M5STACK

M5FGV4 Flow Gateway

M5STACK M5FGV4 Flow Gateway User Guide

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M5STACK

M5STACK M5FGV4 Flow Gateway

Specifications

- **Module Size:** 60.3 * 60.3 * 48.9mm

Product Information

The Flow Gateway is a versatile device with various communication capabilities and sensors, designed for seamless integration into your projects. It features a 2.0-inch capacitive touch IPS screen, multiple communication interfaces, sensors, and power management options.

Communication Capabilities

- **Main Controller:** ESP32-S3FN8
- **Wireless Communication:** Wi-Fi, BLE, Infrared (IR) functionality
- **CAN Bus Interfaces:** Four interfaces supporting multi-device communication

GPIO Pins and Programmable Interfaces

- **Grove Ports:** Port A: I2C Interface, Port B: UART Interface, Port C: ADC Interface
- **TF Card Slot:** For expanded storage
- **Onboard Interface:** Type-C for programming and serial communication

Power Management

- **Power Management Chip:** AXP2101 with four power flow control channels

- **Power Supply:** External DC 12V (supports 9~24V) or internal 500mAh lithium battery (M5Go2 Base)
- **Low power consumption design**

Sound Processing

- **Audio Decoder Chip:** ES7210 with dual-microphone input
- **Amplifier Chip:** 16-bit I2S AW88298
- **Built-in Speaker:** 1W high-fidelity speaker

Physical Characteristics

- **Physical Dimensions:** 60.3 * 60.3 * 48.9mm
- **Weight:** 290.4g
- **Buttons:** Independent power button and reset (RST) button with delay circuit

Product Usage Instructions

Quick Start – Scan Wi-Fi Information

1. Open Arduino IDE (Refer to **Arduino IDE Installation Guide**)
2. Press and hold the Reset button, then insert the cable
3. Select the M5CoreS3 board and the corresponding port, then upload the code
4. Open the serial monitor to display the scanned WiFi and signal strength information

Quick Start – Scan BLE Device Information

1. Open Arduino IDE (Refer to **Arduino IDEInstallation Guide**)

Please ensure to follow the instructions carefully for the successful operation of the Flow Gateway.

Frequently Asked Questions

- **Q: How do I charge the internal lithium battery?**
  - A: To charge the internal lithium battery, connect the device to an external DC power source using the provided Type-C cable.
- **Q: Can I expand the storage capacity of the Flow Gateway?**
  - A: Yes, you can expand the storage capacity by inserting a TF card into the dedicated TF card slot on the device.
- **Q: What is the recommended operating voltage for the Flow Gateway?**
  - A: The Flow Gateway supports an external DC power supply of 12V (range: 9~24V) or can be powered by the internal 500mAh lithium battery.

OUTLINE

Flow Gateway is a multifunctional expansion module based on the M5CoreS3 host, integrating 4 CAN bus

interfaces and multiple GPIO mappings, providing powerful expansion capabilities for industrial control and IoT applications. The module is designed with simplicity in mind, supporting seamless stacking with M5Stack series devices. It also features built-in power management and I2C expansion functions, making it ideal for complex scenarios requiring multi-device communication and precise control.

