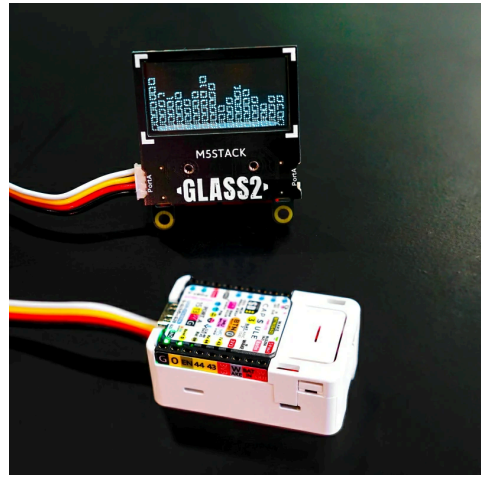
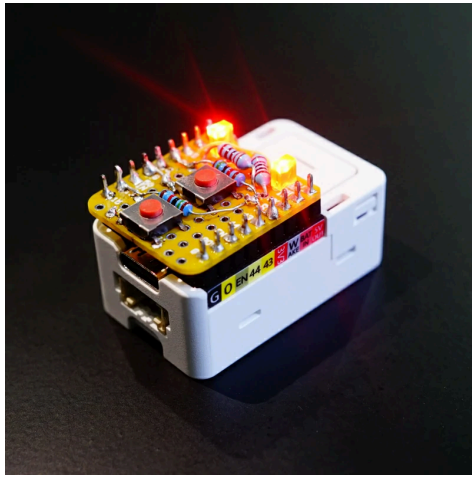
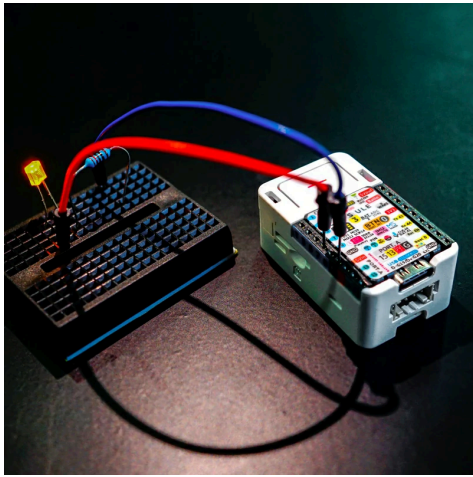


Capsule

SKU:K129

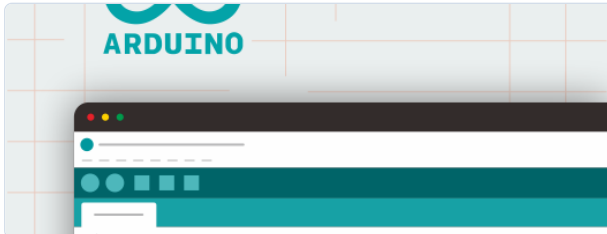




Description

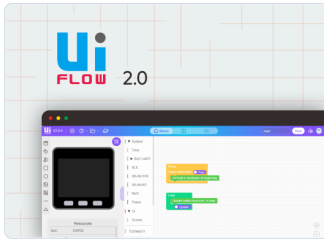
Capsule is a multifunctional embedded development platform using **Stamp-S3** as the core controller, integrating key functions such as sensors, power supply, storage, and control. It features a high-performance BMI270 **IMU** for precise motion tracking and attitude control, an SPM1423 **microphone** sensor for recording, voice recognition, and wake-up, and an **infrared sensor** for remote control. For power supply, the platform has a built-in 250mAh **battery** and supports external battery expansion to ensure long-term operation. In terms of data storage, the **TF card slot** expands storage capacity for data logging and media storage. The RTC8563 real-time **clock module** provides high-precision time and date information and supports timed wake-up for low-power functionality. Additionally, a **buzzer** provides audio feedback, while the **Proto pin header** offers extra expandability, allowing connection to custom sensors and expansion boards to meet various project needs. Structurally, it features 4 embedded magnets and 2 M3 threaded holes for screw attachment, enabling magnetic adsorption and expanding its range of application scenarios. This product is suitable for building IoT, embedded systems, sensor applications, and smart device data acquisition systems.

