

M5StickC Plus2 Operation Guidance

Factory Firmware

When the device encounters operational issues, you can try re-flashing the factory firmware to check if there is any hardware malfunction. Refer to the following tutorial. Use the M5Burner firmware flashing tool to flash the factory firmware onto the device.

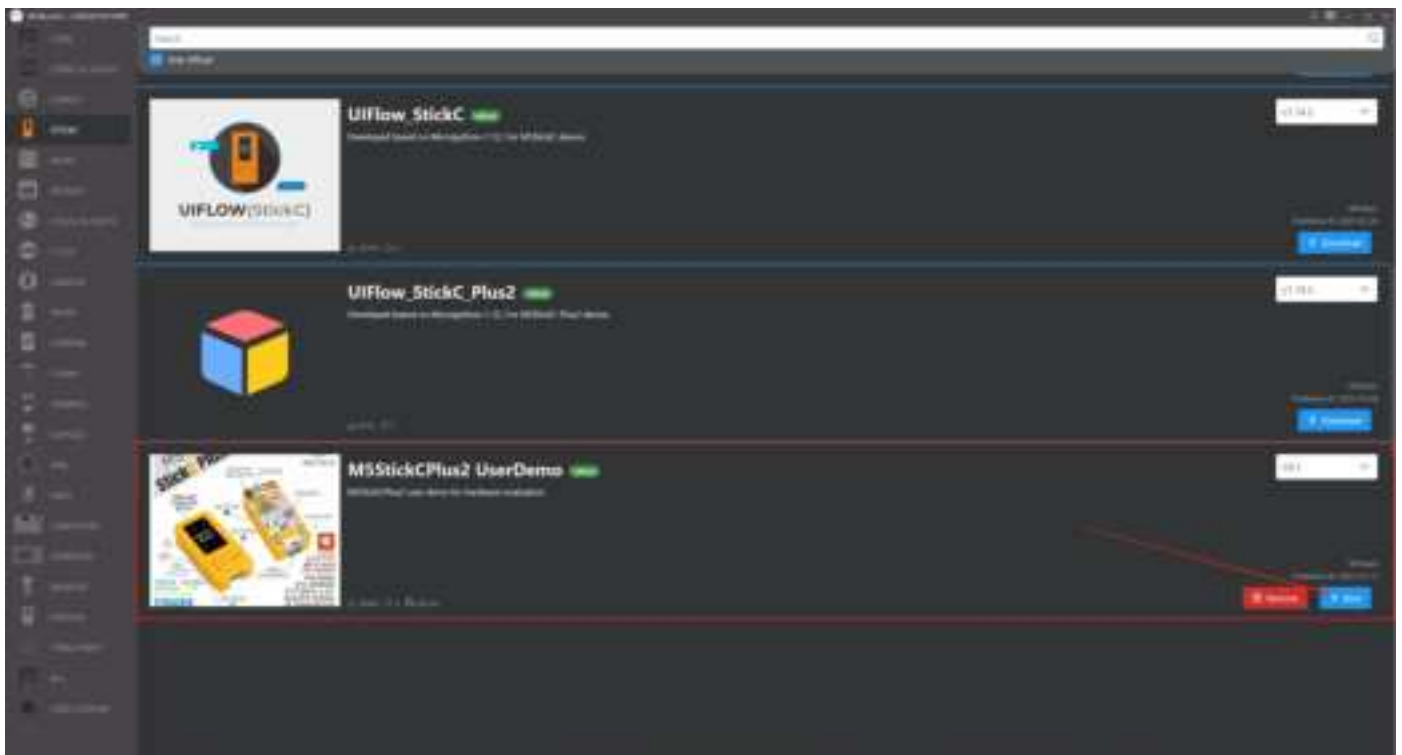


FAQ

Q1: Why is my M5StickC Plus2 black screen/won't boot?



Solutions: M5Burner Burn **official** Factory Firmware "M5StickCPlus2 UserDemo"





