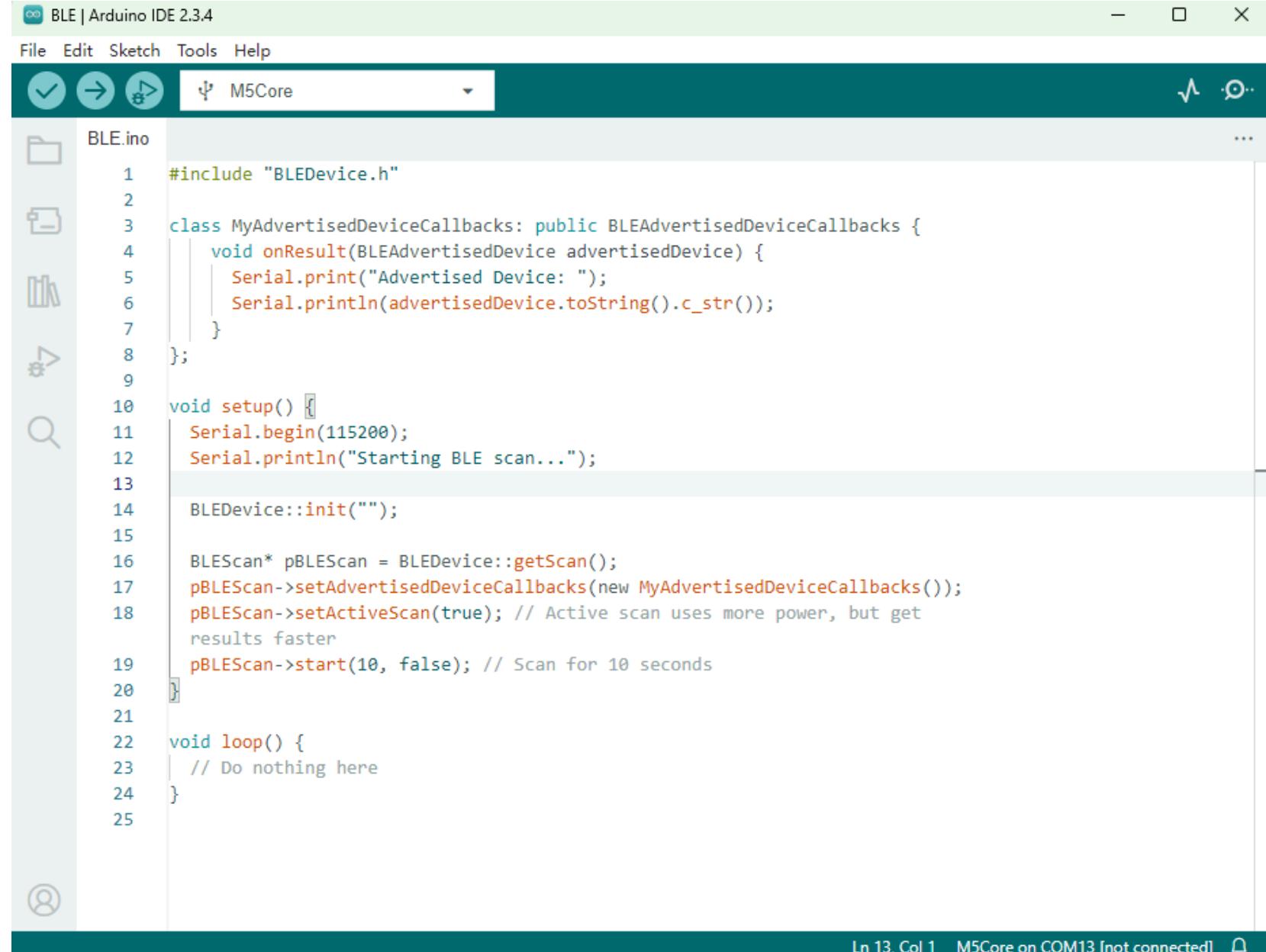
Before you do this step, look at the text in the final appendix: Installing Arduino

3.1. Print BLE information

1. Open Arduino IDE (Refer to

https://docs.m5stack.com/en/arduino/arduino_ide for the installation guide for the development board and software)