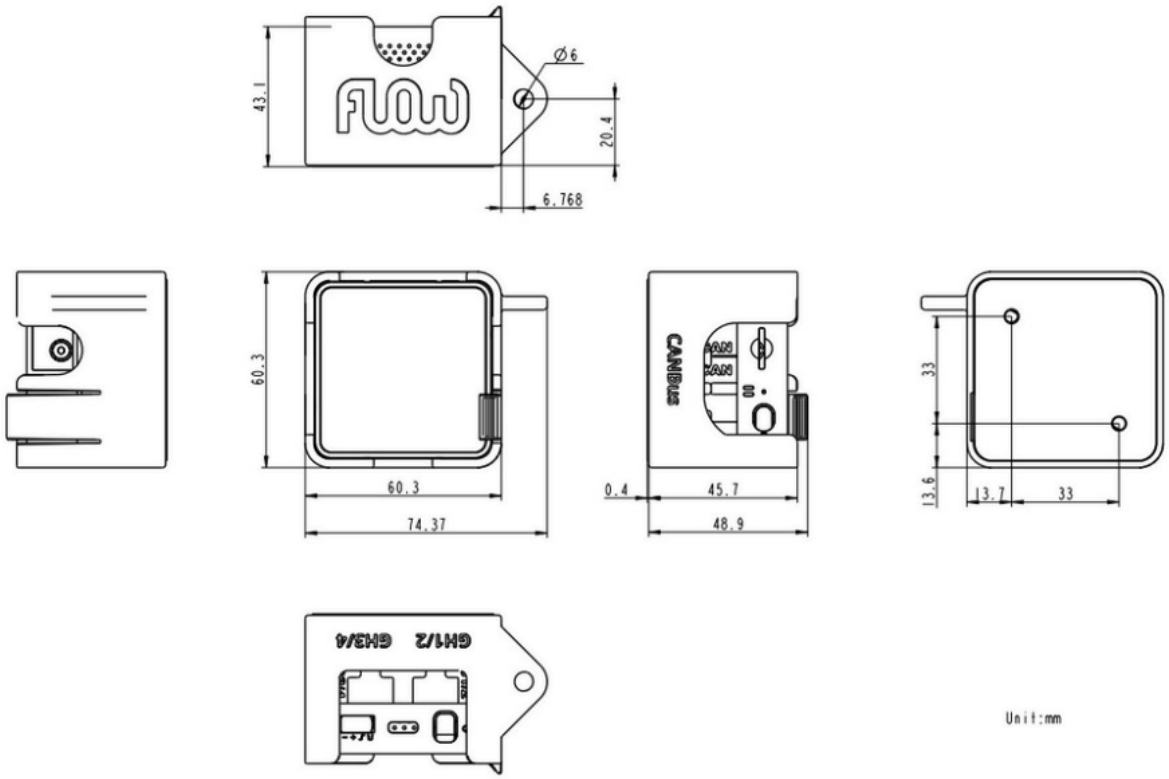
Flow Gateway

1. Communication Capabilities:
    - Main Controller: ESP32-S3FN8
    - Wireless Communication: Wi-Fi, BLE, Infrared (IR) functionality
    - Four CAN Bus Interfaces: Supports multi-device communication
2. Processor and Performance:
    - Processor Model: Xtensa LX7 (ESP32-S3FN8)
    - Storage Capacity: 16MB Flash, 8MB PSRAM
    - Processor Operating Frequency: Xtensa® dual-core 32-bit LX7 microprocessor, up to 240 MHz
3. Display and Input:
    - Screen: 2.0-inch capacitive touch IPS screen with high-strength glass panel
    - Touch Sensor: GT911 for precise touch control
    - Camera: 0.3-megapixel GC0308
    - Proximity Sensor: LTR-553ALS-WA
4. Sensors:
    - Accelerometer and Gyroscope: BMI270
    - Magnetometer: BMM150
    - Real-Time Clock (RTC): BM8563EMA
5. GPIO Pins and Programmable Interfaces:
    - Grove Ports:
    - Port A: I2C Interface
    - Port B: UART Interface
    - Port C: ADC Interface
    - TF Card Slot: For expanded storage
    - Onboard Interface: Type-C for programming and serial communication
6. Power Management:
    - Power Management Chip: AXP2101 with four power flow control channels
    - Power Supply: External DC 12V (supports 9~24V) or internal 500mAh lithium battery (M5Go2 Base)
    - Low power consumption design
7. Sound Processing:
    - Audio Decoder Chip: ES7210 with dual-microphone input
    - Amplifier Chip: 16-bit I2S AW88298
    - Built-in Speaker: 1W high-fidelity speaker
8. Physical Characteristics:
    - Physical Dimensions: 60.3 * 60.3 * 48.9mm
    - Weight: 290.4g
    - Buttons: Independent power button and reset (RST) button with delay circuit

Specification

Parameter and Specification	Value
MCU	ESP32-S3FN8 @ Xtensa dual-core 32-bit LX7, 240MHz
Communication Capability	Wi-Fi, BLE, Infrared (IR) functionality, Four CAN Bus Interfaces
Supply Voltage	4.5~5.5V DC
Flash Storage Capacity	16MB Flash
PSRAM Storage Capacity	8MB PSRAM
Screen	2.0-inch capacitive touch IPS screen, high-strength glass panel
Sensors	BMI270 accelerometer and gyroscope, BMM150 magnetometer, BM8563EMA RTC, GC0308 0.3-megapixel camera, LTR-553ALS-WA proximity sensor
Buzzer	1W high-fidelity speaker, Passive buzzer for sound notifications and alerts
Expansion Interface	Grove Ports: Port A (I2C), Port B (UART), Port C (ADC)
TF Card Slot	Yes, for expanded storage
Battery	500mAh lithium battery (M5Go2 Base)
Operating Temperature	0° C to 40° C
Wi-Fi Working Frequency	802.11b/g/n @ 2.412~2.462 GHz
BLE Working Frequency	2402 MHz ~ 2480 MHz
Size	60.3 * 60.3 * 48.9mm
Weight	290.4g
Manufacturer	M5Stack Technology Co., Ltd

