M5CoreS3 SE

SKU:K128-SE

Description

The `M5CoreS3 SE` is a lightweight version of the third-generation CoreS3 main unit in the M5Stack development kit series. It is powered by the `ESP32-S3` solution, featuring a dual-core Xtensa LX7 processor with a main frequency of 240MHz, and comes with built-in `(2.4G)WiFi` functionality. It has onboard 16MB FLASH and 8MB PSRAM; programs can be downloaded via the TYPE-C interface, which supports `OTG and CDC` functions, making it convenient to connect USB devices and burn firmware. The front is equipped with a 2.0-inch capacitive touch IPS screen, with a high-strength glass panel. The power supply part uses the AXP2101 power management chip and 4-way power flow control circuit, designed for low power consumption overall. It has an onboard `MicroSD` card slot and a BM8563 RTC chip that provides precise timing and sleep-timer wake-up functions. For sound output, it uses a high-fidelity 16-bit I2S amplifier chip AW88298 and has a built-in `1W speaker` . For sound input, it uses an ES7210 audio decoding chip with `dual microphone input` . The device body has an independent power button and reset (RST) button on the side, with a built-in delay circuit. Long pressing the reset button enters program download mode. This product is suitable for `IoT development` `various DIY project development` `smart home control`

for IoT development, various DIY project development, smart home control systems, and industrial automation control systems .

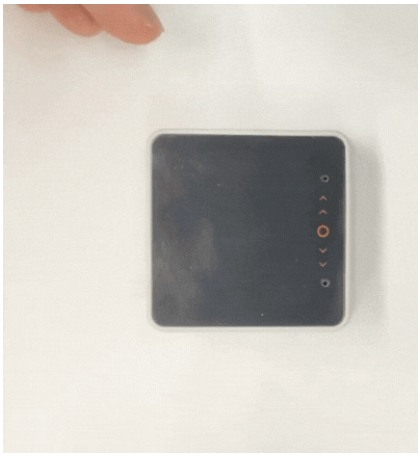
Version comparison

Compared to the M5CoreS3, the M5CoreS3 SE does not feature a camera (GC0308), proximity sensor (LCR-553ALS-WA), IMU (BMI270), or magnetic compass (BMM150).The M5CoreS3 SE uses a medium grey number different from the black grey number of the M5CoreS3, and the glass panel touch area extends to the camera position. The DinBase base with the original M5CoreS3 kit was removed.

Hardware peripheral	M5CoreS3	M5CoreS3 SE
Camera(GC0308)	√	×
Proximity Sensor(LTR-553ALS-WA)	√	×
IMU(BMI270)	√	×
Compass(BMM150)	√	×
RTC	√	√
MIC	√	√
SPEAKER	√	√
PMIC(AXP2101)	√	√
16MB FLASH and 8MB PSRAM	√	√
TOUCH	√	√

Download Mode

Before downloading the program, please be sure to press and hold the reset button 3S (green light) to enter the download mode, otherwise the download will fail!



On-off Operation

Power on and off operation:

Power on: Click the left power button①

shut down: Long press the left power button① for 6 seconds

reset: Click the bottom RST button②

Download mode: Long press reset button② 3S (green light)

Tutorial

Arduino IDE

This tutorial will show you how to program and control CoreS3 SE devices through Arduino IDE

Features

- Developed based on ESP32-S3, support WiFi @16MB Flash, 8MB PSRAM
- Speakers,Dual microphones
- Capacitive touch screen
- MicroSD card slot
- High-strength glass
- Support OTG and CDC functions
- AXP2101 power management, low power design
- Supported programming platforms: Arduino, UIFlow

Includes

- 1 × M5CoreS3 SE

Applications

- IoT development
- Various DIY project development
- Smart home control system
- Industrial automation control system