2. Select the **M5Core** board and the corresponding port, then upload the code
3. Open the serial monitor to display the scanned BLE and signal strength information



The screenshot shows the Arduino IDE interface. The top bar displays "BLE | Arduino IDE 2.3.4". The menu bar includes File, Edit, Sketch, Tools, and Help. The toolbar contains icons for file operations and a "M5Core" board selection. The left sidebar shows a file tree with "BLE.ino" selected. The code editor contains the following sketch:

```
BLE.ino
1 #include "BLEDevice.h"
2
3 class MyAdvertisedDeviceCallbacks: public BLEAdvertisedDeviceCallbacks {
4     void onResult(BLEAdvertisedDevice advertisedDevice) {
5         Serial.print("Advertised Device: ");
6         Serial.println(advertisedDevice.toString().c_str());
7     }
8 };
9
10 void setup() {
11     Serial.begin(115200);
12     Serial.println("Starting BLE scan...");
13
14     BLEDevice::init("");
15
16     BLEScan* pBLEScan = BLEDevice::getScan();
17     pBLEScan->setAdvertisedDeviceCallbacks(new MyAdvertisedDeviceCallbacks());
18     pBLEScan->setActiveScan(true); // Active scan uses more power, but get
19     results faster
20     pBLEScan->start(10, false); // Scan for 10 seconds
21 }
22
23 void loop() {
24     // Do nothing here
25 }
```