Tutorial



Arduino IDE

This tutorial will introduce you to how to program and control the Capsule device using the Arduino IDE.



UiFlow2

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

Features

- Versatility: Integrates functions such as IMU, MIC, infrared, storage, clock, buzzer, and Proto expansion
- Flexible expandability: Through the Proto pin header and TF card slot, M5Capsule offers expandability, allowing connection to custom sensors and expansion boards to meet specific project needs.
- Voice recognition and audio processing: The SPM1423 microphone sensor supports voice recognition, recording, and wake-up functions, suitable for voice control and audio analysis.
- Attitude control and motion tracking: The BMI270 IMU provides precise attitude control and motion tracking functions, suitable for virtual reality and game control applications.
- Time and low-power management: The RTC8563 real-time clock module supports high-precision time and date information, as well as timed wake-up functions, suitable for timestamp and automatic control tasks.
- Data acquisition and storage: The TF card slot expands storage capacity for data logging and event recording, suitable for large-scale data acquisition.
- Development Platform
 - UiFlow2
 - Arduino IDE
 - ESP-IDF
 - PlatformIO

Includes

- 1 x Capsule

Applications

- Internet of Things (IoT) applications
- Embedded system development
- Voice recognition and audio processing
- Attitude control and motion tracking
- Timestamp and timed tasks
- Data acquisition and storage
- Smart device and prototype development

Specifications

Specification	Parameter
SoC	ESP32-S3FN8 @ Xtensa® 32-bit LX7 dual-core processor, clock frequency 240MHz
Flash	8MB
Six-axis sensor	BMI270 I2C Address: 0x69
MEME Microphone	SPM1423
Clock Chip	BM8563 I2C Address: 0x51
Battery Capacity	250mAh
Infrared Remote Distance	Infrared emission distance at ∠180° (straight line): 330CM Infrared emission distance at ∠90°: 48CM Infrared emission distance at ∠45°: 134CM
Standby 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	18.6g
Package Size	99.2 x 63.1 x 17.4mm
Gross Weight	26.8g

Learn

Power On/Off

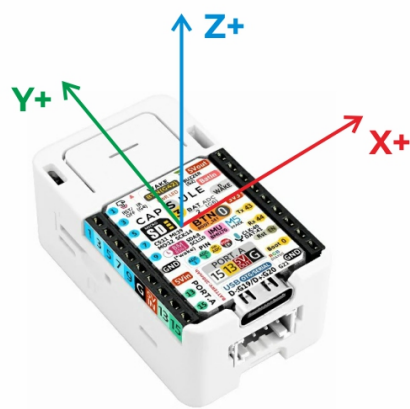
- Power on: The device can be powered on by pressing the "WAKE" button or triggered by an RTC-scheduled IRQ signal. After the wake signal is triggered, the HOLD (G46) pin must be set HIGH (1) during program initialization to maintain power; otherwise, the device will return to sleep.
- Power off: When no external USB power is connected, press the RST button to power off. Alternatively, with no external USB power, set HOLD (G46) = 0 during program execution to cut power and shut down.

Download Mode

To enter download mode, press the G0 button on StampS3 during power on.