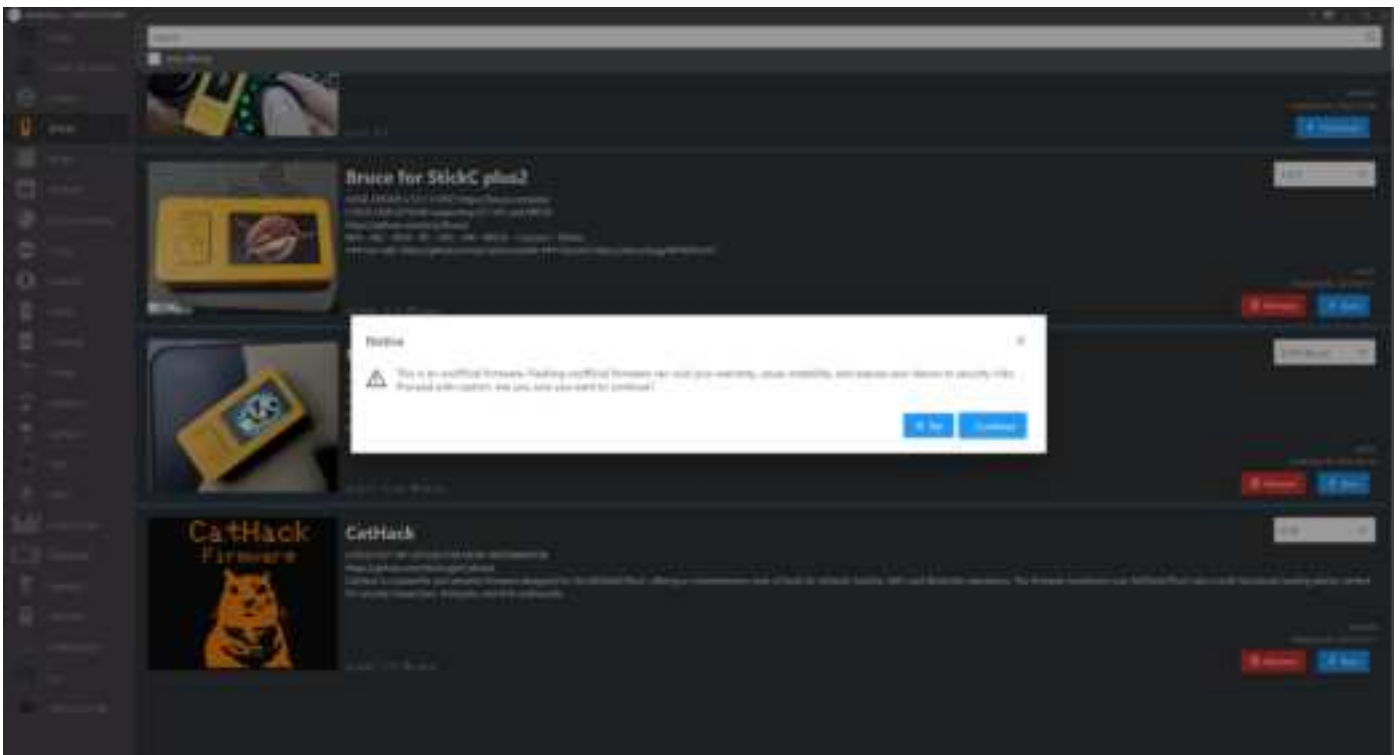
Q2: Why it working time only 3 hours? Why does it 100% charge in 1 minute, remove the charging cable it will turn off?





Solutions: "Bruce for StickC plus2" This is an unofficial firmware. Flashing unofficial firmware can void your warranty, cause instability, and expose your device to security risks. Proceed with caution.

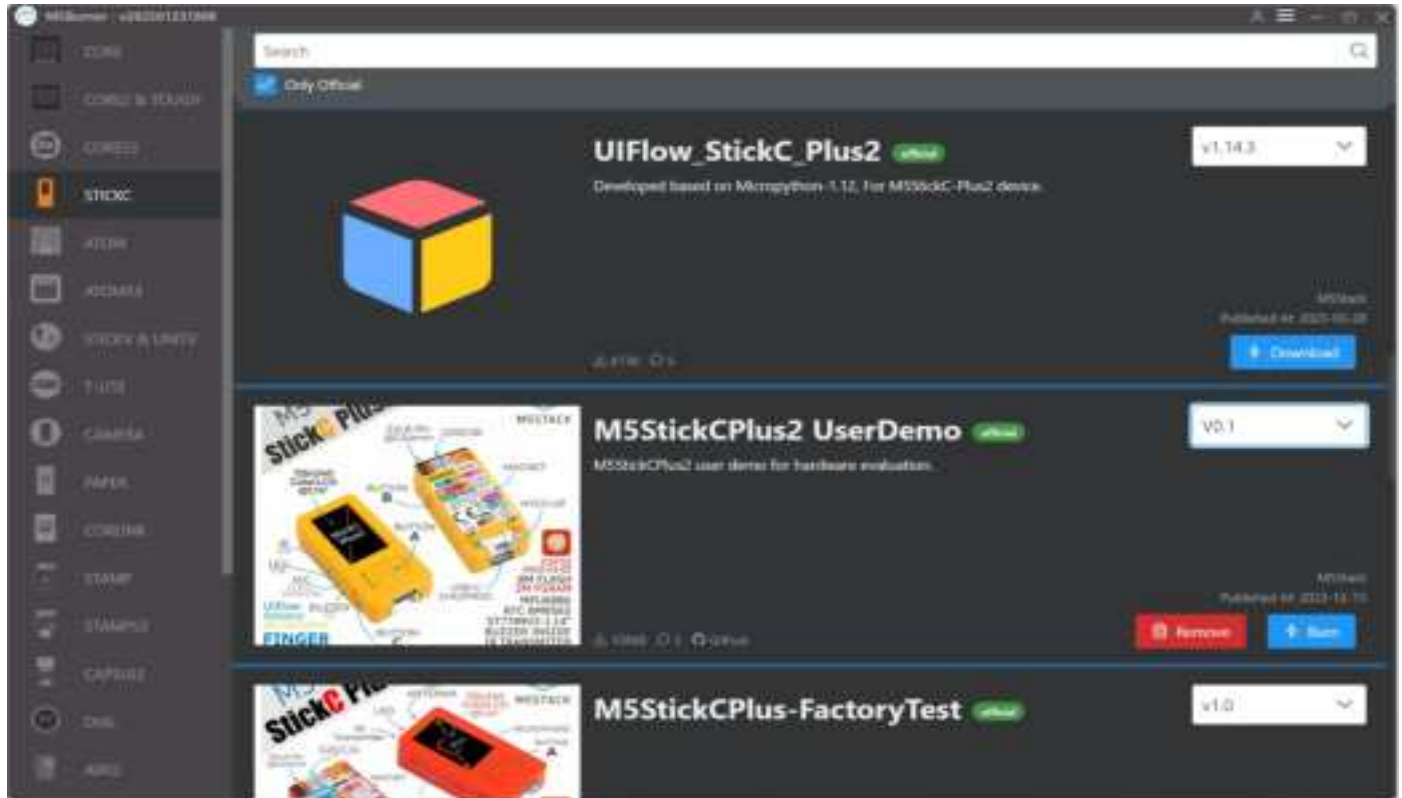
Please burn back **official firmware**.



