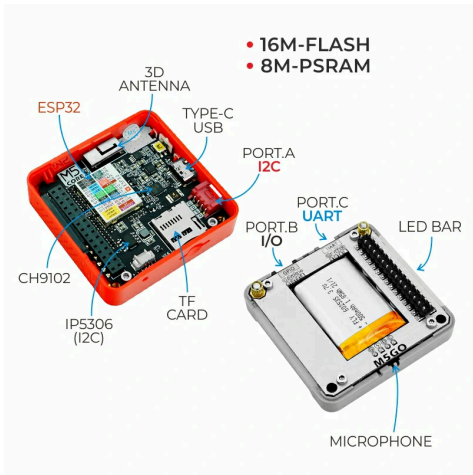


Fire v2.7

SKU:K007-V27





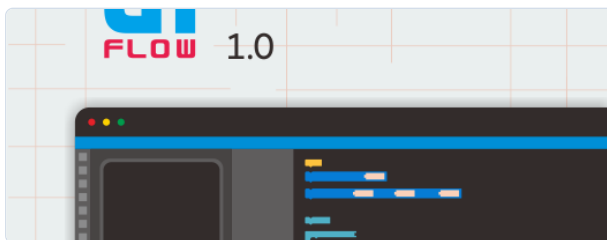
Description

Fire v2.7 is a cost-effective **Wi-Fi** IoT controller. It uses the Espressif **ESP32** main control chip, equipped with 2 low-power **Xtensa® 32-bit LX6** microprocessors, with a main frequency of up to 240 MHz. It has an onboard memory combination of **8M PSRAM + 16M Flash**, integrating a **2.0-inch full-color high-definition IPS display panel**, **IMU**, **LED**, **microphone**, **speaker**, **TFCard slot**, and other peripherals. The fully covered casing ensures the **stability** of circuit operation even in complex industrial application scenarios. The internal bus provides a variety of commonly used interface resources (ADC/DAC/I2C/UART/SPI, etc.), making it highly expandable. This feature-rich, high-performance IoT controller is very suitable for various product prototype development, industrial control, and smart building application scenarios.

Features

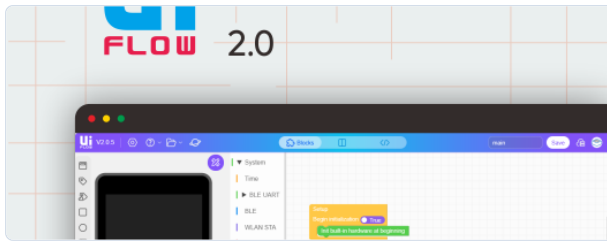
- **Highly Productized**:
 - Exquisite appearance design, directly corresponding to product landing for prototype development
 - Product-grade full-cover casing for more stable circuit operation
- **Low-Code Development**:
 - Supports UIFlow graphical programming platform, scripting, no compilation, cloud push
 - Fully compatible with mainstream development platforms like Arduino, ESP-IDF
 - Supports FreeRTOS, efficiently organizing task logic and optimizing program execution efficiency with dual-core and multitasking mechanisms
- **High Integration**:
 - 2.0-inch IPS display panel, 6-axis IMU, programmable RGB lights x10, microphone, speaker, custom buttons x3
 - Built-in lithium battery power supply, integrated power management chip, supports Type-C interface and POGO PIN interface power supply
 - Professionally modulated RF circuit provides stable and reliable wireless communication quality
- **Strong Expandability**:
 - GROVE expansion ports x3 (I2C, GPIO, UART)
 - Easily integrate into M5Stack's software and hardware ecosystem, stackable module design, plug-and-play sensor expansion

Tutorial



UIFlow

This tutorial will teach you how to control the Fire device through the UIFlow graphical programming platform



UiFlow2

This tutorial will teach you how to control the Fire device through the UiFlow2 graphical programming platform



Arduino IDE

This tutorial will teach you how to program and control the Fire device using the Arduino IDE