Module Size



QUICK START

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

Print WiFi information

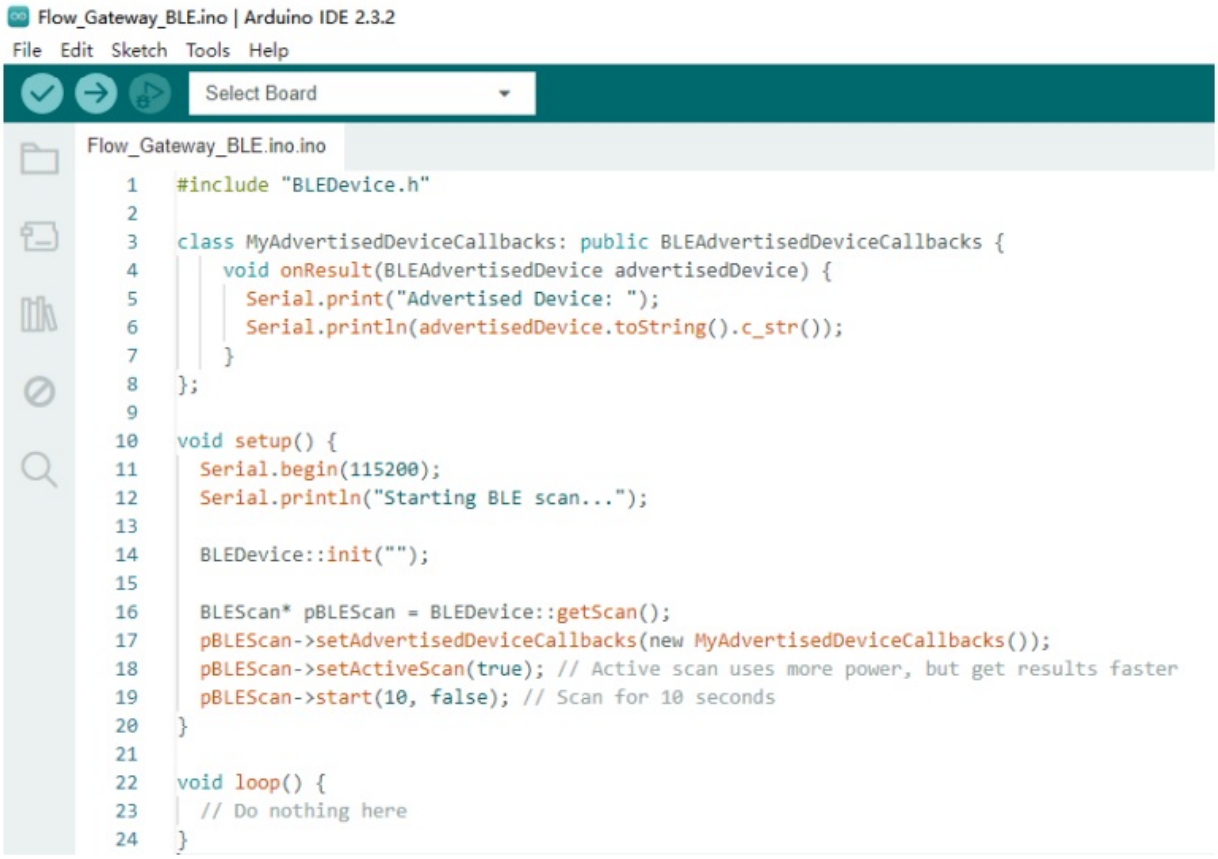
1. Open Arduino IDE (Refer to https://docs.m5stack.com/en/arduino/arduino_ide for the installation guide for the development board and software)
2. Press and hold the Reset button, then insert the cable
3. Select the M5CoreS3 board and the corresponding port, then upload the code
4. Open the serial monitor to display the scanned WiFi and signal strength information