The status bar at the bottom indicates "Ln 13, Col 1 M5Core on COM13 [not connected]". The bottom half of the screen shows the serial monitor output, which is a list of scanned BLE devices with their names, addresses, manufacturer data, and signal strengths (RSSI). The output starts with:

```
16:32:55.340 -> Advertised Device: Name: , Address: 29:b2:79:b9:a3:a0, manufacturer data: 060001092022f2ad5527637974d01222aa793bc9fc4c359e2392776a, rssi: -95
16:32:55.340 -> Advertised Device: Name: , Address: 68:ab:bc:a6:82:56, manufacturer data: 8f030a108212005482a6bcab6881, rssi: -72
16:32:55.387 -> Advertised Device: Name: , Address: 4c:11:0b:4a:ac:06, manufacturer data: 4c0010052818e6dfc1, txPower: 8, rssi: -78
16:32:55.387 -> Advertised Device: Name: , Address: c4:23:5c:6d:7f:cc, manufacturer data: 4c0012020003, rssi: -78
16:32:55.387 -> Advertised Device: Name: , Address: 7c:c2:94:11:dd:b3, manufacturer data: 8f030a10bb1900b1dd1194c27c81, rssi: -90
16:32:55.434 -> Advertised Device: Name: , Address: 69:9a:a5:ca:0e:76, manufacturer data: 4c001007381fa49766f208, txPower: 12, rssi: -87
16:32:55.481 -> Advertised Device: Name: , Address: 68:8a:2d:9d:69:9a, manufacturer data: 4c000719010e202b778f01000a5a7b38b9d862679f9aa0147c93dfb9a3, rssi: -92
16:32:55.481 -> Advertised Device: Name: , Address: 46:21:43:b4:e4:8f, manufacturer data: 4c0009081302c0a802531b581608006aad6eb4cf9d7, rssi: -86
16:32:55.481 -> Advertised Device: Name: , Address: 68:13:24:e2:c9:a6, rssi: -94, serviceData: 00
16:32:55.528 -> Advertised Device: Name: , Address: 4c0012020000, rssi: -75
16:32:55.528 -> Advertised Device: Name: , Address: 4d:7a:15:80:e0:e4, manufacturer data: 4c0016080083cf28ec2b91b1, rssi: -75
16:32:55.575 -> Advertised Device: Name: , Address: 0d:4f:0e:0f:b8:6b, manufacturer data: 06000109202270c24b9ec6b7806f55379bea22271ecd7e87c71f99cb35, rssi: -92
16:32:55.575 -> Advertised Device: Name: , Address: 43:85:45:a1:4f:84, manufacturer data: 4c000908130cc0a81f071b5813080a88ba7d27f9c700, rssi: -81
16:32:55.622 -> Advertised Device: Name: , Address: a4:c1:38:8d:a7:00, rssi: -74, serviceData: 0X[00]
16:32:55.622 -> Advertised Device: Name: , Address: fa:e7:06:2b:fd:91, manufacturer data: 4c0012023503, rssi: -78
16:32:55.714 -> Advertised Device: Name: , Address: c3:3e:25:29:00:03, manufacturer data: 4c0012020003, rssi: -74
16:32:55.714 -> Advertised Device: Name: , Address: 52:88:46:95:91:08, manufacturer data: 4c00160800d660375f0003bf, rssi: -73
16:32:55.806 -> Advertised Device: Name: , Address: 6a:c3:bb:88:c2:0b, manufacturer data: 4c0010050e18874880, txPower: 12, rssi: -89
16:32:55.991 -> Advertised Device: Name: , Address: 4b:c9:66:74:75:f0, manufacturer data: 4c00100607194fa9cd38, txPower: 12, rssi: -87
16:32:55.991 -> Advertised Device: Name: , Address: 24:e8:e2:9b:75:46, manufacturer data: 4c0013080a4d1f30f2970b00, rssi: -91