1. Preparation

- Refer to the [M5Burner tutorial](#) to complete the firmware flashing tool download, and then refer to the image below to download the corresponding firmware.

Download link: <https://docs.m5stack.com/en/uiflow/m5burner/intro>



2. USB Driver Installation

Driver Installation Tip

Click the link below to download the driver matching your operating system. The driver package for the CP34X (for the CH9102 version) can be downloaded and installed by selecting the installation package corresponding to your operating system. If you encounter issues with program download (such as timeout or "Failed to write to target RAM" errors), try reinstalling the device driver.

CH9102_VCP_SER_Windows

https://m5stack.oss-cn-shenzhen.aliyuncs.com/resource/drivers/CH9102_VCP_SER_Windows.exe

CH9102_VCP_SER_MacOS v1.7

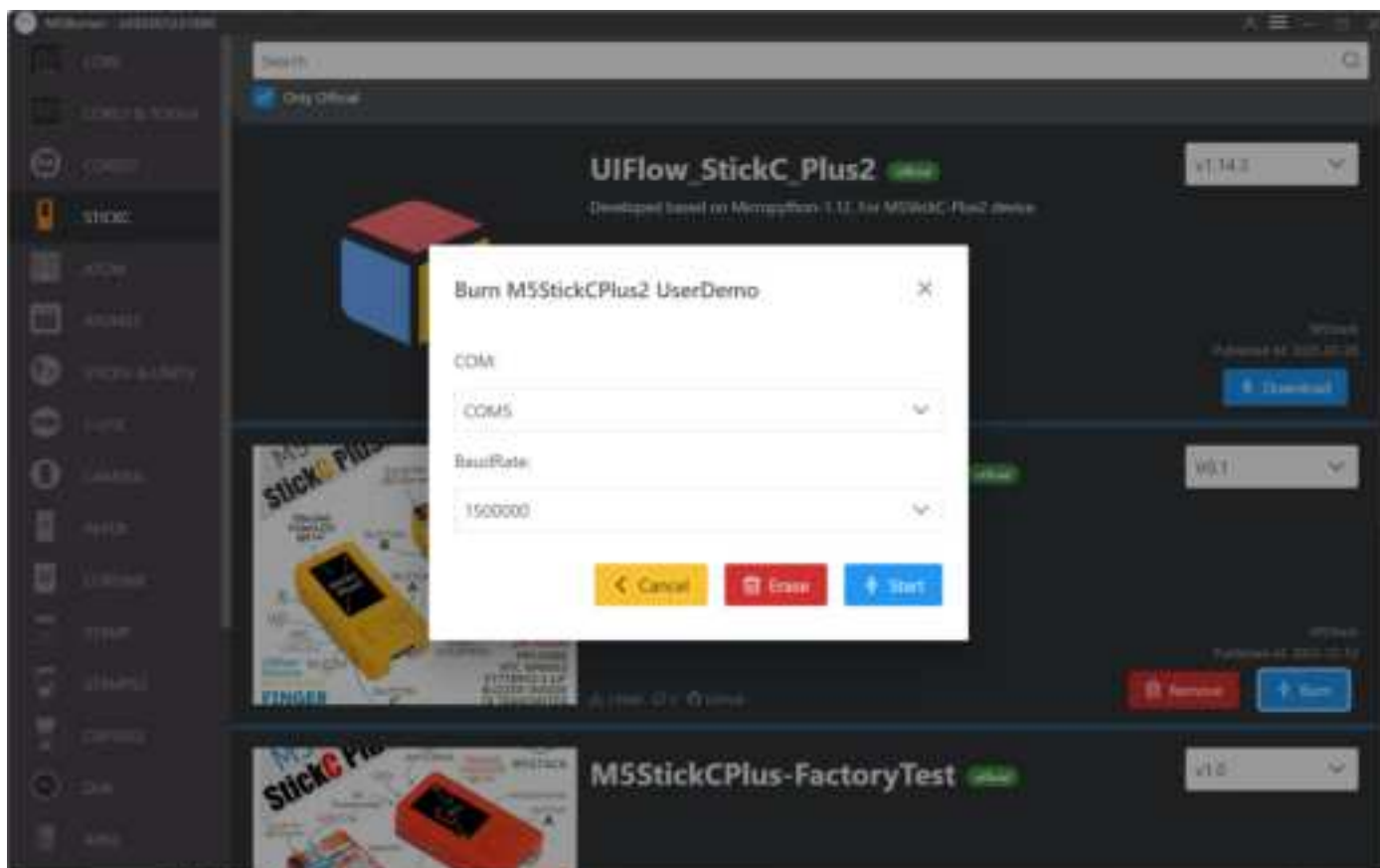
https://m5stack.oss-cn-shenzhen.aliyuncs.com/resource/drivers/CH9102_VCP_MacOS_v1.7.zip

Port Selection on MacOS

On MacOS, there may be two available ports. When using them, please select the port named wchmodem.