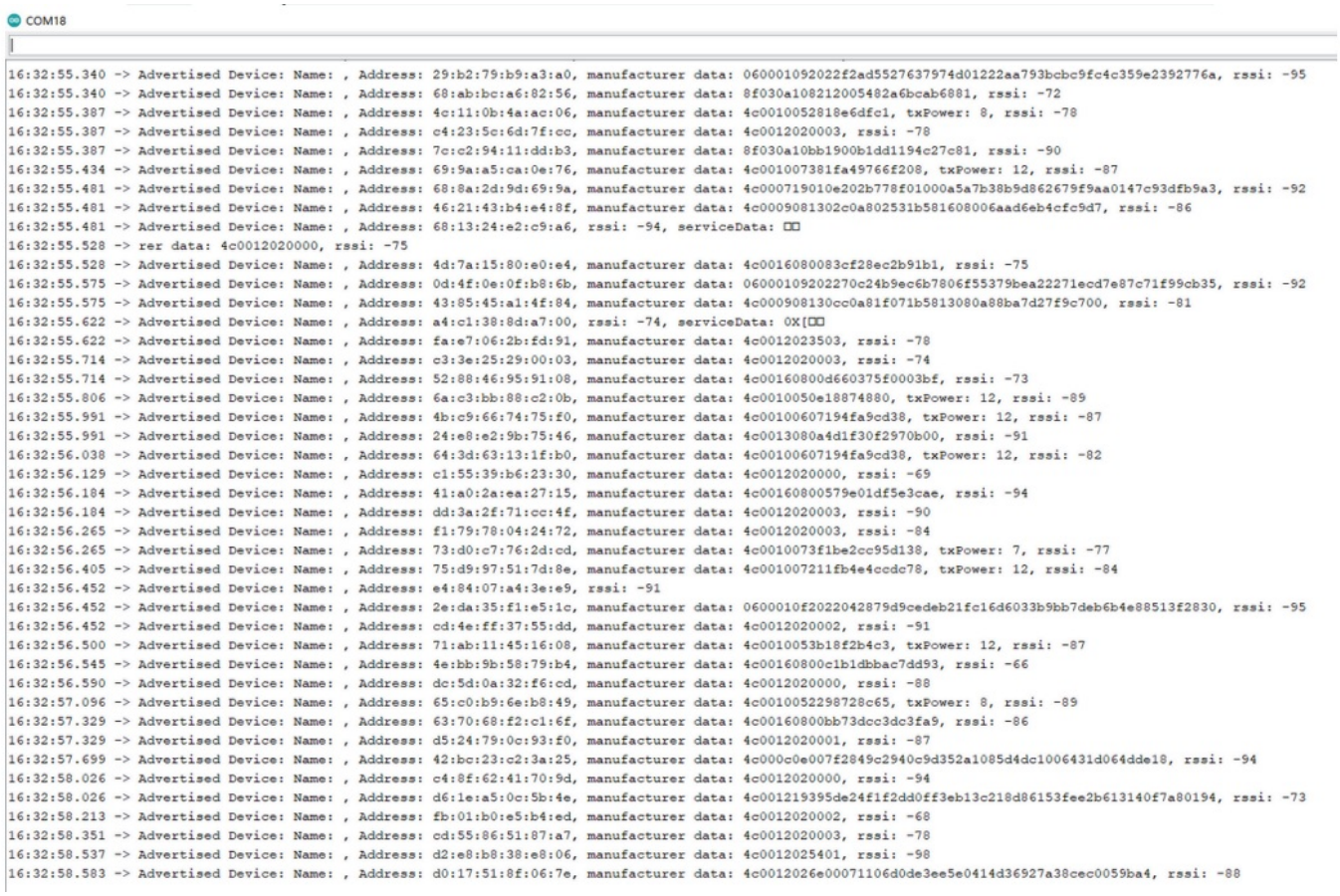
QUICK START

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

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. Press and hold the Reset button, then insert the cable
3. Select the M5CoreS3 board and the corresponding port, then upload the code
4. Open the serial monitor to display the scanned BLE and signal strength information





FCC Statement

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 the receiver.
- Connect the equipment to 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.

