

M5Core2

SKU:K010



Tutorial&Quick-Start

Choose the development platform you want to use, view the corresponding tutorial&quick-Start.

[UIFlow](#) [Arduino](#)

Description

M5Core2 is the second generation core device in the M5Stack development kit series, which further enhances the functions of the original generation of cores.

The MCU is an ESP32 model D0WDQ6-V3 and has dual core Xtensa® 32-bit 240Mhz LX6 processors that can be controlled separately. WiFi and Bluetooth are supported as standard and it includes an on board 16MB Flash and 8MB PSRAM, USB TYPE-C interface for charging, downloading of programs and serial communication, a 2.0-inch integrated capacitive touch screen, and a built-in vibration motor.

M5Core2 also features a built-in RTC module which can provide accurate timing. The power supply is managed by an AXP192 power management chip, which can effectively control the power consumption of the base and a built-in green LED power indicator helps to notify the user of battery level. The battery capacity has been upgraded to 390mAh, which can power the core for much longer than the previous model.

The M5Core2 retains the TF-card(microSD) slot and speakers. However, in order to ensure higher quality sound output, the I2S digital audio interface power amplifier chip is used to effectively prevent signal distortion. There are independent power and reset buttons on the left side and bottom of the base.

The 3 icons on the front of the screen are capacitive buttons which are programmable. There is a small expansion board on the back of the base with a 6-axis IMU sensor and microphone. The development platform and programming language supported by M5Stack Core2: Arduino, [UIFlow](#) (using Blockly, MicroPython language) No matter what level of your development and programming skills, M5Stack will help You gradually turn your ideas into reality.

Power on/off:

- Power on: click the power button
- Power off: press the power button for 6s

Restart: Click the RST button at the bottom

Core2 is adopting AXP192 as power chip. Please initialize the 'mbus' mode per the powering method, as below:

```
//mbus_mode_t:
```

```
//kMBusModeOutput: Powered by USB or battery
```

```
//kMBusModeInput: Powered by external 5V or DC jack
```

```
MS.begin(bool LCDEnable = true, bool SDEnable = true, bool SerialEnable = true, bool I2CEnable = false, mbus_mode_t mode = kMBusModeOutput);
```

To stack M5Core2 with M5 modules, you need to remove/eliminate the battery bottom of Core2; If you wish to keep I2S Mic, IMU and Battery functions, a [M5GO Bottom2](#) is required.

Product Features

- ESP32-based, built-in Bluetooth, WiFi
- 16M Flash, 8M PSRAM
- Built-in speaker, power indicator, vibration motor, RTC, I2S amplifier, capacitive touch screen, power button, reset button
- TF card slot (16G Maximum size)
- Built-in lithium battery, equipped with power management chip
- Independent small board built-in 6-axis IMU, PDM microphone
- M-Bus Socket & Pins
- Program Platform: [UIFlow](#), [MicroPython](#), [Arduino](#)

Include

- 1x M5Stack Core2
- 1x Type-C USB(20cm)

Applications

- Internet of things terminal controller
- Stem education product
- DIY creation
- Smart home equipment