3. Port Selection

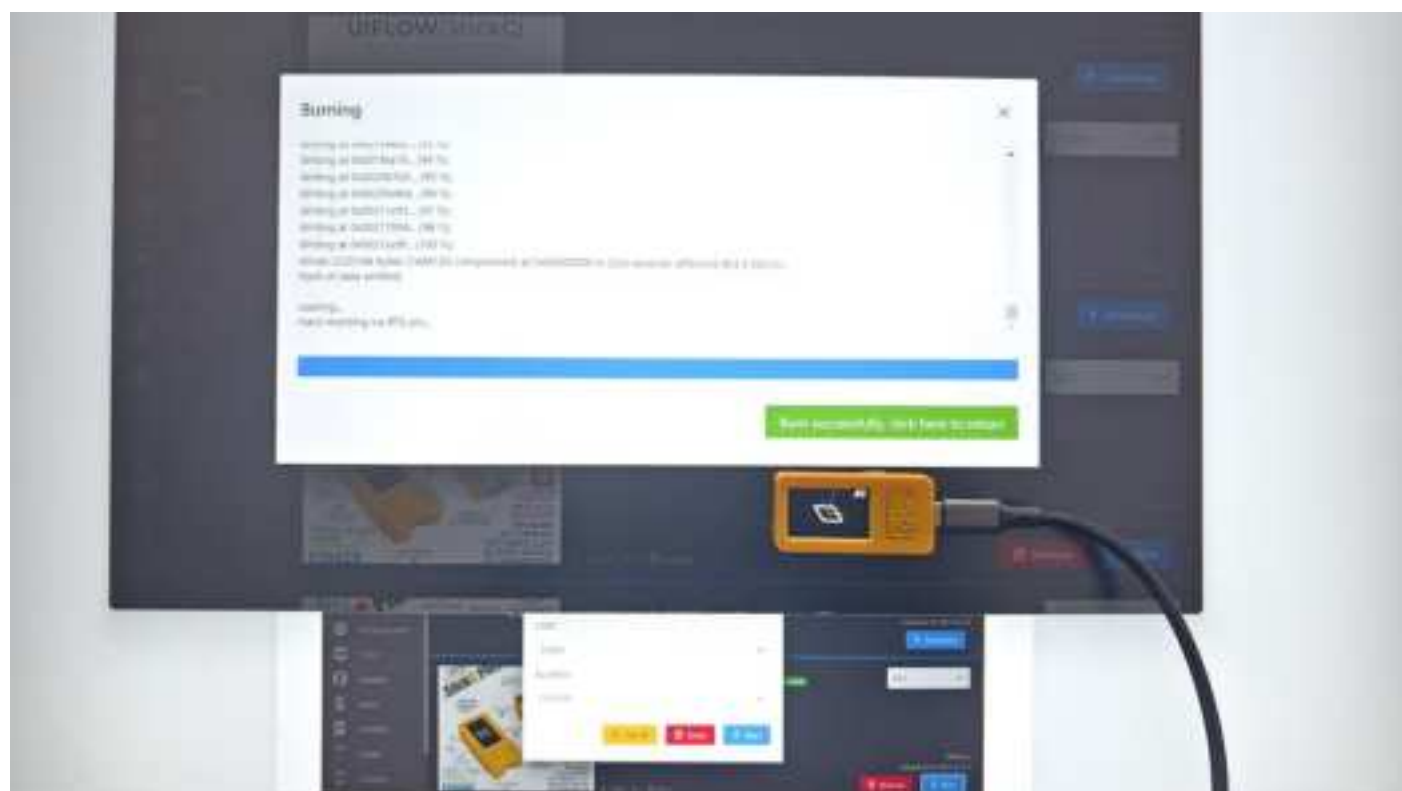
Connect the device to the computer via a USB cable. After the driver installation is complete, you can select the corresponding device port in M5Burner.



4. Burn

Click "Burn" to start the flashing process.





StickC-Plus2

SKU:K016-P2





Description

StickC-Plus2 is the iterative version of StickC-Plus. It is powered by the ESP32-PICO-V3-02 chip, providing Wi-Fi connectivity. Within its compact body, it integrates a rich variety of hardware resources, including IR emitter, RTC, microphone, LED, IMU, buttons, buzzer, and more. It features a 1.14-inch TFT display driven by the ST7789V2 with a resolution of 135 x 240.

The battery capacity has been increased to 200 mAh, and the interface is compatible with both HAT and Unit series modules.

This sleek and compact development tool can ignite unlimited creativity. StickC-Plus2 helps you quickly build IoT product prototypes and greatly simplifies the entire development process. Even beginners who are new to programming can create interesting applications and apply them in real life.

Tutorial



UiFlow

This tutorial will introduce how to control the StickC-Plus2 device through the UiFlow graphical programming platform.



UiFlow2

This tutorial will introduce how to control the StickC-Plus2 device through the UiFlow2 graphical programming platform.



Arduino IDE

This tutorial will introduce how to program and control the StickC-Plus2 device using the Arduino IDE.

| Note

Port Not Recognized

When using a C-to-C cable, if the port cannot be recognized, please perform the following power-on procedure:

disconnect StickC-Plus2, **power it off** (long-press the power button until the green LED lights up), then **reconnect the USB cable to power on**.

| Features

- Based on ESP32-PICO-V3-02 with Wi-Fi support
- Built-in 3-axis accelerometer and 3-axis gyroscope
- Integrated IR emitter
- Built-in RTC
- Integrated microphone
- User buttons, 1.14-inch LCD, power/reset button
- 200 mAh Li-ion battery
- Expansion connector
- Integrated passive buzzer
- Wearable & mountable
- Development Platform
 - UiFlow1
 - UiFlow2
 - Arduino IDE
 - ESP-IDF
 - PlatformIO

| Includes

- 1 x StickC-Plus2

| Applications

- Wearable devices
- IoT controller
- STEM education
- DIY projects
- Smart-home devices

