FIRE SKU:K007

Description

M5Stack FIRE Kit, as one of the M5Stack developing kit series, is an upgrade from the Gray kits. Providing 9-Axis IMU sensor(6-Axis posture acceleration measurement + 3-Axis magnetic measurement), it equips with more hardware resources : 16M Flash + 4M PSRAM , enhanced Base (M5GO Base and M5GO CHG Base), larger battery, etc. For those developers who ask for hardware performance, Fire will be a good choice.

With a IMU posture sensor, there are a lot of situations which you can apply this kit to: detecting acceleration, angulation, and trajectory. You can make relative products like sports data collector, 3D remote gesture controller and more base on the above functions.

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.

M5Stack Fire comes with three separable parts. The top part ,just like Basic and Gray Kit, has all kinds of processors, chips ,sockets, 2.4G antenna, ESP32, power management IC , a LCD screen and some other interface components. The middle part is called M5GO base which provides a lithium battery, M-BUS socket , LED bar and three more GROVE Ports. The bottom part is a charge table, which can be connected to the M5GO base via POGO pins.

If you want to explore the fastest way of IoT prototyping, M5Stack development board is the perfect solution. Not like others, M5Stack development board is highly efficient, covered with industrial grade case and ESP32-based development board. It integrates with Wi-Fi & Bluetooth modules and contains a dual-core and 16MB 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.

Supportive development platforms and programming languages: Arduino, Blockly language with UIFlow, Micropython. Regardless of what level programming skill you have, M5Stack would guide you in every step of the way to realize your idea as well as to the final productlization.

If you ever played with ESP8266, you would realize that ESP32 is a perfect upgrade out of ESP8266. In comparison, ESP32 has more GPIOs, more analog inputs and two analog outputs, multiple extra peripherals(like a spare UART). Official developing platform ESP-IDF has transplanted with FreeRTOS. With dual-core and real time OS you can get more organized code and much high speed processor.

Notice:

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 improperly and causing instability.

Power on/off:

Power on: click the red power button on the left

Power off: Quickly double-click the red power button on the left

Product Features

ESP32 - based
Speaker, 3 Buttons, LCD(320*240)
TF card slot (16G Maximum size)
Battery Socket & Lipo Battery
Extendable Pins & Holes
M-Bus Socket & Pins
Development Platform UIFlow, MicroPython , Arduino

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

Applications

Internet of things terminal controller
Stem education product
DIY creation

Specification

Resources	Parameter
ESP32	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash Memory	16MB
PSRAM	4MB
Power Input	5V @ 500mA
Port	TypeC x 1, GROVE(I2C+I/0+UART) x 1
IPS Screen	2 inch, 320x240 Colorful TFT LCD, ILI9342C, max brightness 853nit
Speaker	1W-0928
Button	Custom button x 3
MEMS	BMM150 + MPU6886
Battery	500 mAh @ 3.7V
Antenna	2.4G 3D Antenna
Operating Temperature	32°F to 104°F (0°C to 40°C)
net weight	62.3g
Gross weight	162g
Product Size	54mm x 54mm x 30.5mm
Package Size	105mm x 65mm x 40mm
Case Material	Plastic (PC)

M5GO Bottom

Click to view details parameters

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)

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	/
Speaker				Speaker Pin

GROVE Port A & IP5306

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

Its I2C address is 0x75. Click here to check its datasheet

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

ESP32 Chip	GPIO15	GPIO34	GPIO25
Hardwares	SIG Pin	MIC Pin	Speaker Pin

M5PORT EXPLAIN

PORT	PIN	Note:
PORT-A(Red)	G21/22	I2C
PORT-B(Black)	G26/36	DAC/ADC
PORT-C(Blue)	G16/17	UART

ESP32 ADC/DAC

ADC1	ADC2	DAC1	DAC2
8 channels	10 channels	2 channels	2 channels
G32-39	G0/2/4/12-15/25-27	G25	G26

When using the RGB LED of gpio15, it is recommended to initialize,pinMode(15, OUTPUT_OPEN_DRAIN); For more information about Pin assignment and Pin Remapping, Please refer to ESP32 Datasheet

Schematic

Schematic

Related Link

Datasheet

ESP32
MPU6886
BMM150

SH200Q
IP5306

Version Change

Release Date	Product Change	Note:
2018.6	Initial public release	/
2019.7	MPU9250 changed to SH200Q+BMM150, TN screen changed to IPS screen	before use . pls upgrade your M5Stack lib to the latest version (after 0.2.8) to solve screen reverse color problem.
2019.8	SH200Q changed to MPU6886	/
2019.11	Battery capacity changed from 600mAh to 500mAh	/

Example

Arduino IDE

Clickhere to get Arduino code

Video

m5stack instroduce