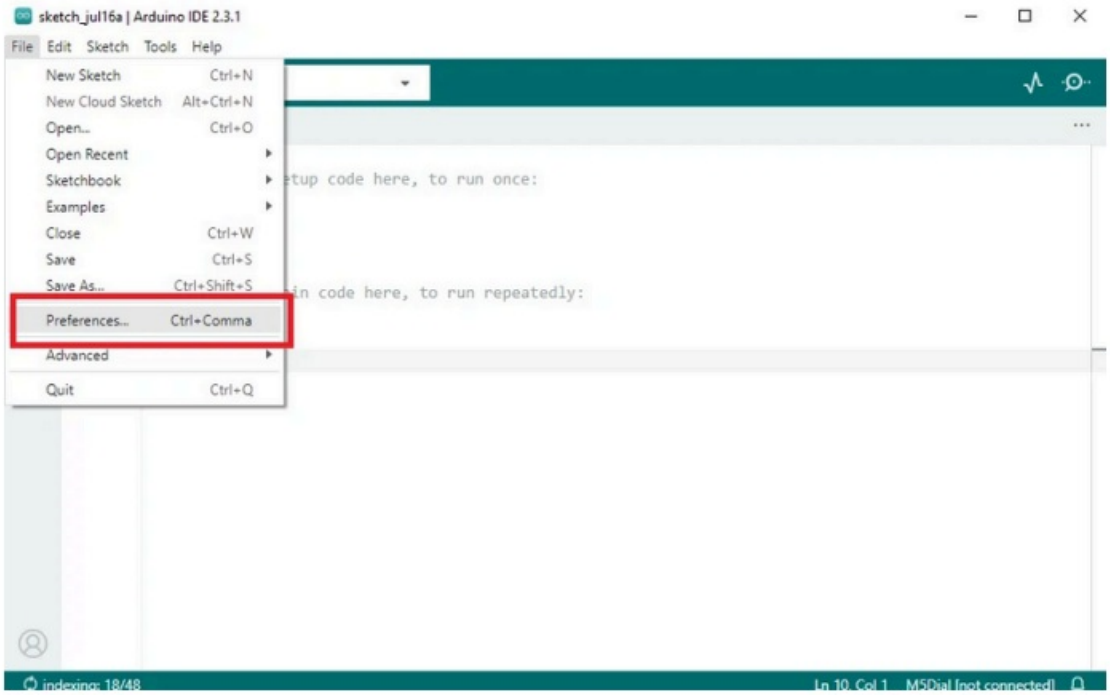
FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance 20cm between the radiator & your body