16:32:56.038 -> Advertised Device: Name: , Address: 64:3d:63:13:1f:b0, manufacturer data: 4c00100607194fa9cd38, txPower: 12, rssi: -82
16:32:56.129 -> Advertised Device: Name: , Address: c1:55:39:b6:23:30, manufacturer data: 4c0012020000, rssi: -69
16:32:56.184 -> Advertised Device: Name: , Address: 41:a0:2a:ea:27:15, manufacturer data: 4c00160800579e01df5e3cae, rssi: -94
16:32:56.184 -> Advertised Device: Name: , Address: dd:3a:2f:71:cc:4f, manufacturer data: 4c0012020003, rssi: -90
16:32:56.265 -> Advertised Device: Name: , Address: f1:79:78:04:24:72, manufacturer data: 4c0012020003, rssi: -84
16:32:56.265 -> Advertised Device: Name: , Address: 73:d0:c7:76:2d:cd, manufacturer data: 4c0010073f1be2cc5d138, txPower: 7, rssi: -77
16:32:56.405 -> Advertised Device: Name: , Address: 75:d9:97:51:7d:8e, manufacturer data: 4c001007211fb4e4ccdc78, txPower: 12, rssi: -84
16:32:56.452 -> Advertised Device: Name: , Address: e4:84:07:a4:3e:9, rssi: -91
16:32:56.452 -> Advertised Device: Name: , Address: 2e:da:35:f1:e5:1c, manufacturer data: 0600010f2022042879d9cedeb21fc16d6033b9bb7deb6b4e88513f2830, rssi: -95
16:32:56.452 -> Advertised Device: Name: , Address: cd:4e:ff:37:55:dd, manufacturer data: 4c0012020002, rssi: -91
16:32:56.500 -> Advertised Device: Name: , Address: 71:ab:11:45:16:08, manufacturer data: 4c0010053b18f2b4c3, txPower: 12, rssi: -87
16:32:56.545 -> Advertised Device: Name: , Address: 4e:bb:9b:58:79:b4, manufacturer data: 4c00160800c1b1dbbac7dd93, rssi: -66
16:32:56.590 -> Advertised Device: Name: , Address: dc:5d:0a:32:f6:cd, manufacturer data: 4c0012020000, rssi: -88
16:32:57.096 -> Advertised Device: Name: , Address: 65:c0:b9:6e:b8:49, manufacturer data: 4c0010052298728c65, txPower: 8, rssi: -89
16:32:57.329 -> Advertised Device: Name: , Address: 63:70:68:f2:c1:6f, manufacturer data: 4c00160800bb73dcc3dc3fa9, rssi: -86
16:32:57.329 -> Advertised Device: Name: , Address: d5:24:79:0c:93:f0, manufacturer data: 4c0012020001, rssi: -87
16:32:57.699 -> Advertised Device: Name: , Address: 42:bc:23:c2:3a:25, manufacturer data: 4c000c0e007f2849c2940c9d352a1085d4dc1006431d064dde18, rssi: -94
16:32:58.026 -> Advertised Device: Name: , Address: c4:8f:62:41:70:9d, manufacturer data: 4c0012020000, rssi: -94
16:32:58.026 -> Advertised Device: Name: , Address: d6:1e:a5:0c:5b:4e, manufacturer data: 4c001219395de24f1f2dd0ff3eb13c218d86153fee2b613140f7a80194, rssi: -73
16:32:58.213 -> Advertised Device: Name: , Address: fb:01:b0:e5:b4:ed, manufacturer data: 4c0012020002, rssi: -68
16:32:58.351 -> Advertised Device: Name: , Address: cd:55:86:51:87:a7, manufacturer data: 4c0012020003, rssi: -78
16:32:58.537 -> Advertised Device: Name: , Address: d2:e8:b8:38:e8:06, manufacturer data: 4c0012025401, rssi: -98
16:32:58.583 -> Advertised Device: Name: , Address: d0:17:51:8f:06:7e, manufacturer data: 4c0012026e00071106d0de3ee5e0414d36927a38cec0059ba4, rssi: -88
```