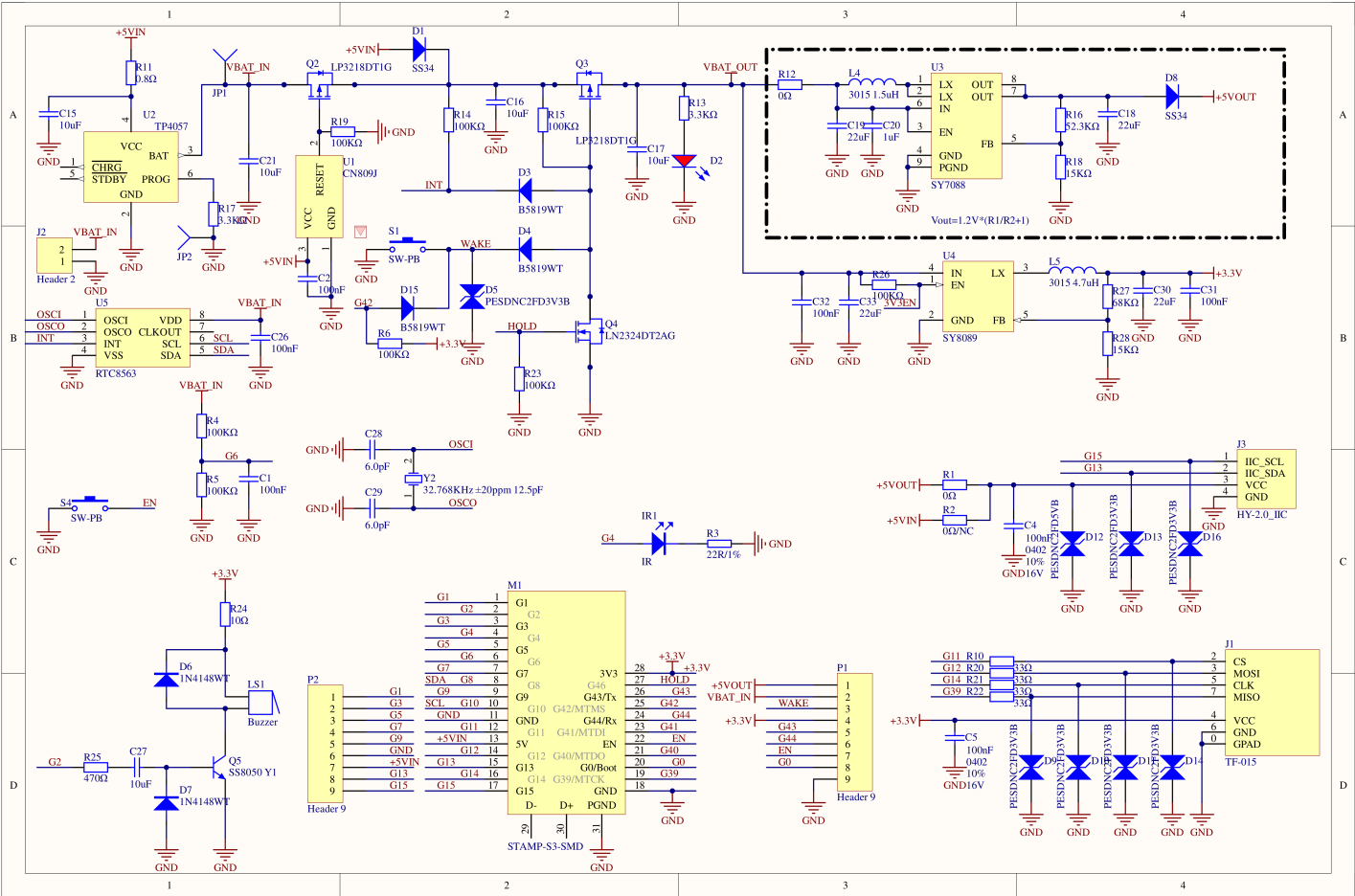
IMU Triaxial Direction Schematic Diagram