Features

- Developed based on ESP32
- 8M PSRAM + 16M FLASH memory combination
- Integrated full-color high-definition IPS display panel and various hardware peripherals
- Rich resource interfaces, compatible with M5Stack stackable module system and sensor system, highly expandable
- Uses [M5GO BOTTOM base](#) compatible with 8mm LEGO bricks, making structural building fun.
- Microsoft Azure certified device
- Development Platform
 - UiFlow1
 - UiFlow2
 - Arduino IDE
 - ESP-IDF
 - PlatformIO

Includes

- 1 x M5Stack FIRE
- 1 x M5GO charging base
- 2 x LEGO bricks
- 5 x LEGO connectors
- 1 x M3 hex wrench
- 1 x USB Type-C cable (50cm)
- 1 x User manual

Applications

- IoT controller
- Maker DIY projects
- Smart home control

Specifications

Specification	Parameter
SoC	ESP32-D0WDQ6 @ Xtensa® 32-bit LX6 dual-core processor, clock frequency 240MHz
DMIPS	600
SRAM	520KB
Flash	16MB
PSRAM	8MB Quad
Wi-Fi	2.4 GHz Wi-Fi
Power Input	5V@500mA
Interface	USB Type-C x1, POGO PIN x1, I2C x1, GPIO x1, UART x1
Buttons	Physical buttons x 3
LCD Screen	2.0"@320 x 240 ILI9342C IPS panel, max brightness 853nit
Speaker	1W-0928
Microphone	Analog BSE3729 Microphone
IMU	6-axis MPU6886
USB Chip	CH9102F
LED	SK6812 RGB LED x 10
Antenna	2.4G 3D antenna
Battery	500 mAh @ 3.7V
Casing Material	Plastic (PC)
Product Size	54.0 x 54.0 x 28.6mm
Product Weight	88.8g
Package Size	106.7 x 69.1 x 40.4mm
Gross Weight	148.6g

Learn

Power On/Off

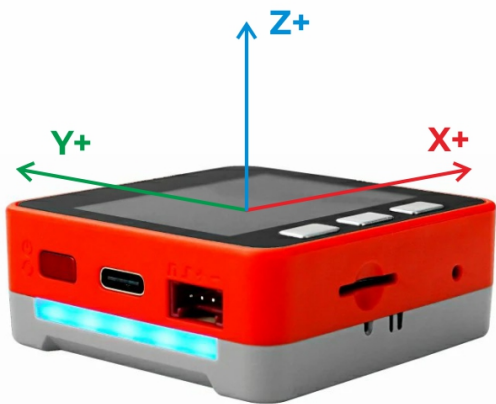
Power On/Off Operation

- Power On:** Single click the red power button on the left
- Power Off:** Quickly double-click the red power button on the left
- USB Power Supply:** By default, when USB is powered, it cannot be turned off

Note:
GPIO 16 / 17 in FIRE is connected to PSRAM by default, so when connecting or stacking other functional modules, be careful to avoid conflicts

with these two pins to prevent the device from malfunctioning and causing instability.

IMU Triaxial Direction Schematic Diagram



IMU ORIENTATION OF AXES

Schematics

◦ [M5Core Schematics PDF](#)

1	2	3	4
REV	DESCRIPTION	DATE	BY
A13	OFFICIAL RELEASE VERSION	10/11/2017	Han

M5
STACK

PAGE NO.	SCHEMATIC PAGE
1	COVER PAGE
2	POWER MANAGEMENT
3	ESP32 SUBSYSTEM
4	USB-UART & ACCESSORY
5	M.BUS DEFINATION
6	AUDIO AMPLIFER

M5
STACK
M5 STACK CORE

Title

M5 STACK CORE COVER

Size

A4

Number

013-0000-001

Revision

A

Date:

2017/12/6

File:

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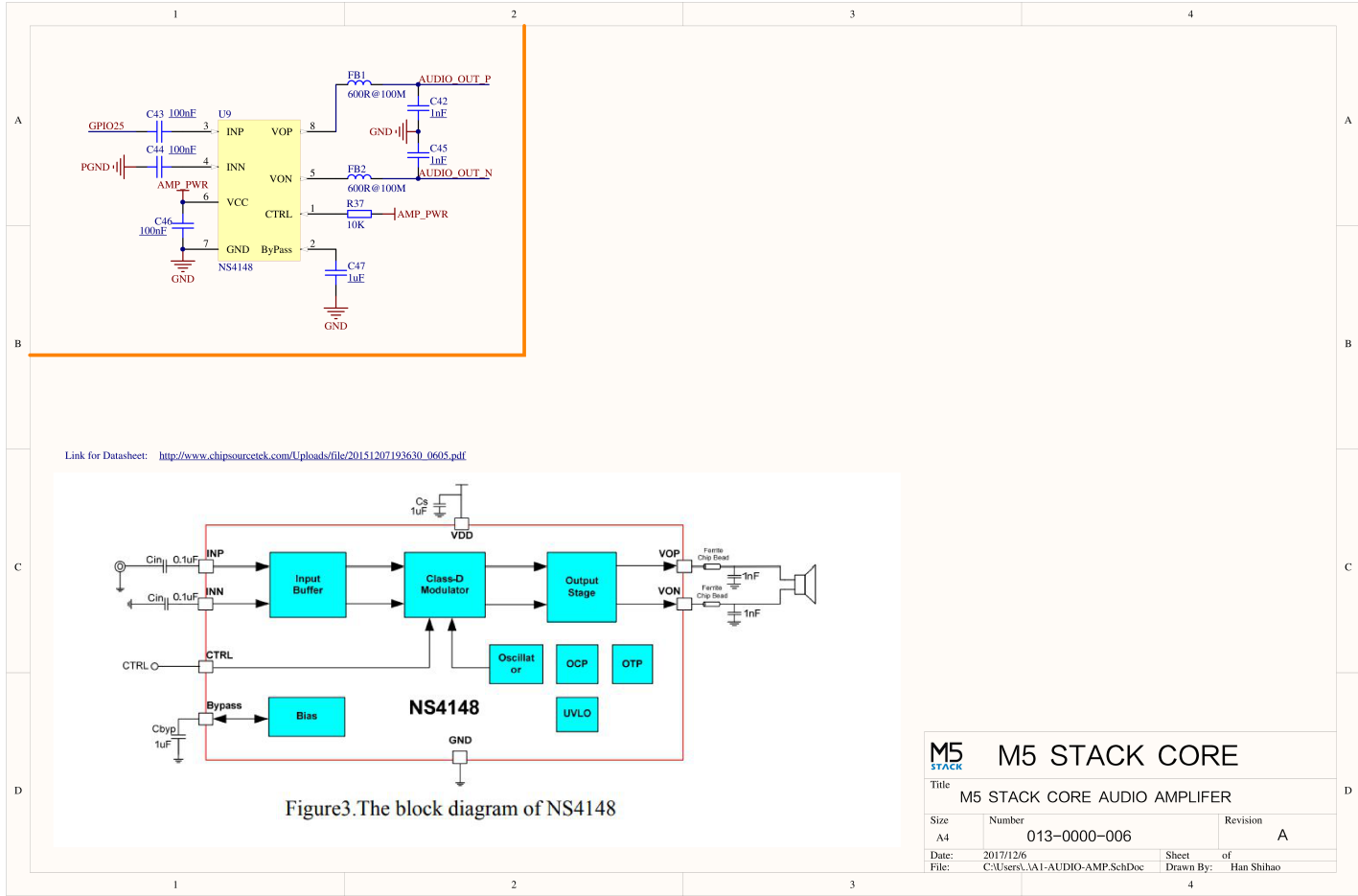
Sheet

of

4

Drawn By:

Han Shihao



PinMap

LCD Screen & TF Card

LCD Pixels: 320x240 TF Card supports up to 16GB

ESP32-D0WDQ6	G23	G19	G18	G14	G27	G33	G32	G4
ILI9342C	MOSI/MISO	/	CLK	CS	DC	RST	BL	
TF Card	MOSI	MISO	CLK	/	/	/	/	CS

Buttons & Speaker

ESP32-D0WDQ6	G39	G38	G37	G25
Button Pins	BUTTON A	BUTTON B	BUTTON C	
Speaker	/	/	/	Speaker Pin

GROVE Interface A & IP5306

The power management chip (IP5306) is a custom I2C version, and its I2C address is 0x75. Click [here](#) to view the IP5306 register manual.