4. FCC Warning

FCC Caution:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

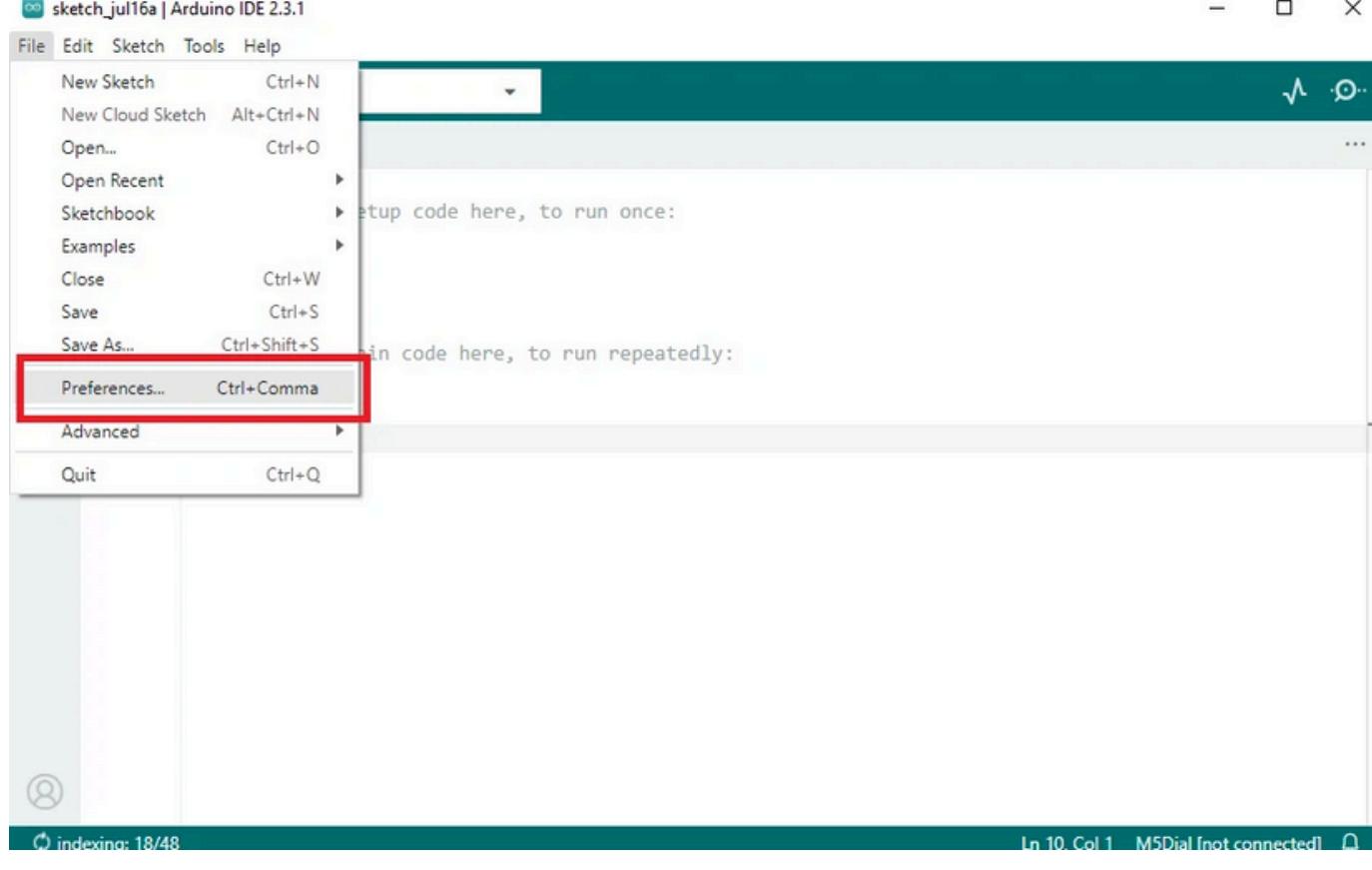
Arduino Install

—. Installing Arduino IDE(<https://www.arduino.cc/en/Main/Software>)

Click to visit the Arduino official website , and select the installation package for your operating system to download.