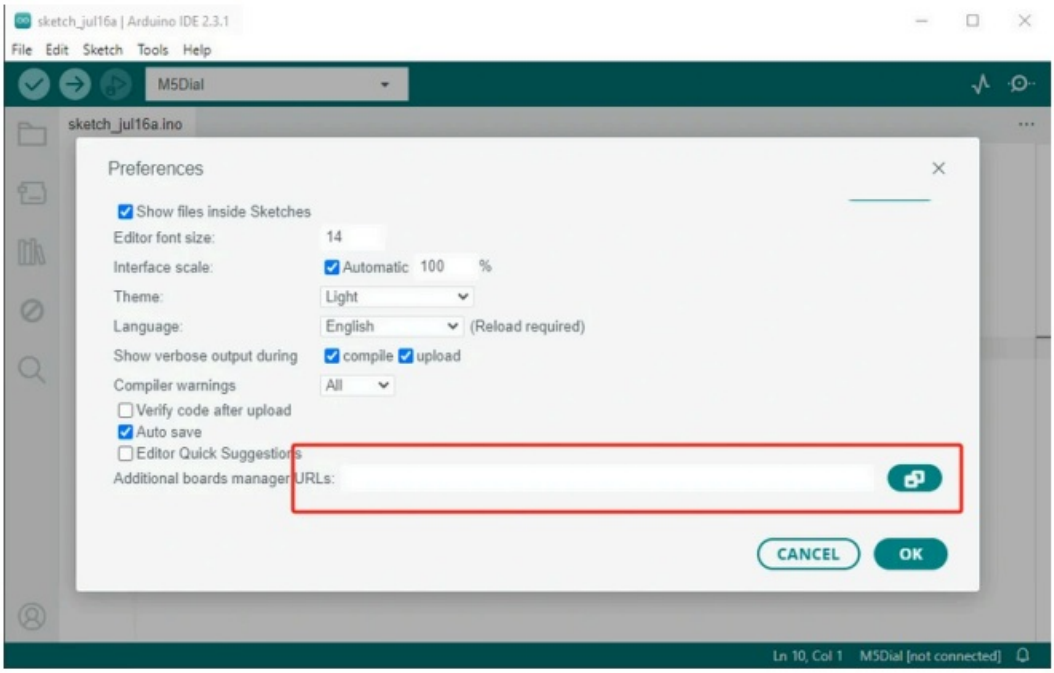
Arduino Install

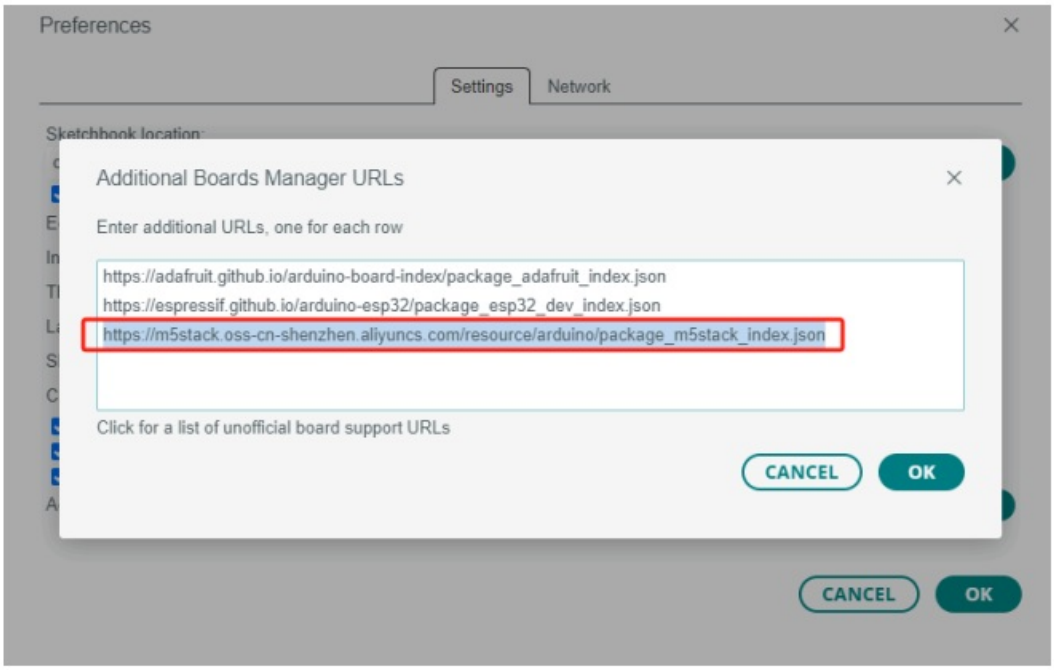
- Installing Arduino IDE(https://www.arduino.cc/en/Main/Software) Click to visit the Arduino official website, and select the installation package for your operating system to download.
- . Installing Arduino Board Management