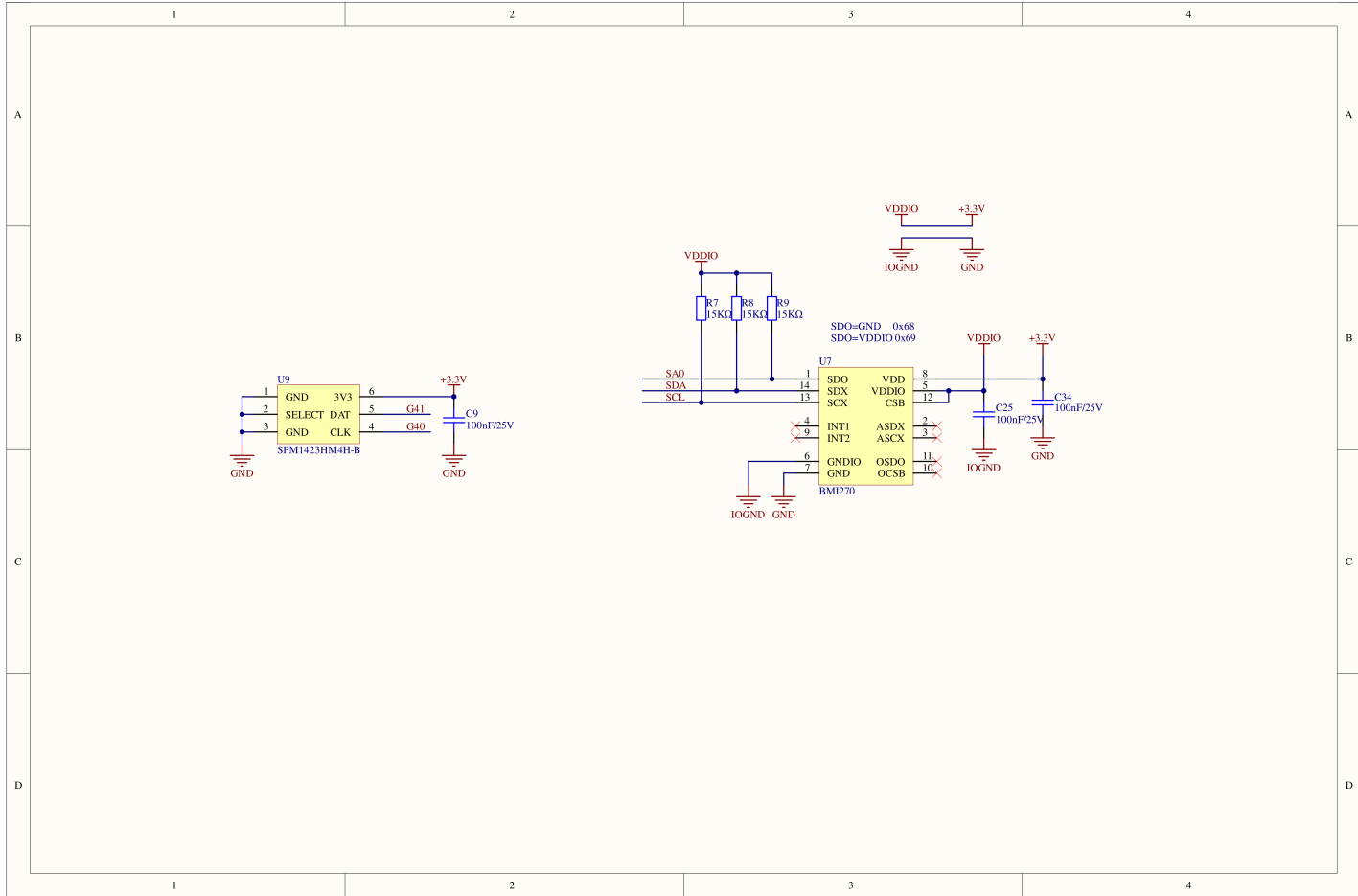


IMU ORIENTATION OF AXES

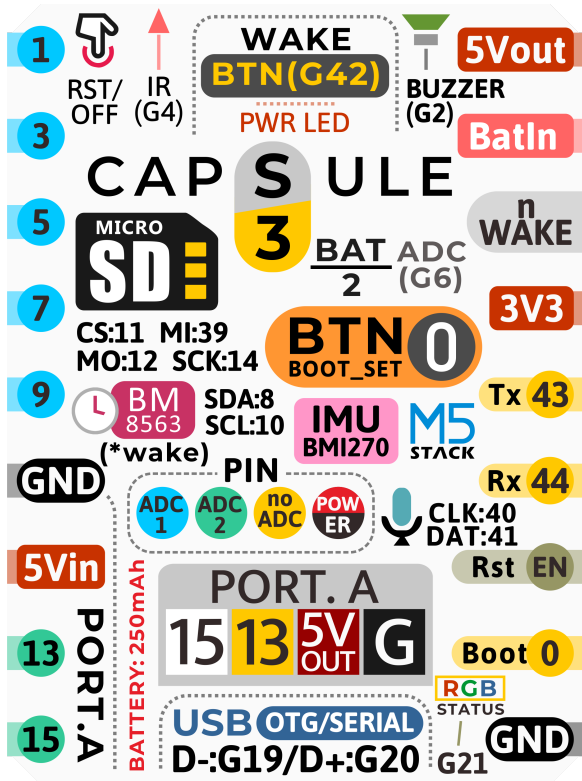
Schematics

o Capsule 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

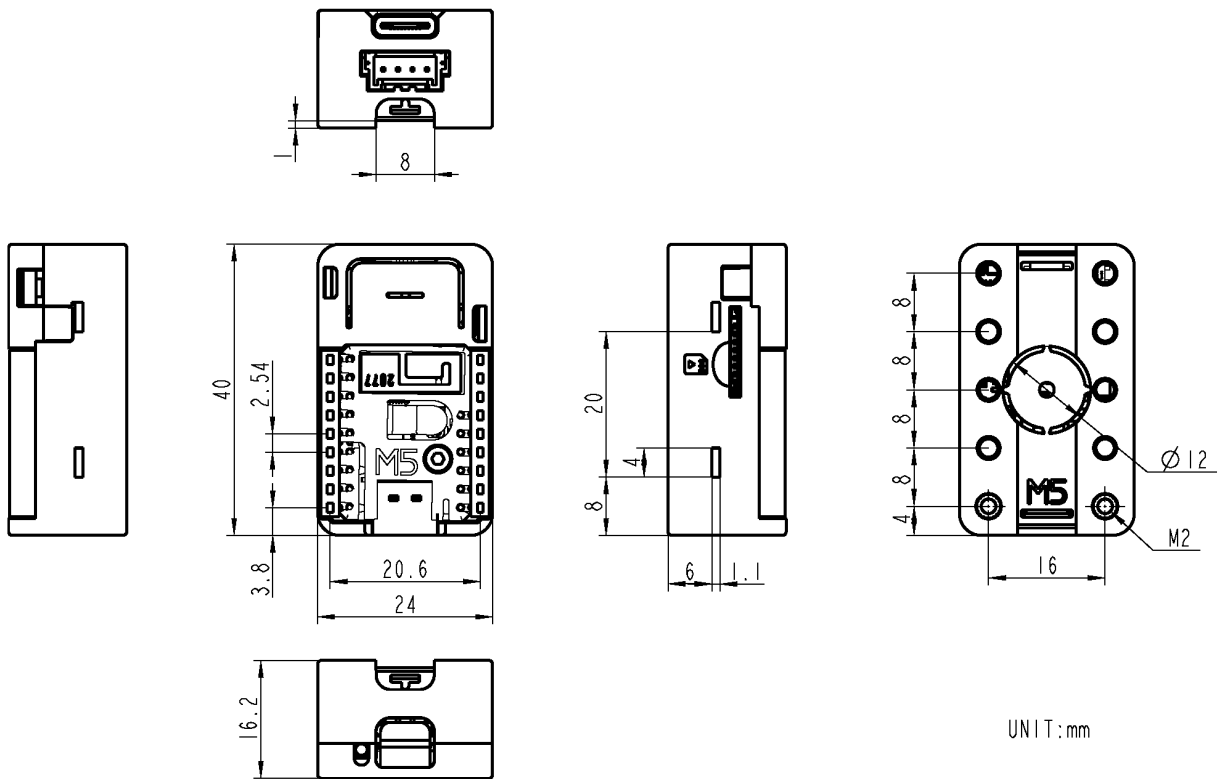
microSD

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



Structure

- [Capsule Structure Files](#)

Datasheets

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

Softwares

Arduino

- [Capsule Arduino Quick Start](#)
- [Capsule Arduino Support Library](#)

UiFlow2

- [Capsule UiFlow2 Quick Start](#)