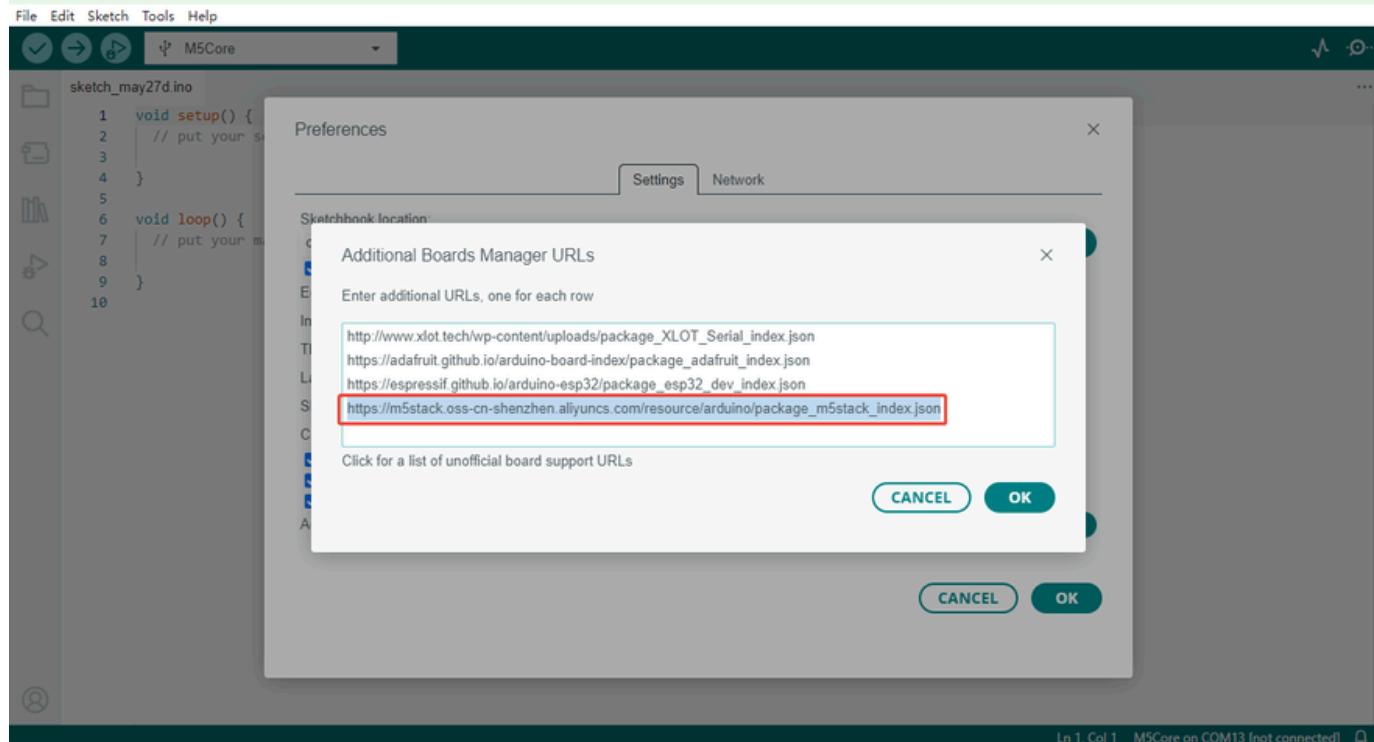
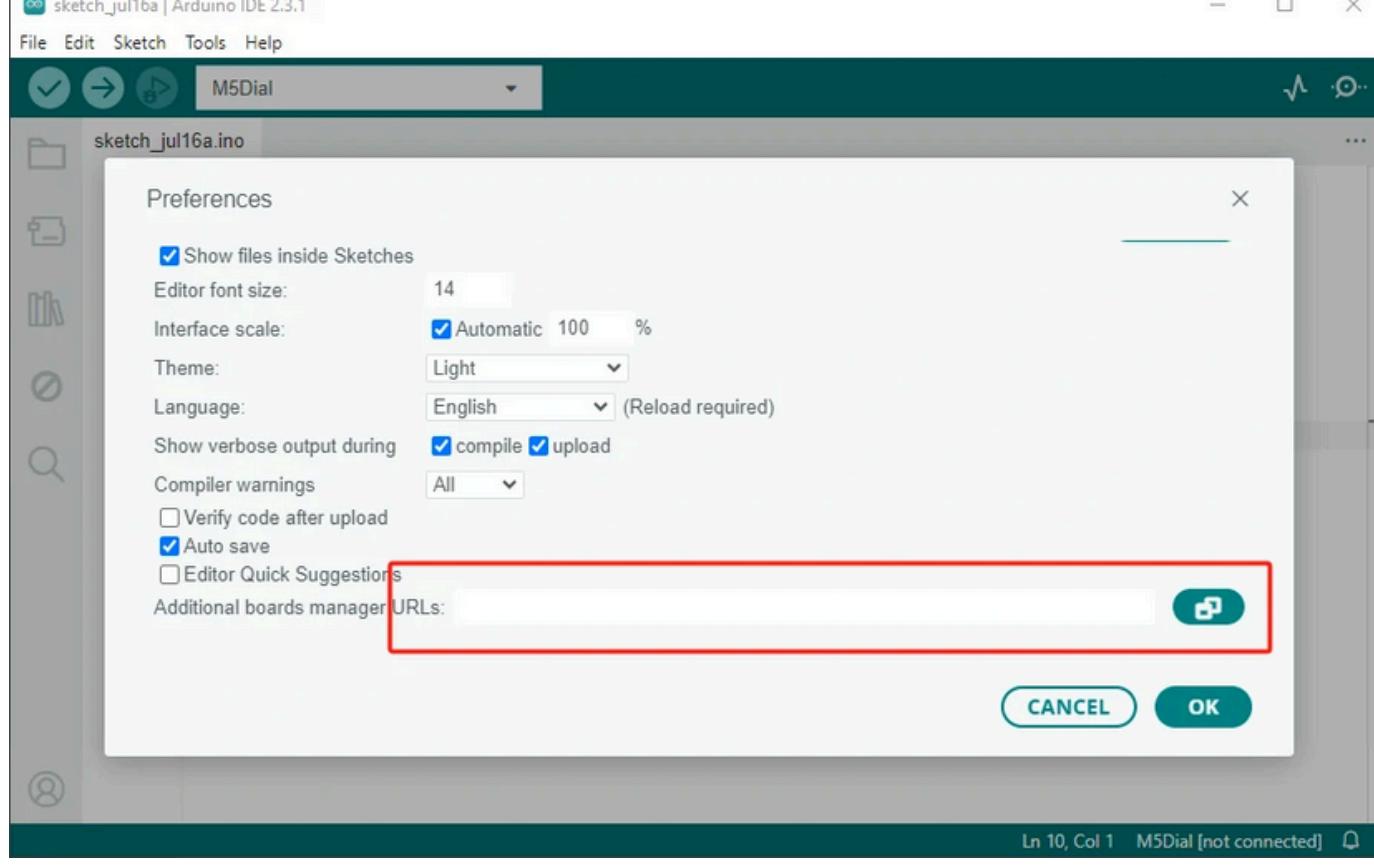
—. Installing Arduino Board Management