Specification

Resources	Parameters
SoC	ESP32-S3@Xtensa LX7 WIFI,OTG\CDC functions
Flash	16MB FLASH
PSRAM	8MB PSRAM
WIFI	802.11 b/g/n (2.4 GHz Wi-Fi)
TOUCH	FT6336U@Capacitive Touch,Touch area pixel: 320*280
LCD Screen	2.0"@320*240 ILI9342C,SPI Communication
Speaker	1W@9028
Power Amplifier	16bits-I2S Power amplifier chip AW88298
Bus pin	G0/G1/G2/G5/G6/G7/G8/G9/G10/G11/G12/G13/G14/G17/G18/G35/G36/G37/G43/G44
Power management chip	AXP2101
RTC	BM8563

Resources	Parameters
Audio decoding chip	ES7210, dual microphone inputs
Lithium battery charging current	5V/198mA
Grove Output maximum current (lithium battery powered)	DC4.2V/940mA
Grove Output Maximum current (USB powered)	DC5V/680mA
Power Dissipation	Battery: Standby mode: DC4.2V/104.64uA Working mode:DC4.2V/109.67mA USB power supply: In working mode: DC5V/166.27mA
Operating Temperature	0-40°C
Product Size	54*54*15.5mm
Package Size	133.4*95*21mm
Product Weight	38.4g
Package Weight	55.1g

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.**

Factory Firmware

Download CoreS3 SE Factory Firmware Easyloader

I2C Address

Chip	ADDRESS
AXP2101 ADDR	0x34
AW88298 ADDR	0x36
FT6336U ADDR	0x38
ES7210 ADDR	0x40
BM8563 ADDR	0x51
AW9523 ADDR	0x58

Pin Map

LCD Screen & MicroSD

LCD Pixel:320x240

MicroSD Specification

MicroSD support up to 16GB

ESP32S3 Chip	GPIO37	GPIO36	GPIO35	GPIO35			
AW9523B					AW9523B_P1_1		

ESP32S3 Chip	GPIO37	GPIO36	GPIO35	GPIO34		AXP2101_DCDO1	
ILI9342C	MOSI	SCK	CS	DC	RST	BL	
TF Card	SPI_MOSI	SPI_SCK		SPI_MISO			

CAP.TOUCH

ESP32S3 chip	GPIO12	GPIO11	AW9523B_P1_2	AW9523B_P0_0
FT6336U	I2C_SYS_SDA	I2C_SYS_SCL	TOUCH_INT	TOUCH_RST

Microphone & amplifier

ESP32S3 Chip	GPIO12	GPIO11	AW9523B_P1_3	AW9523B_P0_2	GPIO34	GPIO33	
ES7210	I2C_SYS_SDA	I2C_SYS_SCL	AW_INT	AW_RST	I2S_BCK	I2S_WCK	

AW882 98	I2C_SYS _SDA	I2C_SYS _SCL	AW952 3B_P1	AW952 3B_P0	GPIO3	GPIO3	
3 Chip	2	1	3	2	4	3	

AXP Power Led

AXP2101	AXP_CHG_LED
Red LED	RTC_VDD

RTC

ESP32S3 Chip	GPIO12	GPIO11	AXP2101_IRQ
BM8563	I2C_SYS_SDA	I2C_SYS_SCL	AXP_WAKEUP

Internal I2C connection

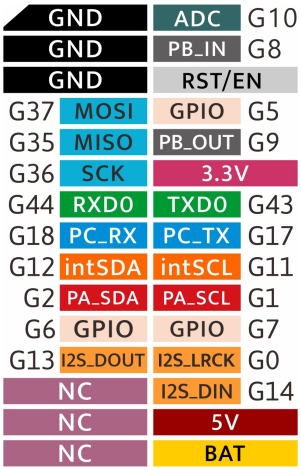
ESP32S3 Chip	GPIO12	GPIO11
AXP2101	I2C_SYS_SDA	I2C_SYS_SCL
BM8563	I2C_SYS_SDA	I2C_SYS_SCL
ES7210	I2C_SYS_SDA	I2C_SYS_SCL
AW88298	I2C_SYS_SDA	I2C_SYS_SCL