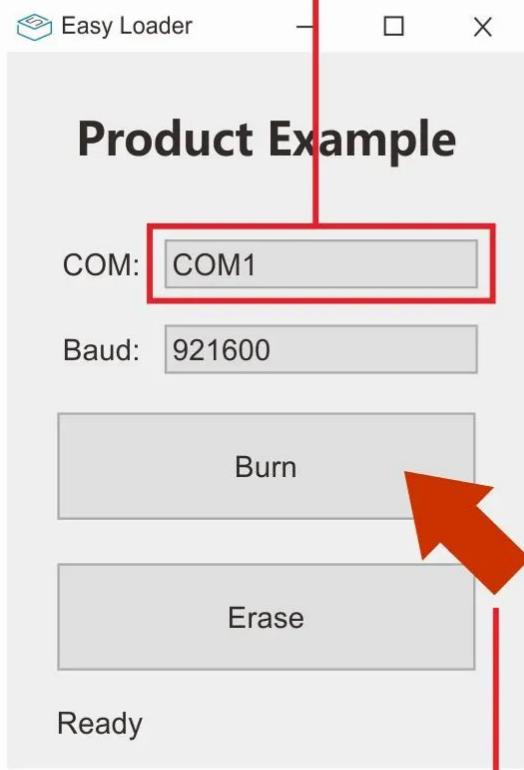
Specification

Resources	Parameter
ESP32-D0WDQ6-V3	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash	16MB
PSRAM	8MB
Input Voltage	5V @ 500mA
Interface	TypeC x 1, GROVE(I2C+I/O+UART) x 1
IPS LCD Screen	2.0" @320*240 ILI9342C
Touch Screen	FT6336U
Speaker	1W-0928
LED	Green power indicator light
Button	Power button, RST button, Virtual screen button*3
Vibration reminder	Vibration motor
MIC	SPM1423
I2S Power Amplifier	NS4168
6-axis IMU	MPU6886
RTC	BM8563
PMU	AXP192
USB Chip	CP2104
DC-DC Boost	SY7088
TF card slot	16G Max.
Lithium Battery	390mAh @ 3.7V
Antenna	2.4G 3D antenna
Operating temperature	32°F to 104°F (0°C to 40°C)
Net Weight	52g
Gross Weight	70g
Product Size	54 x 54 x 16mm
Package Size	75 x 60 x 20mm
Case Material	Plastic (PC)

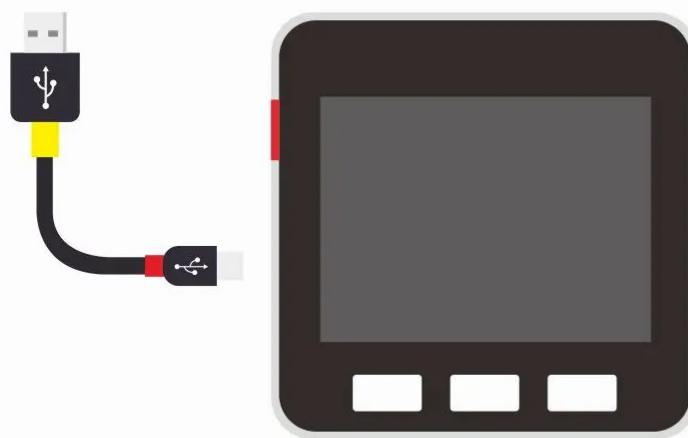
EasyLoader

EasyLoader is a concise and fast program writer, which has a built-in case program related to the product. It can be burned to the main control by simple steps to perform a series of function verification. Please install the corresponding driver according to the device type. M5Core host [Please click here to view the CP210X driver installation tutorial](#), M5StickC/V/T/ATOM series can be used without driver)

2, Select COM

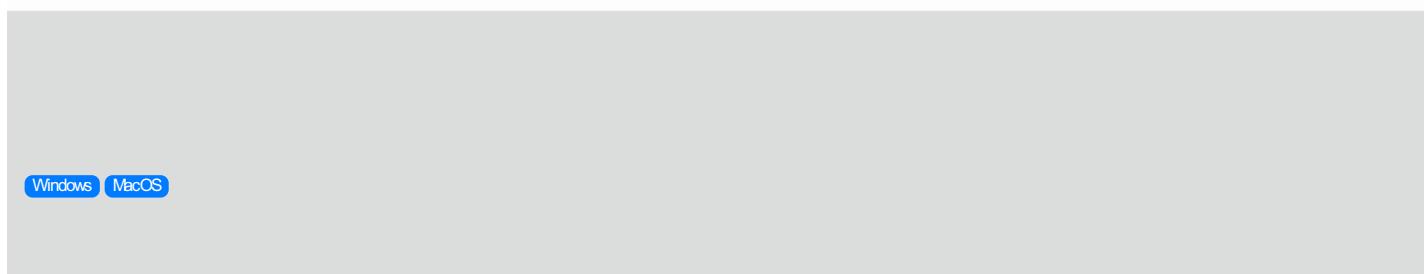


1, Downloads



Core \ M5StickC \ M5StickV...

3, Burn Firmware



PinMap

LCD & TF card

LCD : 320x240 TF card Maximum size 16GB

ESP32 Chip	GPIO38	GPIO23	GPIO18	GPIO5	GPIO15			
AXP192 Chip						AXP_IO4	AXP_DC3	AXP_LDO2
ILI9342C	MISO	MOSI	SCK	CS	DC	RST	BL	PWR
ESP32 Chip	GPIO38	GPIO23	GPIO18	GPIO4				
TF Card	MISO	MOSI	SCK	CS				

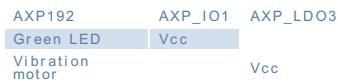
CAP.TOUCH

ESP32 chip	GPIO21	GPIO22	GPIO39		
AXP192				AXP_IO4	
FT6336U	SDA	SCL	INT	RST	

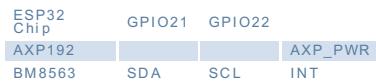
Mic & NS4168(Speaker)