1. The Board Manager URL is used to index the development board information for a specific platform. In the Arduino IDE menu, select File -> Preferences

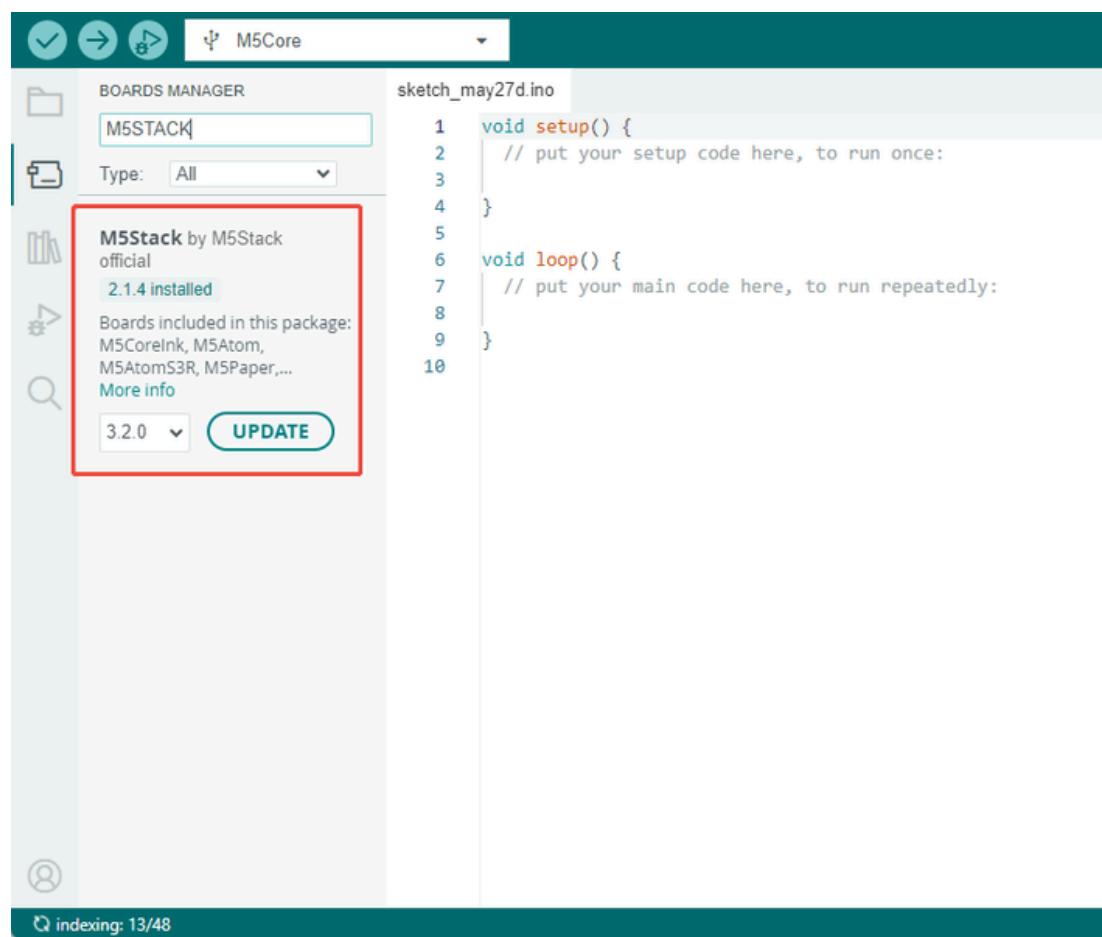


2. Copy the ESP board management URL below into the Additional Board Manager URLs: field, and save.

https://m5stack.oss-cn-shenzhen.aliyuncs.com/resource/arduino/package_m5stack_index.json

