

# BALA2

SKU:K014-C



## Description

**BALA2** is short for 'Balance', as its name suggests, it is the second generation of M5Stacks balancing robot series.

**BALA2** is a Self Balancing Robot consisting of an M5Stack Gray and two wheels(DC motors).The base uses STM32F030C8T6 as the main control and has a two-way encoding motor driver and built-in 1200mAh battery.

This robotics product comes with preloaded software. A self-balancing robot application which balances the robot vertically using a closed-loop algorithm. You can program it to automatically move around through programming, or you can combine WiFi and Bluetooth to develop remote control functions.

This Robot is controllable by a Smartphone device or a Transmitter. The BALA2 base contains a wealth of interfaces. In addition to the conventional PortB and PortC, it also supports 8-channel servos, of which 4 channels can be directly connected, and the remaining 4 channels need to be connected from the inside of the base. Even if you have never attempted such a balancing robot program, you can quickly get the hang of it and control it through UIFlow. The self balancing robot uses data from the Accelerometer and Gyroscope to correct its orientation and position.The 2 DC driver module communicates with M5Stack Gray through I2C(0x3A).

## Product Features

- 9-DOF IMU
- Two-wheel drive, PID control balance
- Grove extension ports
- 8-channel servo drive, 4-channel external connection, 4-channel built-in
- Support WiFi/Bluetooth, programmable
- Built-in speaker
- TF Card Support
- LEGO™ Compatible
- Programming Support
  - Python
  - UIFlow (Blockly)
  - Arduino

## Include

- 1x M5Stack Gray + BALA2
- 4x Wheel connector
- 2x HY2.0-4P Cables(20cm)
- 2x Bricks
- 1x Hex wrench
- Type-C USB Cable(120cm)

## Applications

- Balancing car

## Usage and Sensor calibration

Note: BALA2 has been calibrated, and it can automatically maintain its balance after turning it on. For manual calibration, please refer to [Quick Start](#)

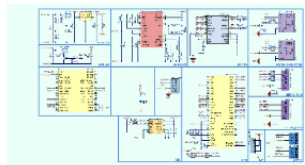
## Specification

Resources	Parameter
ESP32	240MHz Dual Core, 600 DMIPS, 520KB SRAM, Wi-Fi, Dual-mode Bluetooth
Flash/RAM	16MB Flash
LCD	2.0 inch, 320x240 Color TFT LCD, ILI9342C
Speaker	1W-0928
MEMS	BMM150+MPU6886
Motor Driver	HR8833
Base Controller	STM32F030C8T6
Ports	GROVE I2C*1/UART*1/GPIO*1/SERVO*4(+4 Extendable Channel)
Battery Capacity	1200mAh
Net Weight	157g
Gross Weight	337g
Product Size	54*54*65*mm
Package dimensions	100*100*100mm
Case Material	Plastic

## EasyLoader

EasyLoader is a concise and fast program writer, which has a built-in case program related to the product. It can be burned to the main control by simple steps to perform a series of function verification. Please install the corresponding driver according to the device type. M5Core host [Please click here to view the CP210X driver installation tutorial](#), M5StickC/V/T/ATOM series can be used without driver)

## Schematic



## PinMap

### GROVE Port A & B & C

ESP32 Chip	GPIO22	GPIO21	GPIO26	GPIO36	GPIO16	GPIO17
PORT A	SCL	SDA				
PORT B			DAC	ADC		
PORT C					RX	TX

## Example

### 1. Arduino IDE

To get complete code, please click, [click](#)

[Tutorial&Quick-Start](#)

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