PORT

Port	Pin	NOTE
PORT-A(RED)	G2/G1	I2C

PORT-B(BLACK) Port	G9/G8 Pin	GPIO NOTE
PORT-C(BLUE)	G18/G17	UART(RX/TX)

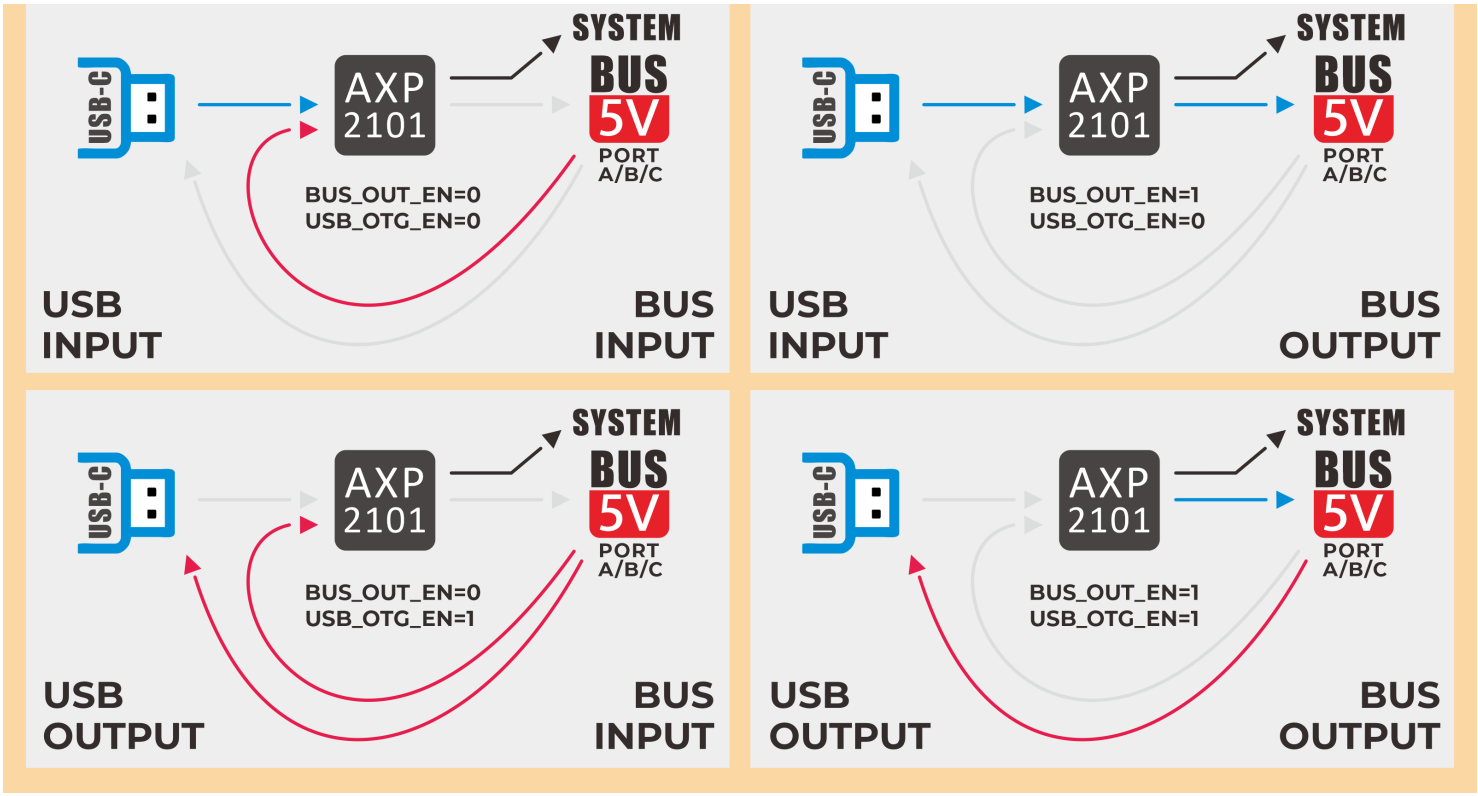
M5CoreS3 M-BUS Schematic diagram



Core series host pin mapping comparison

CoreMP135_Bus		M5CORES3_Bus/M5CORES3_SE_Bus		M5CORE2_Bus		M5Basic_Bus											
GND	GND	GND	GND	GND	GND	GND	GND	1	2	ADC	G35	ADC	G35	ADC	G10	GPIO	PA0
GND	GND	GND	GND	GND	GND	GND	GND	3	4	ADC	G36	ADC	G36	PB_IN	G8	PB_IN	PD3
GND	GND	GND	GND	GND	GND	GND	GND	5	6	RST_EN		RST_EN		RST_EN		AXP-PWR-OK	
PE11	SPI4MO	G37	MOSI	G23	MOSI	G23	MOSI	7	8	DAC/SPK	G25	DAC	G25	GPIO	G5	GPIO	PB13
PE13	SPI4MI	G35	MISO	G38	MISO	G19	MISO	9	10	DAC	G26	DAC	G26	PB_OUT	G9	PB_OUT	PE9