Specifications

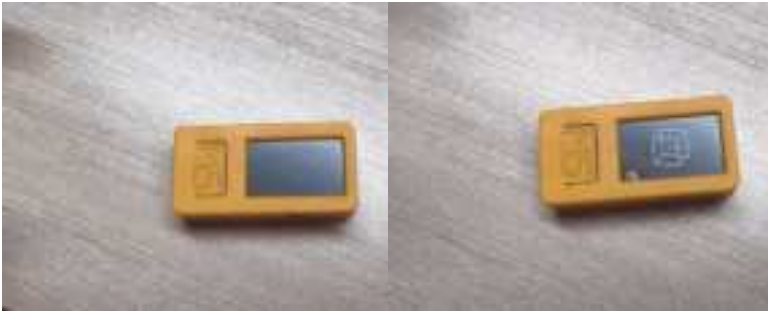
| Specification | Parameter |
|----------------|--|
| SoC | ESP32-PICO-V3-02 240 MHz dual-core, Wi-Fi, 2 MB PSRAM, 8 MB Flash |
| Input Voltage | 5 V @ 500 mA |
| Interface | Type-C x 1, GROVE (I2C + I/O + UART) x 1 |
| LCD Screen | 1.14 inch, 135 x 240 Color TFT LCD, ST7789V2 |
| Microphone | SPM1423 |
| Buttons | User buttons x 3 |
| LED | Green LED x 1 (non-programmable, sleep indicator) Red LED x 1 (shares control pin G19 with IR emitter) |
| RTC | BM8563 |
| Buzzer | On-board passive buzzer |
| IMU | MPU6886 |
| Antenna | 2.4 G 3D antenna |
| External Pins | G0, G25/G26, G36, G32, G33 |
| Battery | 200 mAh @ 3.7 V, inside |
| Operating Temp | 0 ~ 40 °C |
| Enclosure | Plastic (PC) |
| Product Size | 48.0 x 24.0 x 13.5mm |
| Product Weight | 16.7 g |
| Package Size | 104.4 x 65.0 x 18.0mm |
| Gross Weight | 26.3 g |

