BASIC

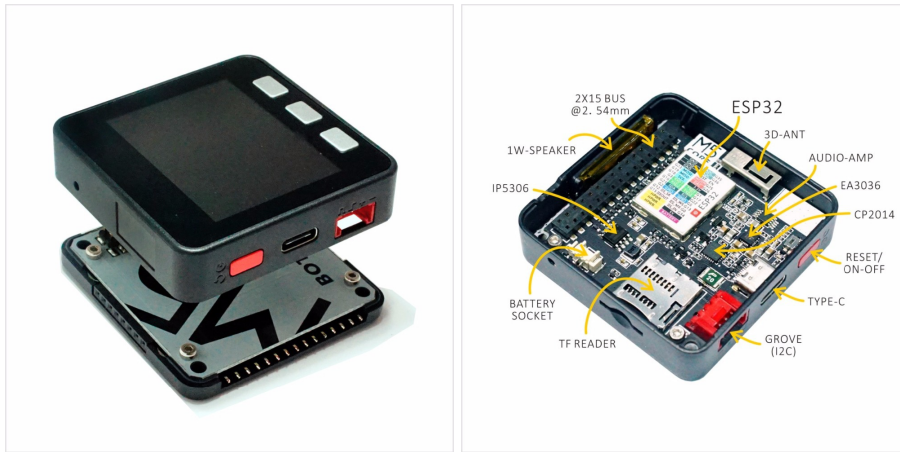## Description

MStack BASIC Kit, like its namesake, is a starter kit among the M5Stack development kit series. 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

includes circuit design, PCB design, software, mold design and production. This Basic kit provides a friendly price and full-featured resources which makes it a good starter kit for you to explore IoT. Ever wanted to explore the fastest way of IoT prototyping, M5Stack development board is the perfect lution. 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.

M5Stack Basic is consist with two separable parts. the upside part has all kinds of processor, chips and some other slot components. The bottom part has a lithium battery, M-BUS socket and extendable pins on both sides.
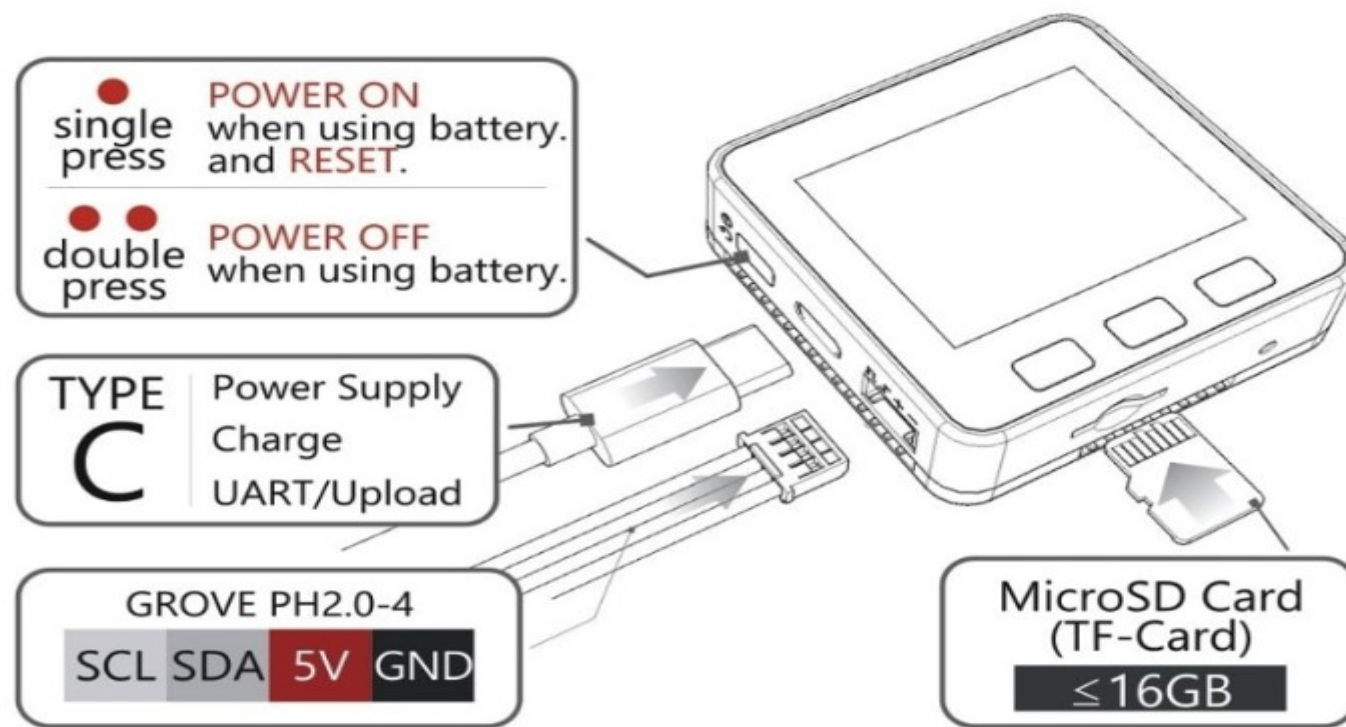
Notice:

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.
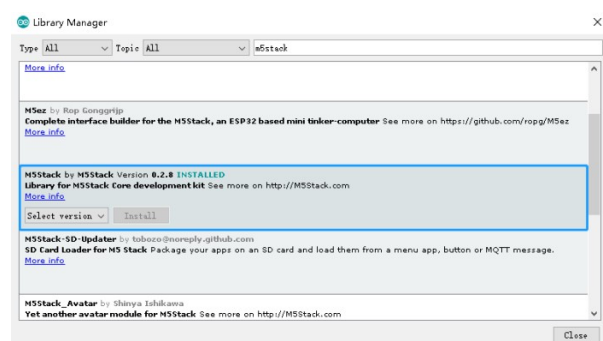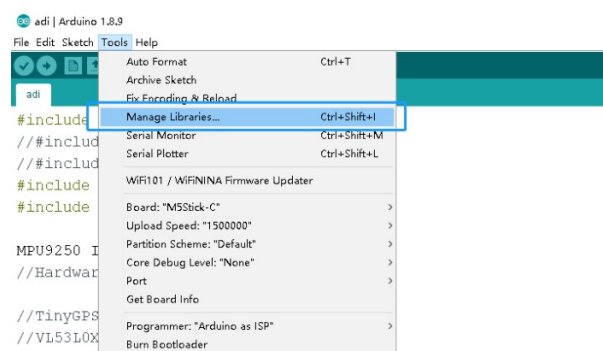
Product Features

- 5V DC power supply
- USB Type-C
- ESP32-based
- Case Material: PC + ABS
- 4 MByte flash
- Speaker, 3 Buttons,Color LCD(320*240), 1 Reset
- 2.4G Antenna: Proant 440
- TF card slot (16G Maximum size)
- Battery Socket & 150 mAh Lipo Battery
- Extendable Pins & Holes
- Grove Port
- M-Bus Socket & Pins
- Program Platform: UIFlow, MicroPython, Arduino
- Product Size：54.2mm x 54.2mm x 17.9mm
- Product weight：47.2g

- 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

EasyLoader

1.EasyLoader is a simple and fast program burner. Every product page in EasyLoader provides a product-related case program. It can be burned to the master through simple steps, and a series of function verification can be performed.(**Currently EasyLoader is only available for Windows OS**)

2.After downloading the software, double-click to run the application, connect the M5 device to the computer via the data cable, select the port parameters, and click **"Burn"** to start burning.

3.The CP210X (USB driver) needs to be installed before the EasyLoader is burned. Click here to view the driver installation tutorial

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%

Parameter

| Resources	Parameter
ESP32	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash Memory	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
Speaker	1W-0928
Battery	150mAh @ 3.7V
Operating Temperature	32°F to 104°F (0°C to 40°C)
Size	54 x 54 x 12.5 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

- ADC1(8 channels atteched to GPIOs 32-39)
- ADC2(10 channels atteched to GPIOs 0，2，4，12-15，25-27)
- ESP32 has two 8-bit DAC (digital to analog converter) channels, connected to GPIO25 (Channel 1) and GPIO26 (Channel 2)

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

Kit includes

- 1x BASIC
- 10x Dupont
- 1x Type-C USB(20cm)
- 1x User Manual
- 1xSticker
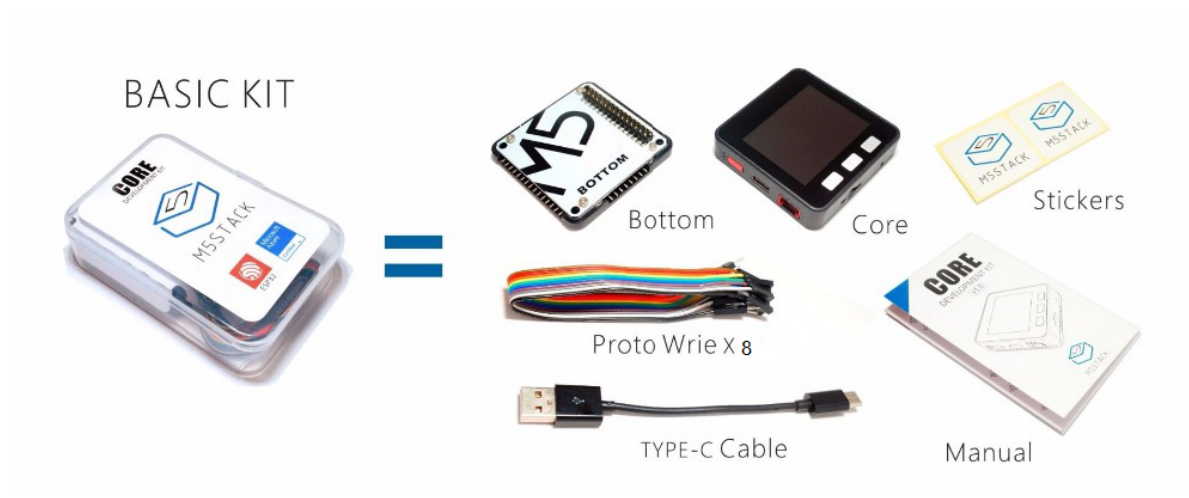
Version Change

Release Date	Product Change
2017.7	Initial public release
2019.7	TN screen changed to IPS screen

M5Core Cases