PB4	SPI4SCK	G36	SCK	G18	SCK	G18	SCK	11	12	3.3V		3.3V		3.3V		3.3V	
PH8	U2RX	G44	RXD0	G3	RXD0	G3	RXD0	13	14	TXD0	G1	TXD0	G1	TXD0	G43	U2TX	PF11
DS-USB1-N		G18	PC_RX	G13	RXD2	G16	RXD2	15	16	TXD2	G17	TXD2	G14	PC_TX	G17	DS-USB1-P	
PE8	I2C1-SDA	G12	intSDA	G21	intSDA	G21	intSDA	17	18	intSCL	G22	intSCL	G22	intSCL	G11	I2C1-SCL	PB8
PG9	I2C2-SDA	G2	PA_SDA	G32	PA_SDA	G2	GPIO	19	20	GPIO	G5	PA_SCL	G33	PA_SCL	G1	I2C2-SCL	PF2
PA6	GPIO	G6	GPIO	G27	GPIO	G12	I2S_SK	21	22	I2S_WS	G13	GPIO	G19	GPIO	G7	GPIO	PB10
PA5	GPIO	G13	I2S_DOUT	G2	I2S_DOUT	G15	I2S_DOUT	23	24	I2S_MK	G0	I2S_LRCK/PDM_CLK	G0	I2S_LRCK	G0	GPIO	PC13
NC		NC		NC		NC		25	26	I2S_DIN	G34	PDM_DAT	G34	I2S_DIN	G14	GPIO	PA1
NC		NC		NC		NC		27	28	5V		5V		5V		5V	
NC		NC		NC		NC		29	30	BAT		BAT		BAT		BAT	

