FIRE

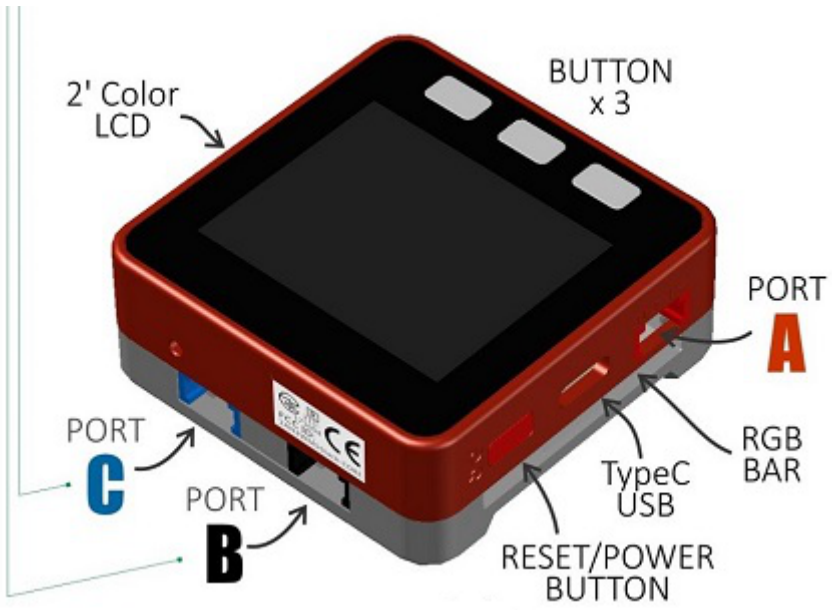
Description

M5Stack FIRE Kit is a upgrade from the Gray kits,except the 9-Axis IMU sensor. It provides more hardware resources : 16M Flash + 4M PSRAM , enhanced Base (M5GO Base and M5GO CHG Base), larger battery, etc.

With a IMU posture sensor, you can include posture detection in your work : accelerated speed, angulation, and trajectory deection. You can make relative products like sports data collector, 3D remote gesture controller and more.

FIRE is M5 Core device. Its modular, stackable, scalable, and portable device is powered with an ESP-32 core, which makes it open source, low cost, full-function, and easy for developers to handle new product development on all stages include circuit design, PCB design, software, mold design and production.

BUS socket , LED bar and two more GROVE Port. The bottom part is a charge table,can be connect to the M5GO base via POGO pins.

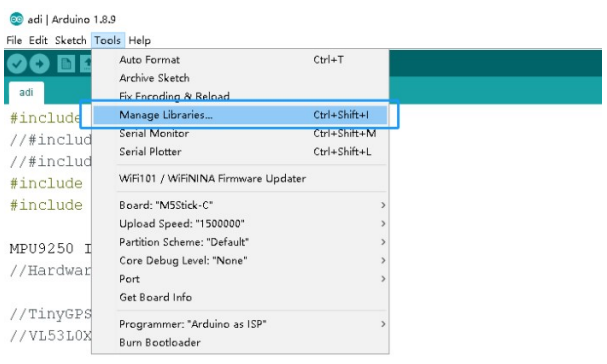


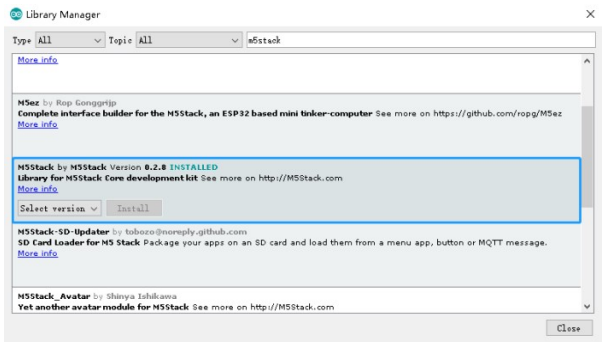
Ever wanted to explore the fastest way of IoT prototyping, M5Stack development board is the perfect solution. Not like others, M5Stack development board is highly productlized, covered with industrial grade case, and ***ESP32-based*** *development board.* ***ESP32*** *is a hybid Wi-Fi & Bluetooth chip contains a dual-core and 4MB of SPI Flash . Together with 30+ M5Stack stackable modules, 40+ extendable units, and different levels of program language, you can create and verify your IoT product in a very short time. Supported development platforms and program languages: Arduino, Blockly language with UIFlow, Micropython. Regardless of what level program skill you have, M5Stack would guide you in every step of the way to realize your idea as well as to the final productilization.*

If you ever played with ESP8266, you would realize that ESP32 is a perfect upgrade from ESP8266. In comparison, ESP32 is full-feathered with more GPIO, plenty of analog inputs and two analog outputs, multiple extra perpherials(like a spare UART). Official development platform ESP-IDF have planted with FreeRTOS. With dual-core and real time OS you can get more organized code and much high speed processor.

Notice1:

The newly-produced M5Core replaces the screen with better display performance and higher viewing angle, so it has some compatibility problems with the old Arduino library. When using the old library for screen driving, it will produce reverse color display. You can open the Arduino. The library management option will upgrade your M5Stack library to the latest version (after 0.2.8) to solve this problem.





Notice2:

The GPIO 16 / 17 in Fire is connected to the PSRAM by default, so when you connect or stack other function modules, you need to avoid conflicts with these two pins to prevent the device from working properly and causing instability.