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

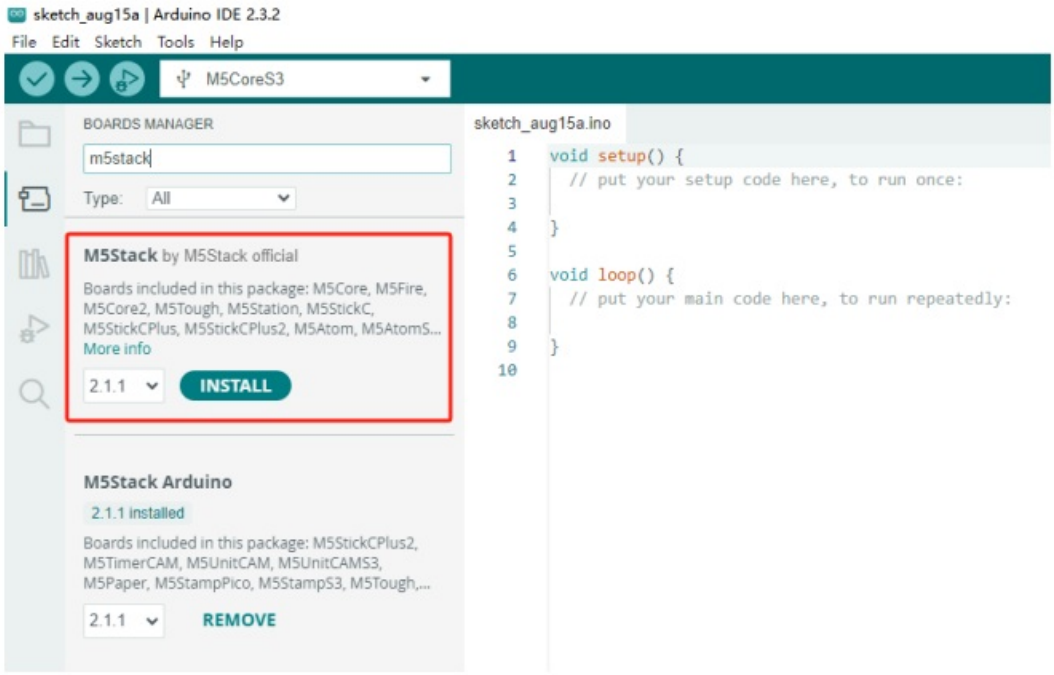


2. Copy the ESP board management URL below into the Additional Board Manager URLs: field, and save.
   https://espressif.github.io/arduino-esp32/package_esp32_dev_index.json

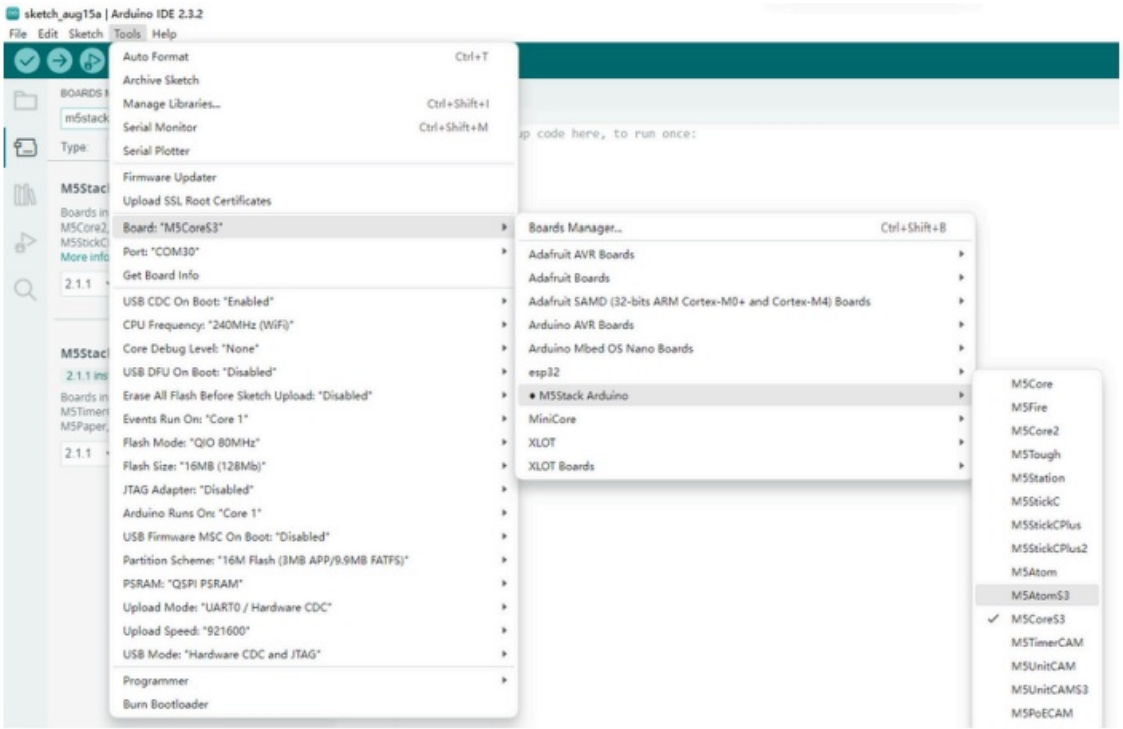




3. In the sidebar, select Board Manager, search for ESP, and click Install



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 -> {M5CoreS3}



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

Documents / Resources

Flow Gateway M5STACK	M5STACK M5FGV4 Flow Gateway [pdf] User Guide M5FGV4, M5FGV4 Flow Gateway, Flow Gateway, Gateway

References

- espressif.github.io/arduino-esp32/package_esp32_dev_index.json
- Software | Arduino
- User Manual