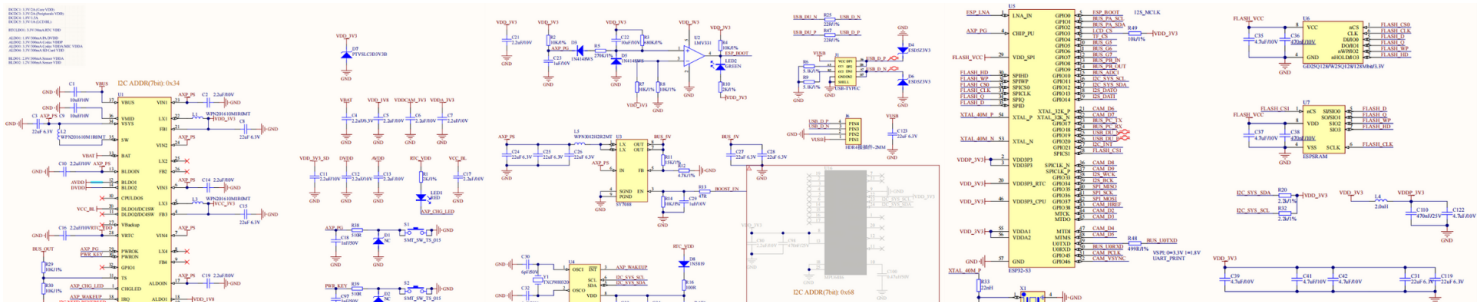
Power Management

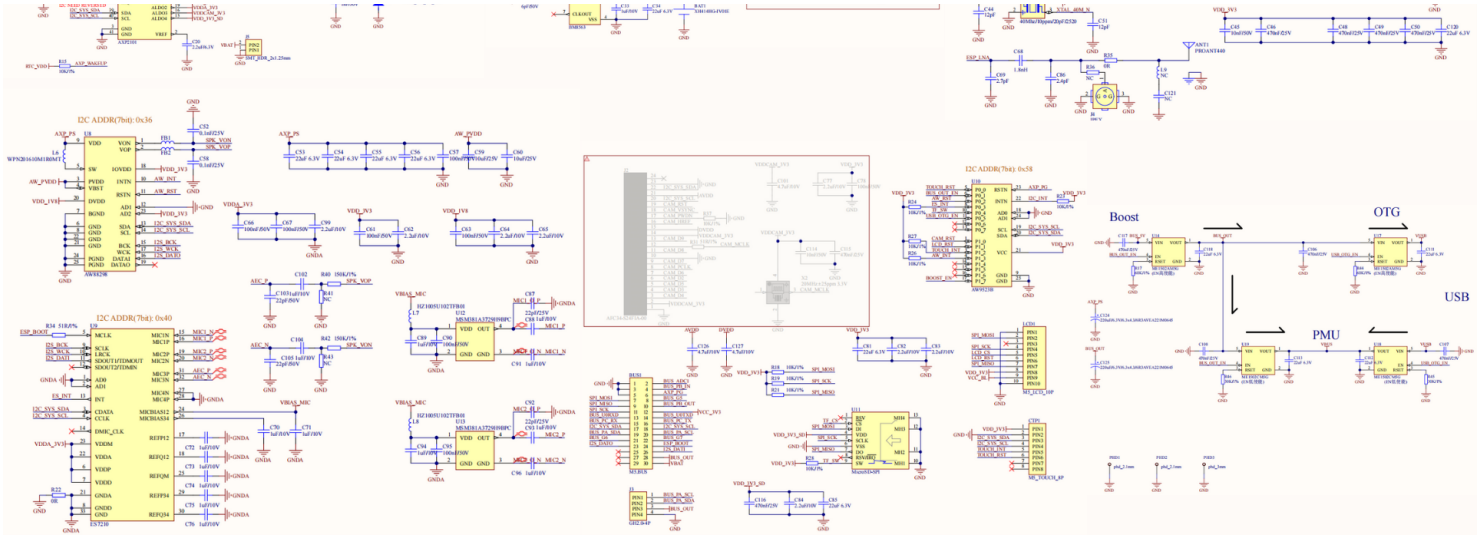


Related Link

- esp32-s3
- ES7210
- BM8563
- AXP2101
- AW88298
- AW9523B

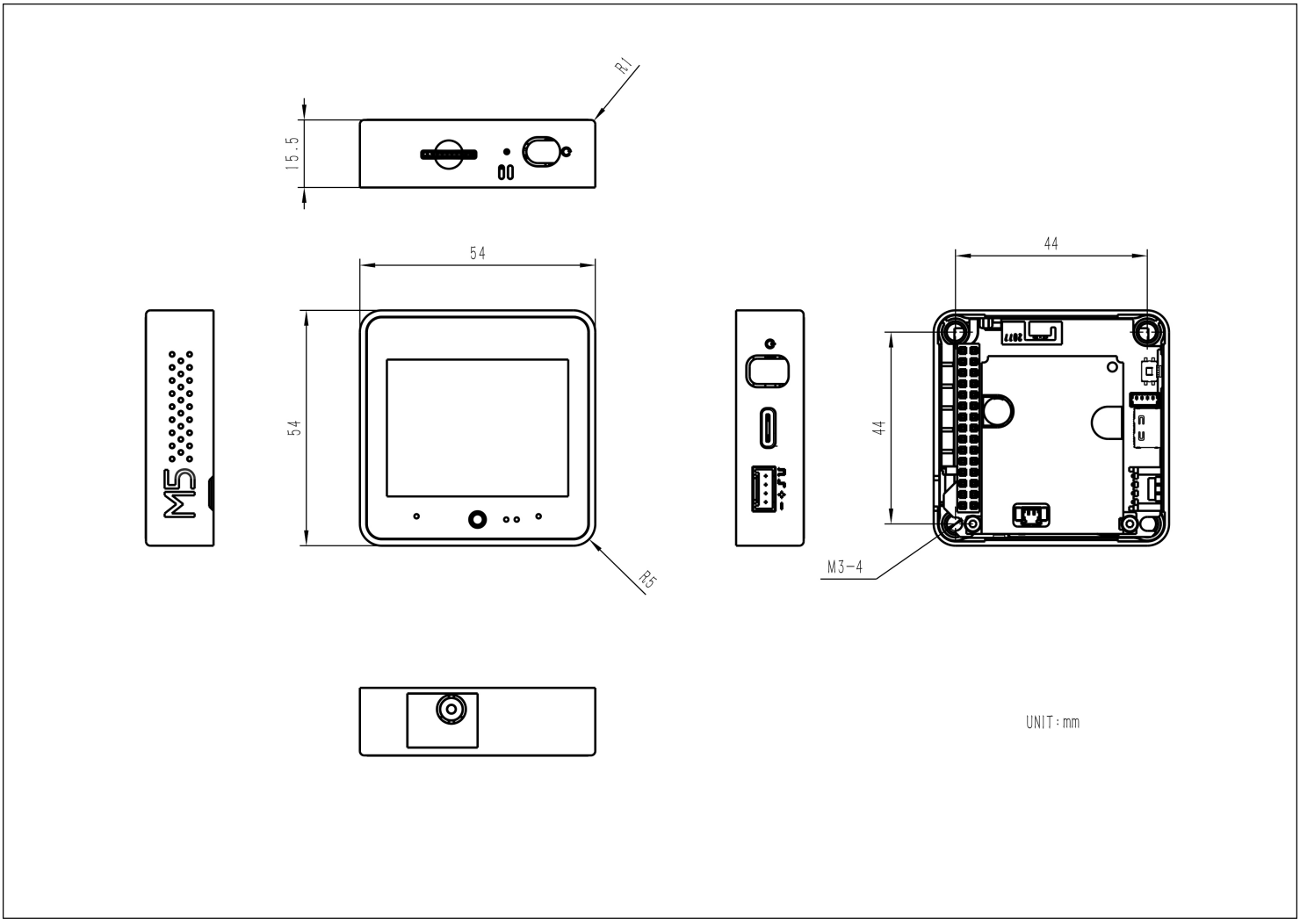
Schematic





- Complete schematic pdf

Module Size



Examples

Arduino

> **NOTE**
>
> There are hardware differences between M5CoreS3 SE and M5CoreS3. The codes in the library file involving camera, proximity sensor, IMU, and magnetic sensor are not applicable to M5CoreS3 SE.

- M5CoreS3-Lib
- M5CoreS3 SE User Demo(pio)
- display
- mic
- rtc
- sdcard
- speaker
- touch
- wakeup

Video

- M5CoreS3 S3 Function Introduction

K128-SE M5CoreS3 SE 视频.mp4