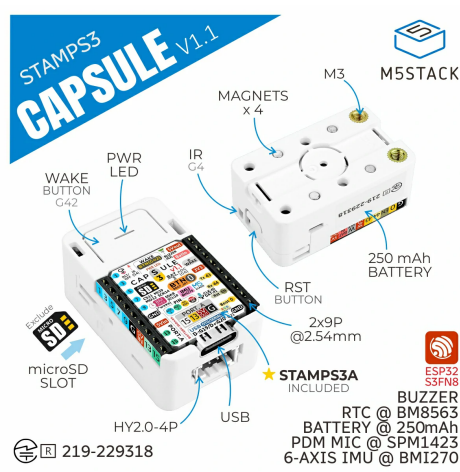
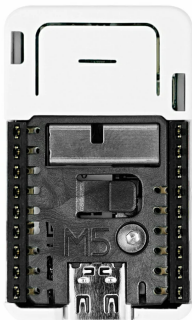
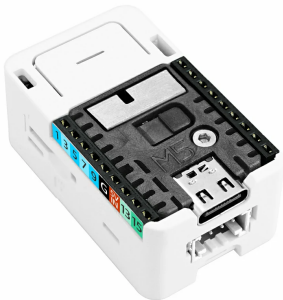


Capsule v1.1

SKU:K129-V11



V1.1





Description

Capsule v1.1 is an iterative upgrade of Capsule, with the core upgrade being the replacement of the main controller from Stamp-S3 to Stamp-S3A, further optimizing hardware performance and user experience. **Capsule v1.1** integrates sensing acquisition, power supply, data storage, and main controller drive into one unified function. It features a high-performance BMI270 IMU inertial measurement unit for precise motion trajectory tracking and attitude control. It incorporates an SPM1423 microphone supporting audio recording, voice recognition, and voice wake-up functions, and includes an infrared sensor for remote control operation. The power configuration includes a built-in 250mAh battery and supports external expansion batteries to ensure stable long-term operation. It has an onboard microSD card slot for flexible storage expansion, meeting data logging and media file storage needs. Equipped with an RTC8563 real-time clock module, it provides accurate time and date information and supports timed wake-up, effectively achieving low-power operation. The device integrates a buzzer for sound prompts and status feedback, and has a reserved Proto pin header expansion interface for freely connecting various custom sensors and expansion boards, suitable for diverse project development needs. The body is built-in with four strong magnets and two M3 screw fixing holes, supporting magnetic placement and screw installation, greatly broadening usage scenarios.

This product can be applied to IoT setups, embedded development, environmental sensing monitoring, smart terminal data collection, and various project scenarios.

Tutorial



Arduino IDE

This tutorial will introduce you to controlling the Capsule device using Arduino IDE programming.



UiFlow2

This tutorial will introduce you to controlling the Capsule device using the UiFlow2 graphical programming platform.

Features

- Integrated buzzer for status feedback
- Integrated BMI270 attitude tracking
- Supports microphone and infrared remote control
- Built-in 250mAh battery & external battery support
- Built-in RTC8563 for timed wake-up
- Development Platform
 - UiFlow2
 - Arduino IDE
 - ESP-IDF
 - PlatformIO

Includes

- 1 x Capsule v1.1

Applications

- Attitude control and motion tracking
- Audio recording and voice wake-up
- Low-power timed data collection
- Infrared remote control smart terminals
- Embedded system development

Specifications

Specification	Parameter
SoC	ESP32-S3FN8 @ Xtensa® 32-bit LX7 dual-core processor, clock frequency 240MHz
Flash	8MB
6-Axis Attitude Sensor	BMI270
MEMS Microphone	SPM1423
Clock Chip	BM8563
Battery Capacity	250mAh
Infrared Remote Distance	∠180°: 330CM (straight line)
	∠90°: 48CM
	∠45°: 134CM
Sleep Current	Battery powered DC 4.2V@35uA
Operating Current	Battery powered DC 4.2V@144mA
Product Size	40.0 x 24.0 x 16.2mm
Product Weight	18.7g
Package Size	99.2 x 63.1 x 14.7mm
Gross Weight	26.3g

Learn

Power On/Off

- Power On: Can be woken up via the "WAKE" button or RTC timed IRQ signal. After the wake-up trigger signal is completed, the program initialization must set the HOLD (G46) pin to high (1) to maintain power, otherwise the device will re-enter sleep mode.
- Power Off: When no USB external power is supplied, press the RST button; or when no USB external power is supplied, set HOLD (G46)=0 in the program to power off.