Operation Instructions

| Power On/Off

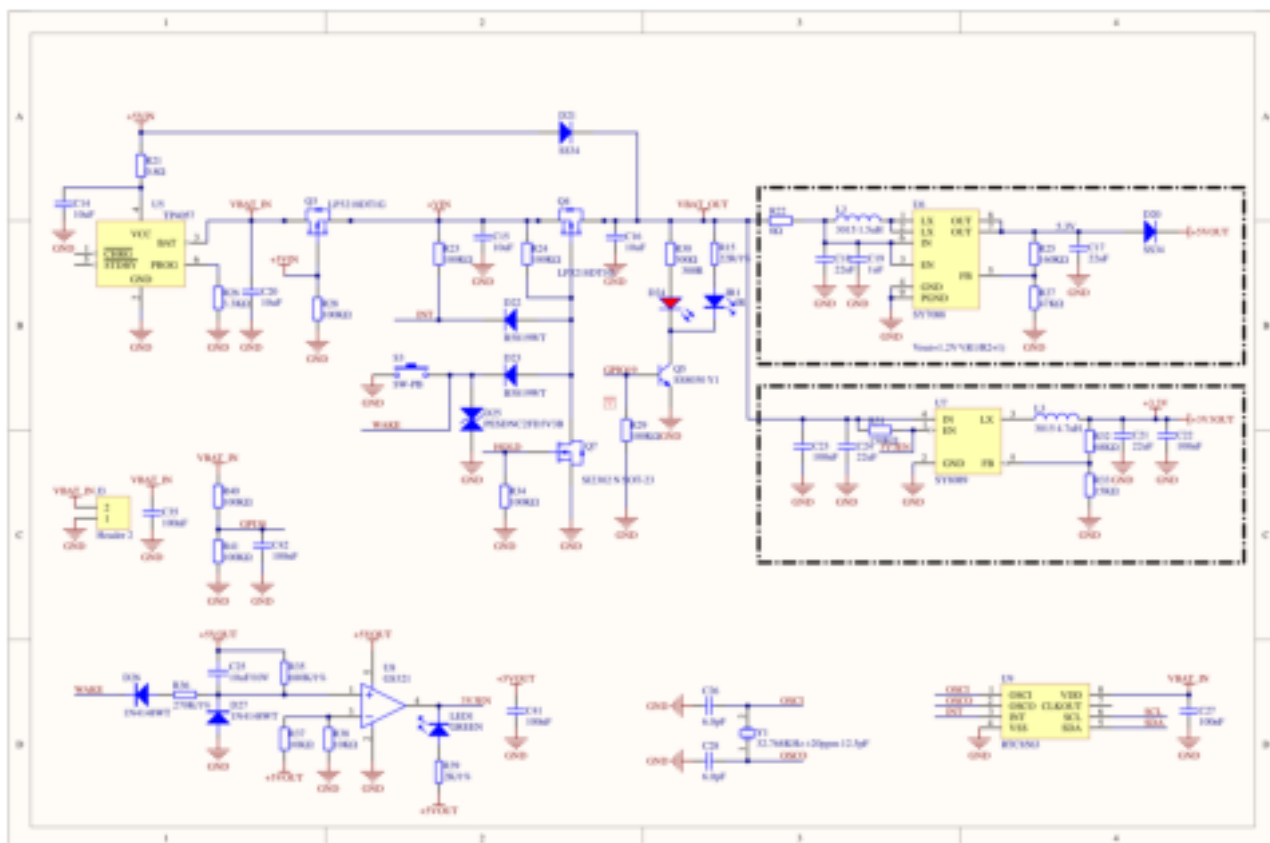
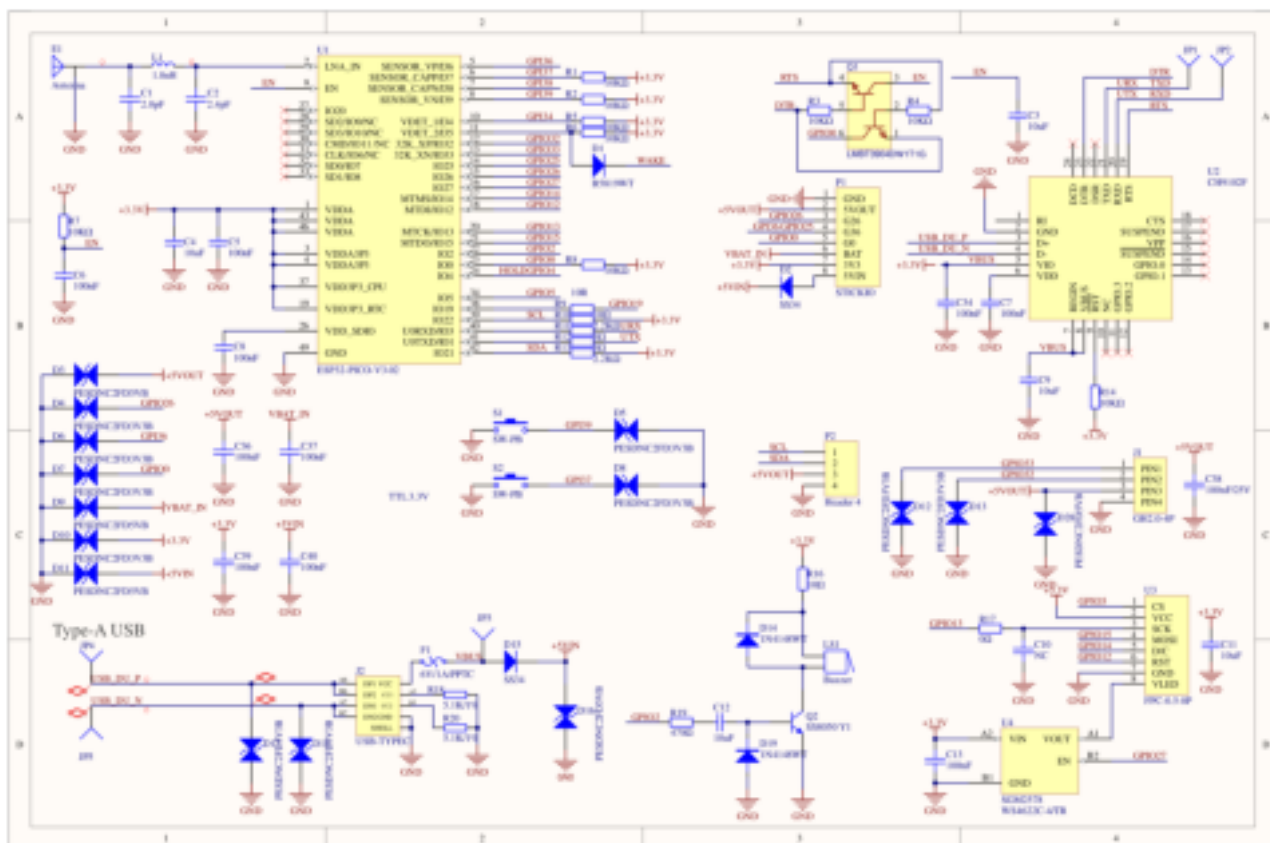
Power-on: Press the "BUTTON C" for more than 2 seconds, or wake up via the RTC IRQ signal. After the wake-up signal is triggered, the program must set the HOLD pin (G4) to high (1) to keep the power on, otherwise the device will shut down again.

