# M5GO IOT Starter Kit

Description

This **M5GO IOT Kit** is a multi-Unit feast with 6 M5units inside (ENV, IR, RGB, PIR, ANGLE, HUB). Just like other M5Stack development kit, M5GO is powered by ESP32.

Every M5stack development kit can be programmed through Arduino IDE, WebIDE UIFlow, Micropython, and Blockly, simplifying the development process for those requiring a joint hardware and software solution. Not only does M5stack have far-reaching IoT applications in industry, agriculture, and home, but it also empowers students to learn to code in STEM classrooms.

This M5GO kit is specifically designed for STEM education. The pack includes 1 M5GO conroller + 6 M5units + plenty of accessories. Having all those goods, together with the Blockly program platform, allows the school students to explore the engineering world , making their own IoT product and implement brilliant ideas into real life.

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.
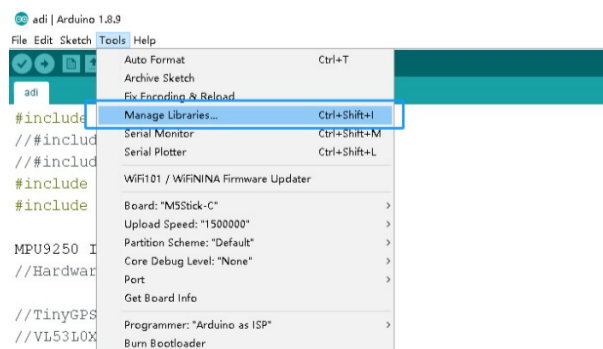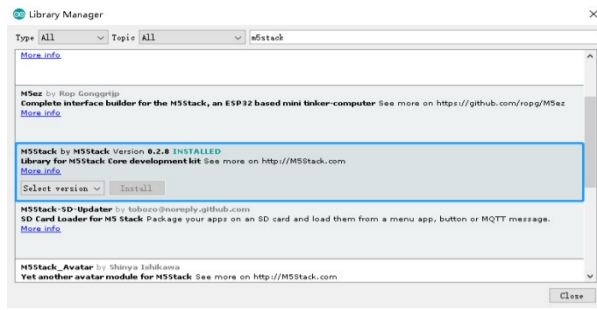
Product Features

- 5V DC power supply
- USB Type-C
- ESP32-based
- Case Material: PC + ABS
- 16 MByte flash
- BMM150 + MPU6886
- peaker, 3 Buttons, LCD(320*240), 1 Reset
- 2.4G Antenna: Proant 440
- TF card slot (16G Maximum size)
- Extendable Pins & Holes
- Grove Port
- M-Bus Socket & Pins
- Development Platform UIFlow, MicroPython, Arduino
- Product Size：54.2mm x 54.2mm x 17.9mm
- Product weight：224.9g

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

PinMap

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 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.

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%
.40 ~ 3.61V -> 25%	4.07 ~ 3.81V -> 75%
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

| GROVE C | RXD | TXD | 5V | GND |

LED Bar & Micphone & Speaker

| ESP32 Chip | GPIO15 | GPIO34 | GPIO25 |

| LED Bar | SIG Pin |

| MIC | MIC Pin |

| Speaker | Speaker Pin |

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 attached to GPIOs 32-39)
- ADC2(10 channels attached 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

- 1x M5GO
- 6x Units(ENV, IR, RGB, PIR, ANGLE, HUB)
- 4x LEGO block
- 12x LEGO Connector
- 4x GROVE cable
- 1x Type-C USB cable(20cm)
- 1x User Manual

Schematic
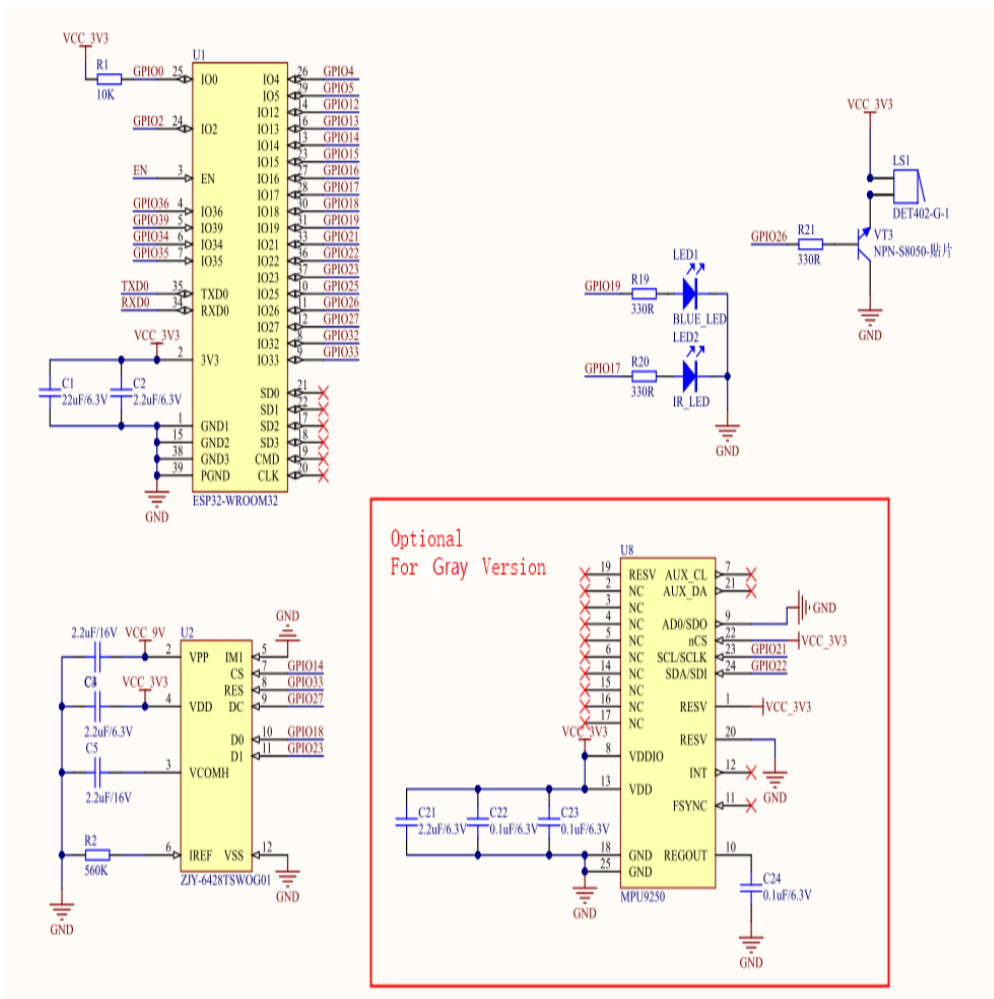
To complete schematic, click here. (https://github.com/m5stack/M5-Schematic/blob/master/Core/Basic/M5-Core-Schematic(20171206).pdf)

Related Link

- **Datasheet**

  - ESP32
  - MPU6886
  - BMM150

- **Register Manual**

  - IP5306

Schematic

- **Schematic** - BASIC

M5Stack Docs

Release Date	Product Change
2018.4	Initial public release
2019.6	MPU9250 changed to MPU6886+BMM150
2019.7	TN screen changed to IPS screen
2019.11	Battery capacity changed from 600mAh to 500mAh