Enter Download Mode

To enter download mode, press the G0 button on the StampS3A during startup.

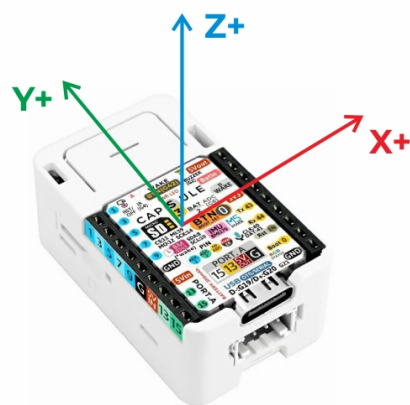


RGB LED Power Supply

RGB LED Power Supply Instructions

The device uses **Stamp-S3A** as its main controller. To optimize overall power consumption, Stamp-S3A adds an independent electronic switch for the RGB LED power supply compared with the previous Stamp-S3. Before controlling the RGB LED in software, set GPIO38, which controls this switch, to a high level.

IMU 3-Axis Direction Diagram

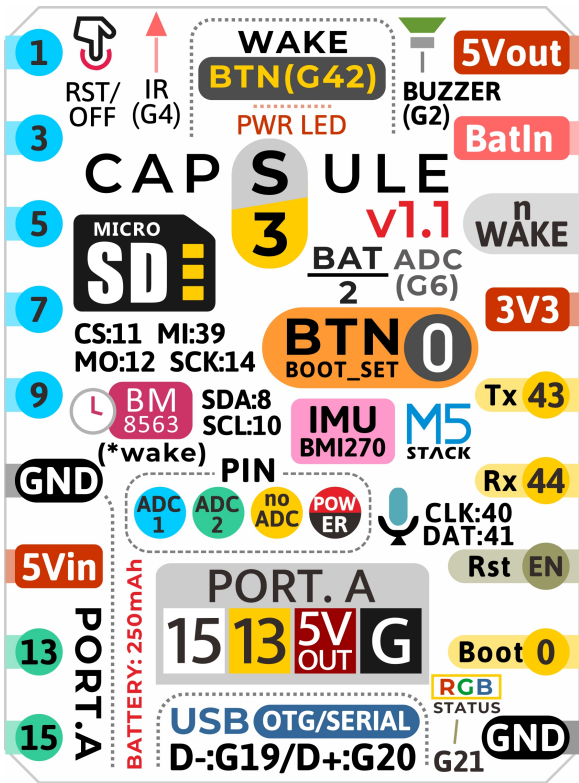


IMU ORIENTATION OF AXES

Schematics

- [Capsule v1.1 Schematics PDF](#)

PinMap



Capsule Bus

FUNC	PIN	LEFT	RIGHT	PIN	FUNC
	G1	1	2	5V_OUT	
	G3	3	4	VBAT_IN	
	G5	5	6	WAKE	
	G7	7	8	3V3	
	G9	9	10	G43	UART_TX
	GND	11	12	G44	UART_RX
	5V_IN	13	14	EN	
	G13	15	16	Boot	
	G15	17	18	GND	