ESP32-D0WDQ6	G22	G21	5V	GND
GROVE A	SCL	SDA	5V	GND
IP5306 (0x75)	SCL	SDA	5V	GND

IP5306 Charge/Discharge, Voltage Parameters

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%

MPU6886

MPU6886 I2C address 0x68

ESP32-D0WDQ6	G22	G21	5V	GND
MPU6886 (0x68)	SCL	SDA	5V	GND

M5GO Base PinMap

LED Strip & Microphone & Speaker

ESP32-D0WDQ6	G15	G34	G25
Hardware	LED Pin	Mic Pin	Speaker Pin

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

HY2.0-4P

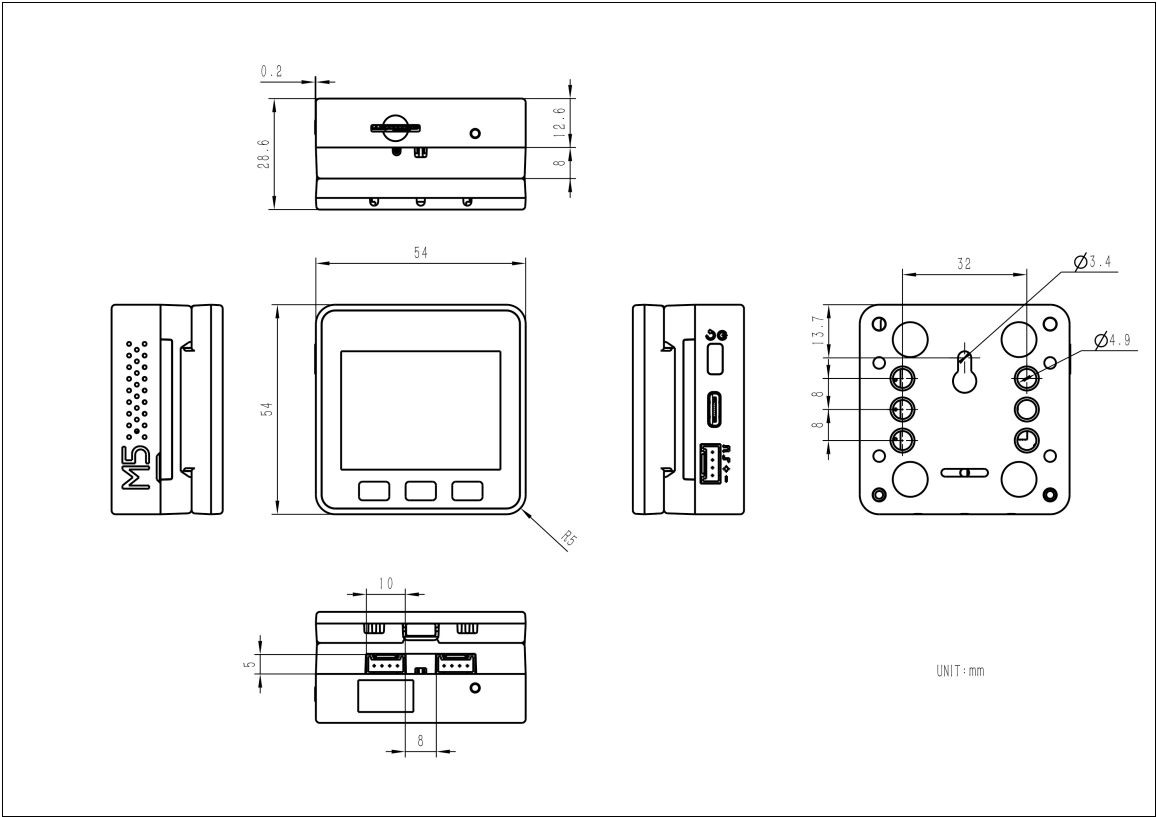
HY2.0-4P	Black	Red	Yellow	White
PORT.A	GND	5V	G21	G22
PORT.B	GND	5V	G26	G36
PORT.C	GND	5V	G17	G16