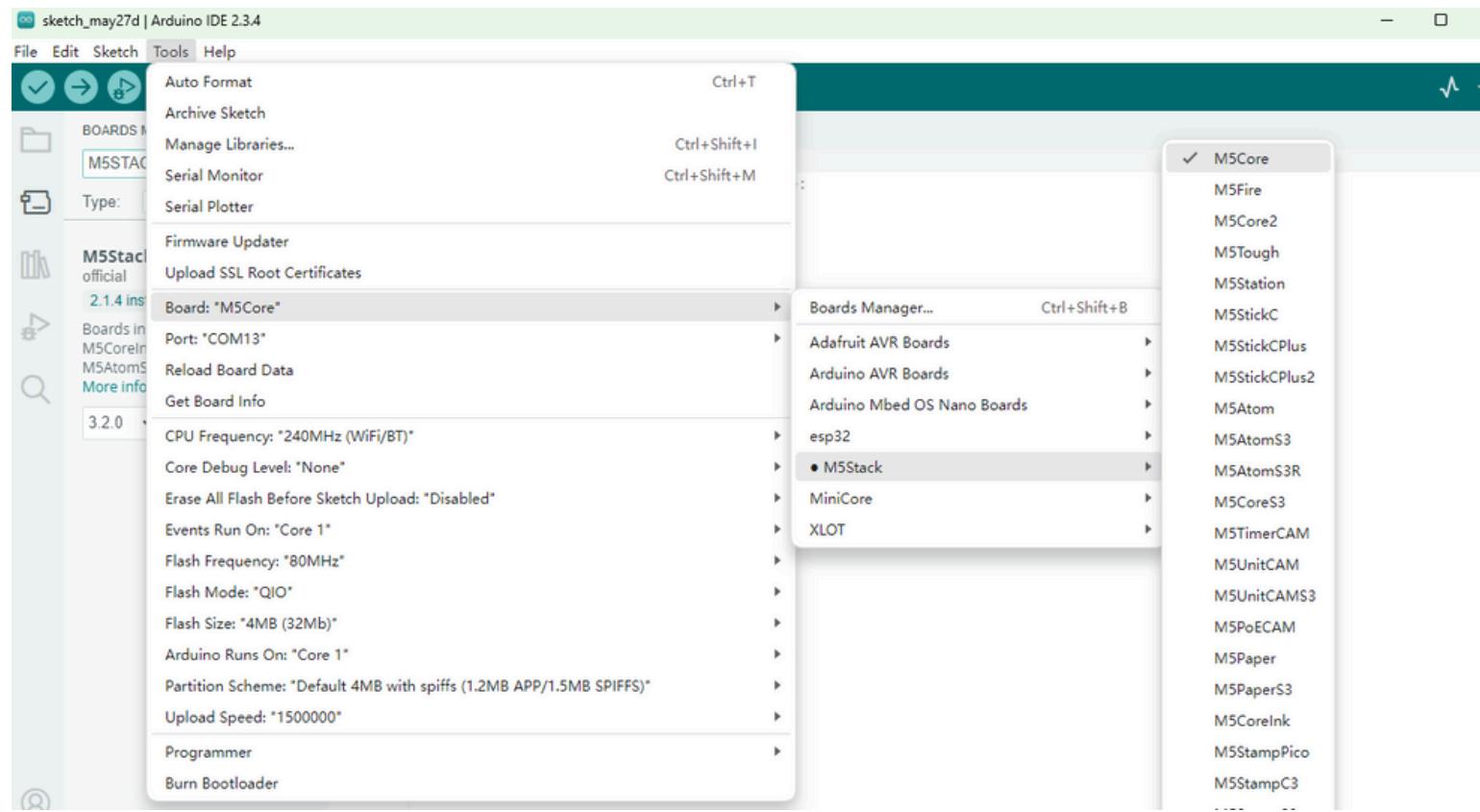


3. In the sidebar, select Board Manager, search for ESP, and click Install.



4. In the sidebar, select Board Manager, search for M5Stack, and click Install.

Depending on the product used, select the corresponding development board under Tools -> Board -> M5Stack -> {M5Core}.



5. Connect the device to your computer with a data cable to upload the program