Peripherals

Capsule	G10	G8	G40	G41	G4	G42	G2
BMI270(0x69)	SCL	SDA					
BM8563(0x51)	SCL	SDA					
SPM1423			CLK	DAT			
IR					IR_TX		
Wake Button						Button	
Buzzer							Signal

microSD

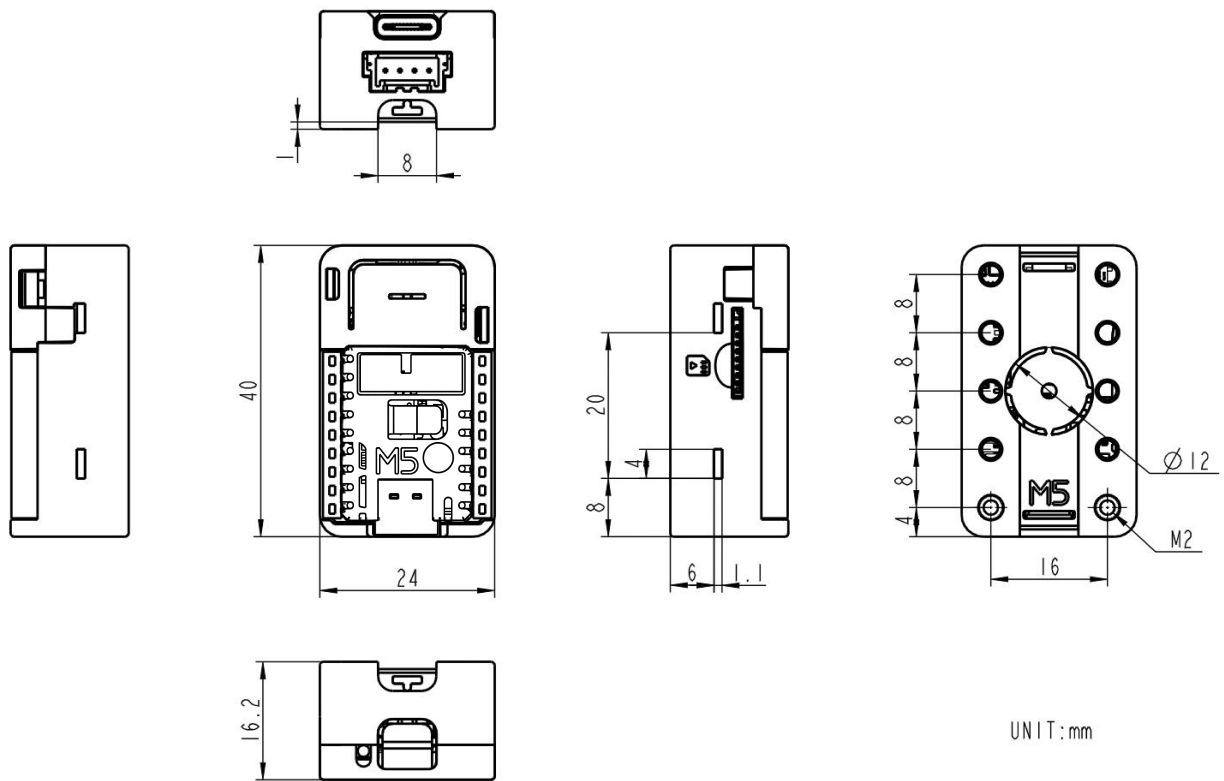
Capsule	G11	G12	G14	G39
microSD	CS	MOSI	CLK	MISO

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.CUSTOM	GND	5V	G13	G15

Model Size

- [Capsule v1.1 Model Size PDF](#)



Structure

- [Capsule v1.1 Structure Files](#)

Datasheets

- [ESP32-S3](#)
- [BMI270](#)
- [SPM1423](#)
- [BM8563](#)

Softwares

Arduino

- [Capsule v1.1 Arduino Quick Start](#)
- [Capsule v1.1 Arduino M5Unified Driver Library](#)

UiFlow2

- [Capsule v1.1 UiFlow2 Quick Start](#)

Product Compare		
	 v1.1	
	Capsule v1.1	Capsule
Core Module	Stamp-S3A	StampS3
Antenna Design	Optimized design, stronger signal	Standard design
StampS3 Module Boot	Optimized button feel, button specification 4.0 x 3.0 x	Button specification 2.6 x 1.6 x
Button	2.0mm	0.55mm
Power Consumption	Optimized for lower power consumption	Standard design