M5-Bus

FUNC	PIN	LEFT	RIGHT	PIN	FUNC
	GND	1	2	G35	ADC
	GND	3	4	G36	ADC
	GND	5	6	RST	EN
MOSI	G23	7	8	G25	DAC/SPK
MISO	G19	9	10	G26	DAC
SCK	G18	11	12	3V3	
RXD0	G3	13	14	G1	TXD0
RXD2	G16	15	16	G17	TXD2
Int SDA	G21	17	18	G22	Int SCL
GPIO	G2	19	20	G5	GPIO
I2S_SK	G12	21	22	G13	I2S_WS
I2S_OUT	G15	23	24	G0	I2S_MK
	HPWR	25	26	G34	I2S_IN
	HPWR	27	28	5V	
	HPWR	29	30	BAT	

When using the RGB LED on GPIO15, it is recommended to initialize the pin with `pinMode(15, OUTPUT_OPEN_DRAIN)`; For more information on pin allocation and pin remapping, please refer to the [ESP32 datasheet](#)

Model Size



Structure

- [Fire v2.7 Structure Files](#)

Datasheets

- [ESP32](#)
- [ILI9342C](#)
- [MPU6886](#)
- [IP5306](#)

Softwares

Arduino

- [Fire v2.7 Arduino Quick Start](#)
- [Fire v2.7 Arduino API](#)
- [Fire v2.7 GitHub](#)

UiFlow1

- [Fire v2.7 UiFlow1 Quick Start](#)

UiFlow2

- [Fire v2.7 UiFlow2 Quick Start](#)

PlatformIO

```
[env:m5stack-fire]
platform = espressif32@6.12.0
board = m5stack-fire
framework = arduino
upload_speed = 921600
monitor_speed = 115200
board_build.partitions = default_16MB.csv
build_type = debug
build_flags =
    -DBOARD_HAS_PSRAM
    -DCORE_DEBUG_LEVEL=5
lib_deps =
    M5Unified=https://github.com/m5stack/M5Unified
```

USB Driver

Click the link below to download the driver for your operating system. There are currently two driver chip versions, CP210X (for **CP2104** version) / CP34X (for **CH9102** version) driver package. After extracting the package, select the installation package corresponding to your operating system bit for installation. (If you are unsure of the USB chip used by your device, you can install both drivers. **CH9102_VCP_SER_MacOS v1.7** may report an error during installation, but it has actually been installed, just ignore it.) If you encounter issues downloading programs (timeout or Failed to write to target RAM), try reinstalling the device driver.

Driver Name	Applicable Driver Chip	Download Link
CP210x_VCP_Windows	CP2104	Download
CP210x_VCP_MacOS	CP2104	Download
CP210x_VCP_Linux	CP2104	Download
CH9102_VCP_SER_Windows	CH9102	Download
CH9102_VCP_SER_MacOS v1.7	CH9102	Download

Easyloader

Easyloader	Download Link	Note
Fire v2.7 Factory Firmware Easyloader	download	/

Video

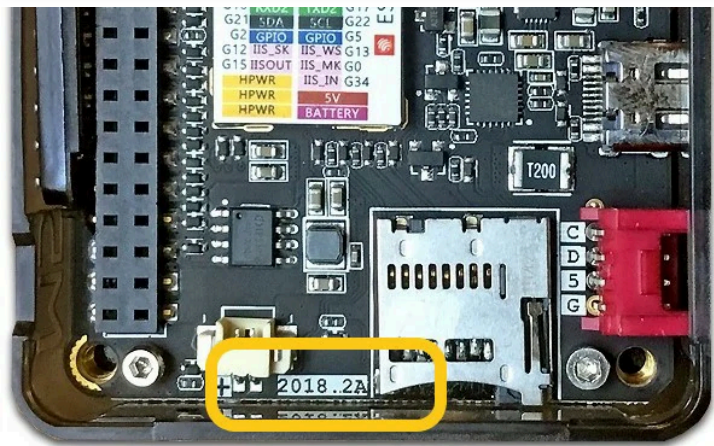
Product Comparison

To compare information on the controller series products, you can visit the [Product Selection Table](#), check the target products, and get the comparison results. The selection table covers key information such as core parameters and functional features, and supports comparison of multiple products simultaneously.

Version Change

Note

Devices with **2018.2A** PCB version do not support C2C (Type-C to Type-C) connection or PD power supply.



New vs Old Version Comparison