ESP32 Chip	GPIO12	GPIO0	GPIO2	AXP_IO2	GPIO34
NS4168	BCLK	LRCK	DATA	SPK_EN	
Mic			CLK		DATA

AXP Power Indicator Light



RTC



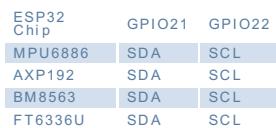
IMU(3-axis gyroscope & 3-axis accelerometer)



USB to serial chip



Internal I2C connection



Charging current measured value

charging current	Fully charged current(Power OFF)	Fully charged current(Power ON)
0.219A	0.055A	0.147A

M5Core2 M-BUS Schematic diagram

GND	ADC	G35
GND	ADC	G36
GND	RST	EN
G23	MOSI	DAC G25
G38	MISO	DAC G26
G18	SCK	3.3V
G3	RXD0	TXD0 G1
G13	RXD2	TXD2 G14
G21	intSDA	intSCL G22
G32	PA_SDA	PA_SCL G33
G27	GPIO	GPIO G19
G2	I2S_DOUT	I2S_LRCK PDM_CLK G0
NC	PDM_DAT	G34
NC		5V
NC		BAT

M5PORT EXPLAIN

PORT	PIN	Note:
PORT-A (Red)	G32/33	I2C

ESP32 ADC/DAC

ADC 1	ADC 2	DAC 1	DAC 2
8 channels	10 channels	2 channels	2 channels
G32-39	G0/2/4/12-15/25-27	G25	G26

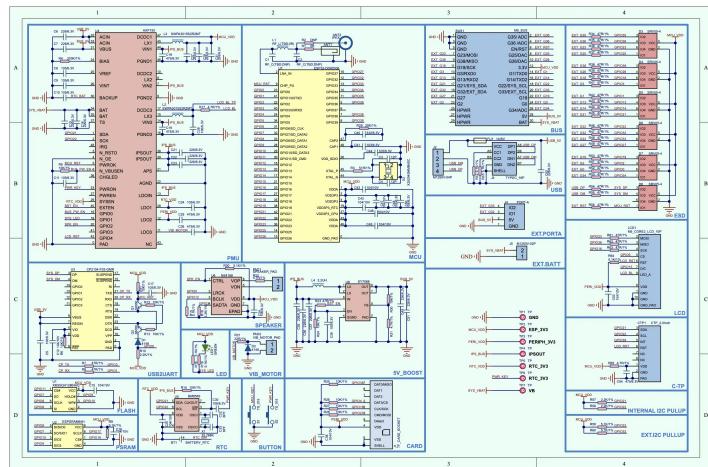
For more information about Pin assignment and Pin Remapping, Please refer to [ESP32 Datasheet](#)

Related Link

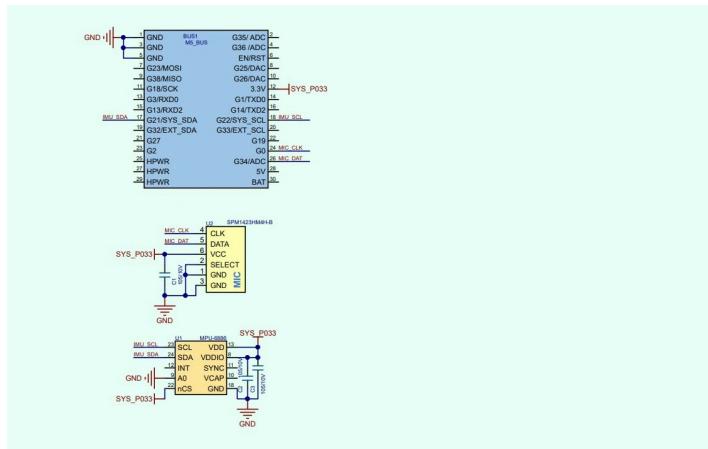
- **Datasheet**
 - [ESP32](#)
 - [FT6336U](#)
 - [NS4168](#)
 - [MPU6886](#)
 - [ILI9342C](#)
 - [SPM1423](#)
 - [BM8563](#)
 - [SY7088](#)
 - [AXP192](#)
 - [ATECC608A](#)

- **API**
 - [Arduino API](#)

Schematic



- **Core2-Schematic**



- **Core2 Expansion board-Schematic**

Example

1. Arduino

- [Click here](#) to get Arduino code

Tutorial

- [UIFlow](#)
- [Arduino](#)