- 5V DC power supply
- USB Type-C
- ESP32-based
- Case Material: PC + ABS
- 16 MB Flash
- 4 MB PSRAM
- BMM150 + MPU6886
- Speaker, 3 Buttons, LCD(320*240), 1 Reset
- 2.4G Antenna: Proant 440
- TF card slot (16G Maximum size)
- Battery Socket & 500 mAh Lipo Battery
- Extendable Pins & Holes
- Grove Port
- M-Bus Socket & Pins
- Development Platform UIFlow, MicroPython, Arduino
- Product Size：54.2mm x 54.2mm x 30.5mm
- Product weight：62.3g

ESP32 Features

- 240 MHz dual core Tensilica LX6 microcontroller with 600 DMIPS
- Integrated 520 KB SRAM
- Integrated 802.11b/g/n HT40 Wi-Fi transceiver, baseband, stack and LWIP
- Integrated dual mode Bluetooth (classic and BLE)
- Hall sensor
- 10x capactive touch interface
- 32 kHz crystal oscillator
- PWM/timer input/output available on every GPIO pin
- SDIO master/salve 50MHz
- SD-card interface support

M5GO Bottom

Click to view details parameters

Peripherals Pin Map

LCD & TF card

LCD ： 320x240 TF card Maximum size 16GB

ESP32 Chip	GPIO23	GPIO19	GPIO18	GPIO14	GPIO27	GPIO33	GPIO32	GPIO4
ILI9342C	MOSI/MISO	/	CLK	CS	DC	RST	BL	
TF Card	MOSI	MISO	CLK					CS

Button & Speaker

ESP32 Chip	GPIO39	GPIO38	GPIO37	GPIO25
Button Pin	BUTTON A	BUTTON B	BUTTON C	

GROVE Port A & IP5306

We've use the customized I2C version of IP5306, on power management.

Its I2C address is 0x75.

ESP32 Chip	GPIO22	GPIO21	5V	GND
GROVE A	SCL	SDA	5V	GND
IP5306	SCL	SDA	5V	GND

IP5306 charging/discharging，Voltage parameter

charging	discharging
0.00 ~ 3.40V -> 0%	4.20 ~ 4.07V -> 100%
3.40 ~ 3.61V -> 25%	4.07 ~ 3.81V -> 75%
3.61 ~ 3.88V -> 50%	3.81 ~ 3.55V -> 50%
3.88 ~ 4.12V -> 75%	3.55 ~ 3.33V -> 25%
4.12 ~ / -> 100%	3.33 ~ 0.00V -> 0%

6-Axis MotionTracking Sensor MPU6886

MPU6886 I2C address 0x68

ESP32 Chip	GPIO22	GPIO21	5V	GND
MPU6886	SCL	SDA	5V	GND

3-Axis Geomagnetic Sensor BMM150

BMM150 I2C address 0x10

ESP32 Chip	GPIO22	GPIO21	5V	GND
BMM150	SCL	SDA	5V	GND

M5GO Base Port

GROVE Port B

ESP32 Chip	GPIO36	GPIO26	5V	GND
GROVE B	GPIO36	GPIO26	5V	GND

GROVE Port C

ESP32 Chip	GPIO16	GPIO17	5V	GND
GROVE C	RXD	TXD	5V	GND

LED Bar & Micphone & Speaker

PARAMETER

Resources	Parameter
ESP32	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash Memory	16MB
Power Input	5V @ 500mA
Port	TypeC x 1, GROVE(I2C+I/0+UART) x 1
IPS Screen	2 inch, 320x240 Colorful TFT LCD, ILI9342C
Speaker	1W-0928
MEMS	BMM150 + MPU6886
Battery	500 mAh @ 3.7V
Operating Temperature	32°F to 104°F (0°C to 40°C)
Size	54 x 54 x 21 mm
Case Material	Plastic (PC)

Notice1： M5PORT EXPLAIN You can identify the port name and function by its color, red is PortA(21/22) mainly used for I2C, black is PortB(26/36) which can be used for DA/AD, Singel-bus communication, Blue is PortC(16/17) can be used for Uart. Correspondingly, most of the M5 Units have the Port with matched color for specify which port it should go in on the M5Core. Those port identification is a convenience for UIFlow (Blockly) Users. For advanced using ,you can do you own customization, since most of the PIN on ESP32 are remapping-able. Unfortunatly, PortA(red) can not be used as analog read in. It refers to GPIO 21 & 22 from ESP32, which doesn't have AD channel alternatives:

- ADC1(8 channels atteched to GPIOs 32-39)
- ADC2(10 channels atteched to GPIOs 0，2，4，12-15，25-27)

To use AD read function : 1, Use Dupont cable refers to the pins on the side which can be used as an AD channel. 2, Get a M5GO bottom, which comes with a PortB. 3, Get a PbHUB and connect it with PortA, then you can have 6 PortBs. For more information about Pin assignment and Pin Remapping, Please refer to EPS32 Datasheet

Include

- 1x FIRE
- 1x M5GO CHG Base
- 2x LEGO block
- 5x LEGO connector
- 1x M3 hex wrench
- 1x Type-C USB(100cm)
- 1x User Manual

- **Schematic** - BASIC

Related Link

- **Datasheet**
  - ESP32
  - MPU6886
  - BMM150
  - SH200Q
- **Register Manual**
  - IP5306

Version Change

Release Date	Product Change
2018.6	Initial public release
2019.7	MPU9250 changed to SH200Q+BMM150, TN screen changed to IPS screen
2019.8	SH200Q changed to MPU6886
2019.11	Battery capacity changed from 600mAh to 500mAh