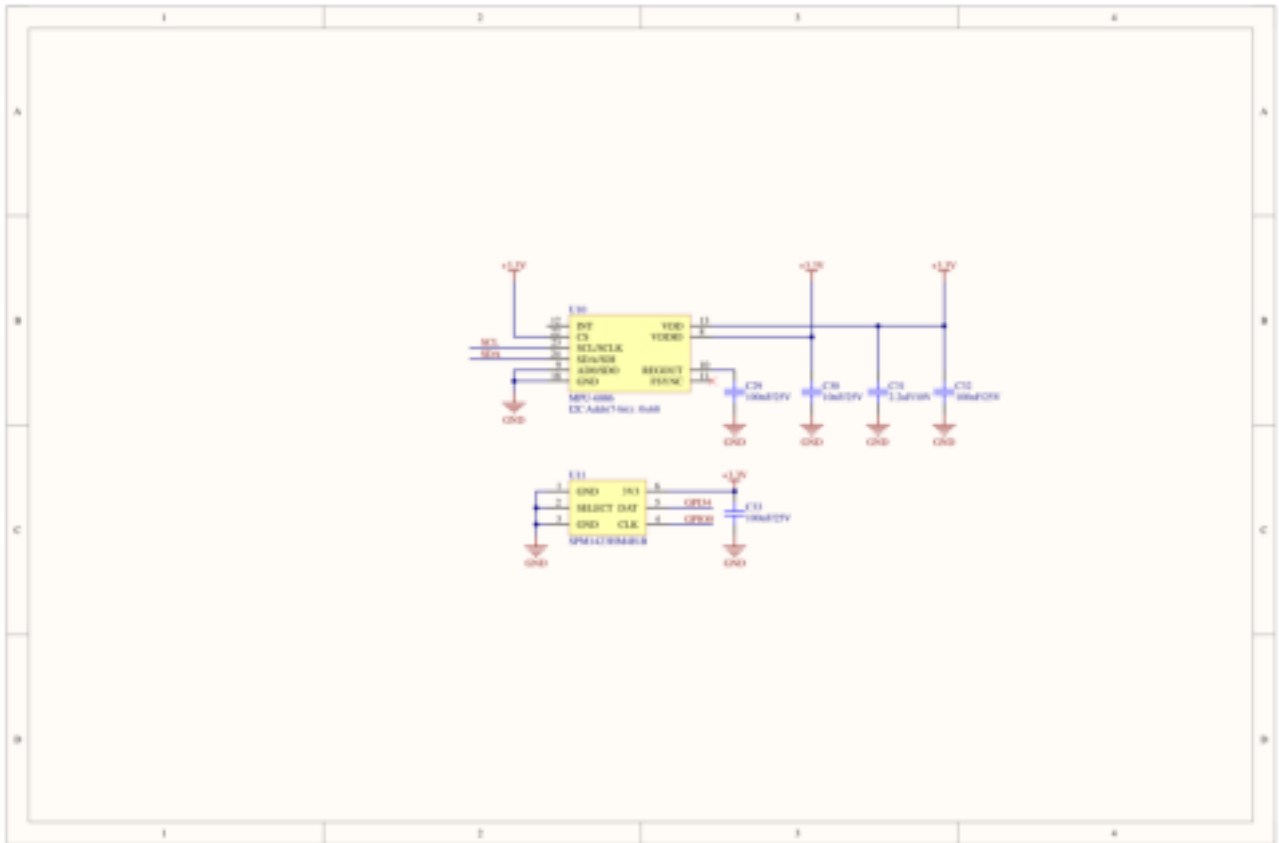
Power-off: Without external USB power, press "BUTTON C" for more than 6 seconds, or set HOLD (GPIO4)=0 in the program to power off. While USB is connected, pressing "BUTTON C" for more than 6 seconds will turn off the screen and enter sleep mode (not a full power-off).



| Schematics

- [StickC-Plus2 Schematics PDF](#)





PinMap

Red LED & IR Emitter | Button A | Button B | Buzzer

| ESP32-PICO-V3-02 | GPIO19 | GPIO37 | GPIO39 | GPIO35 | GPIO2 |
|----------------------|--------------------------|----------|----------|----------|--------|
| IR Emitter & Red LED | IR emitter & Red LED pin | | | | |
| Button A | | Button A | | | |
| Button B | | | Button B | | |
| Button C | | | | Button C | |
| Passive Buzzer | | | | | Buzzer |

Color TFT Display

Driver IC: ST7789V2

Resolution: 135 x 240

| ESP32-PICO-V3-02 | G15 | G13 | G14 | G12 | G5 | G27 |
|------------------|----------|---------|--------|---------|--------|--------|
| TFT Display | TFT_MOSI | TFT_CLK | TFT_DC | TFT_RST | TFT_CS | TFT_BL |

Microphone MIC (SPM1423)

| ESP32-PICO-V3-02 | G0 | G34 |
|------------------|-----|------|
| MIC SPM1423 | CLK | DATA |

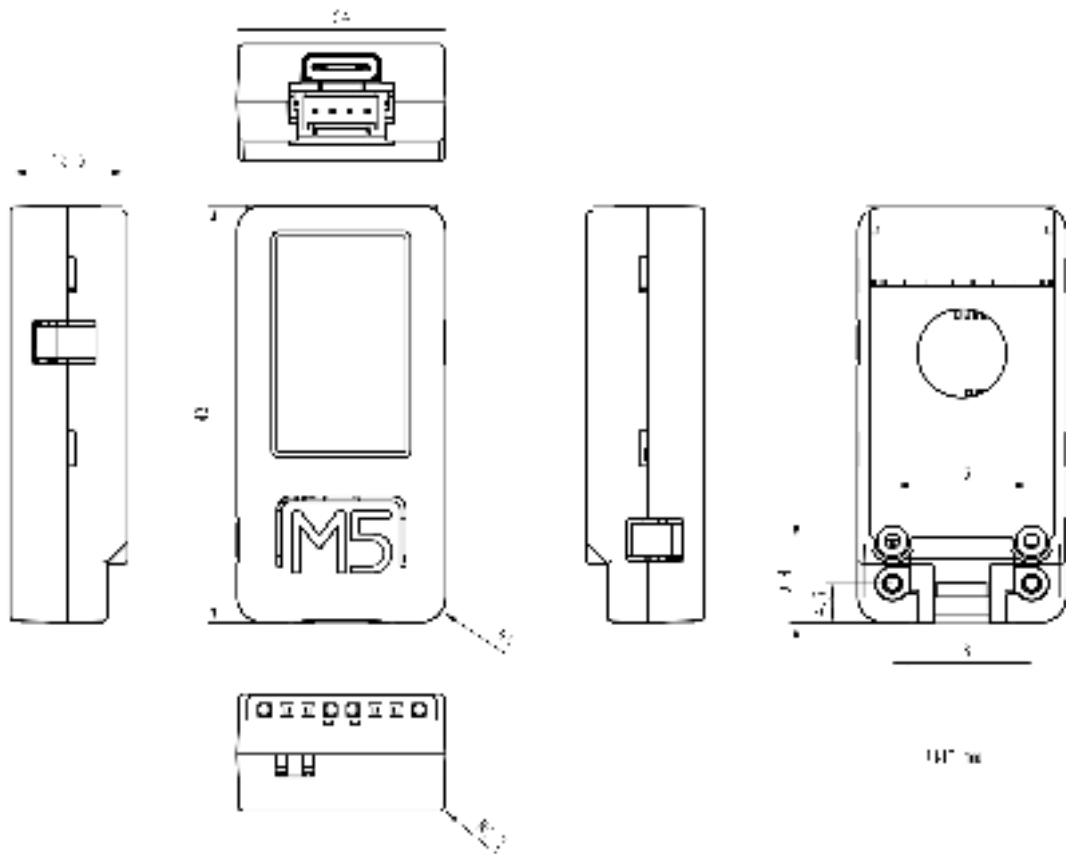
6-Axis IMU (MPU6886) & RTC BM8563

| ESP32-PICO-V3-02 | G22 | G21 | G19 |
|------------------|-----|-----|-----|
| IMU MPU6886 | SCL | SDA | |
| BM8563 | SCL | SDA | |
| IR Emitter | | | TX |
| Red LED | | | TX |

HY2.0-4P

| HY2.0-4P | Black | Red | Yellow | White |
|-------------|-------|-----|--------|-------|
| PORT.CUSTOM | GND | 5V | G32 | G33 |

Model Size



Datasheets

- [ESP32-PICO-V3-02](#)
- [ST7789V2](#)
- [BM8563](#)
- [MPU6886](#)
- [SPM1423](#)

Softwares

Arduino

- [StickC-Plus2 Arduino Quick Start](#)
- [StickC-Plus2 Library](#)
- [StickC-Plus2 Factory Test Firmware](#)

UiFlow1

- [StickC-Plus2 UiFlow1 Quick Start](#)

UiFlow2

- [StickC-Plus2 UiFlow2 Quick Start](#)

PlatformIO

```
[env:m5stack-stickc-plus2]
platform = espressif32@6.7.0
board = m5stick-c
framework = arduino
upload_speed = 1500000
monitor_speed = 115200
build_flags =
    -DBOARD_HAS_PSRAM
    -mfix-esp32-psram-cache-issue
    -DCORE_DEBUG_LEVEL=5
lib_deps =
    M5Unified=https://github.com/m5stack/M5Unified
```

USB Driver

Click the links below to download the driver that matches your operating system. The package contains CP34X drivers (for **CH9102**). After extracting the archive, run the installer that matches your OS bit-depth.

If you encounter issues such as timeout or “Failed to write to target RAM” during downloading, please try reinstalling the driver.

| Driver Name | Supported Chip | Download |
|---------------------------|----------------|--------------------------|
| CH9102_VCP_SER_Windows | CH9102 | Download |
| CH9102_VCP_SER_MacOS v1.7 | CH9102 | Download |

macOS Port Selection

Two serial ports may appear on macOS. Please select the port named **wchmodem**.

Easyloader

EasyLoader is a lightweight program flasher that comes with a demonstration firmware. By following a few simple steps, you can flash it to the controller for quick functional verification.

| Easyloader | Download | Note |
|-------------------------|--------------------------|------|
| FactoryTest for Windows | download | / |

Other

- [StickC-Plus2 Restore Factory Firmware Guide](#)

Video

- [StickC-Plus2 Feature Introduction](#)

[StackC Plus2 视频.mp4](#)

Version Change

| Release Date | Change Description | Note |
|--------------|--|------|
| / | First release | / |
| 2021-12 | Added sleep and wake-up function, version updated to v1.1 | / |
| 2023-12 | Removed PMIC AXP192, MCU changed from ESP32-PICO-D4 to ESP32-PICO-V3-02, different power-on/off method, version v2 | / |

Product Comparison



Hardware Differences

| Product Name | SoC | Power Management | Battery Capacity | Memory | USB-UART Chip | Color |
|--------------|------------------|------------------|------------------|--------------------------|---------------|------------|
| StickC-Plus | ESP32-PICO-D4 | AXP192 | 120 mAh | 520 KB SRAM + 4 MB Flash | CH522 | Red-orange |
| StickC-Plus2 | ESP32-PICO-V3-02 | / | 200 mAh | 2 MB PSRAM + 8 MB Flash | CH9102 | Orange |

Pin Differences

| Product Name | IR | LED | TFT | BUTTON A | BUTTON B | BUTTON C (WAKE) | HOLD | Battery Voltage Detect |
|----------------|-----|-----|---|----------|----------|-----------------|------|------------------------|
| M5STICKC PLUS | G9 | G10 | MOSI (G15) CLK (G13) DC (G23) RST (G18) CS (G5) | G37 | G39 | Regular button | / | Via AXP192 |
| M5STICKC PLUS2 | G19 | G19 | MOSI (G15) CLK (G13) DC (G14) RST (G12) CS (G5) | G37 | G39 | G35 | G4 | G38 |

Power On/Off Differences

| Product Name | Power On | Power Off |
|--------------|---|---|
| StickC-Plus | Press reset button (BUTTON C) for at least 2 s | Press reset button (BUTTON C) for at least 6 s |
| StickC-Plus2 | Press "BUTTON C" for more than 2 s, or wake via RTC IRQ. After wake-up, set HOLD (G4)=1 in the program to keep power on, otherwise the device will shut down again. | Without USB power, press "BUTTON C" for more than 6 s, or set HOLD (GPIO4)=0 in the program to power off. With USB connected, pressing "BUTTON C" for more than 6 s will turn off the screen and enter sleep, but not a full power-off. |

Because StickC-Plus2 removes the PMIC AXP192, the power-on/off method differs from previous versions. As mentioned at the beginning of this document, the operation is largely similar, but the supported libraries will differ. Wi-Fi and IR signal strength have both been improved compared to the previous model.