

CoreS3 Thread BR

SKU:K149





Description

CoreS3 Thread BR is a Thread Border Router kit. The core components consist of the CoreS3 controller and the Module Gateway H2 wireless module. The CoreS3 serves as the control core of the border router, running user applications and the OpenThread protocol stack. The CoreS3 controller uses the ESP32-S3 SoC, with an onboard memory configuration of 16MB Flash and 8MB PSRAM. It supports 2.4 GHz Wi-Fi and integrates a 2.0" touch LCD display, camera, microphone, speaker, RTC, six-axis motion sensor, and other rich peripherals. The Module Gateway H2 module integrates the ESP32-H2-MINI-1 module and supports IEEE 802.15.4 wireless communication. It acts as an OpenThread Radio Co-Processor (RCP), providing Thread packet forwarding functionality for the CoreS3 main controller. CoreS3 Thread BR is suitable for applications such as smart homes, environmental monitoring, sensor networks, and low-power wireless communication nodes, helping developers quickly perform prototype verification and product development.

Features

- CoreS3 Core Controller
 - ESP32-S3
 - 16MB Flash
 - 8MB PSRAM
 - microSD Card Slot
 - 9-axis IMU Sensor: BMI270 + BMM150
 - RTC: BM8563
 - USB-OTG
 - 0.3MP Camera GC0308

- Proximity Sensor LTR-553ALS-WA
- Audio Codec ES7210
- Dual Microphone Input
- Hi-Fi Power Amplifier AW88298 + 1W Speaker
- Module Gateway H2 (RCP)
 - ESP32-H2-MINI-1
 - IEEE 802.15.4
 - Zigbee, Thread, Matter
- Base DIN
 - DIN rail mounting design
 - Built-in 500mAh lithium battery
 - Supports DC 9 ~ 24V input power supply
 - Independent power switch
 - 2x HY2.-4P expansion interfaces

| Includes

- 1 x CoreS3 Thread BR
- 1 x Hex Key L-Shape 2.5mm (For M3 Screw)
- 4 x Screw Clips
- 1 x DIN Rail Base Clip

| Applications

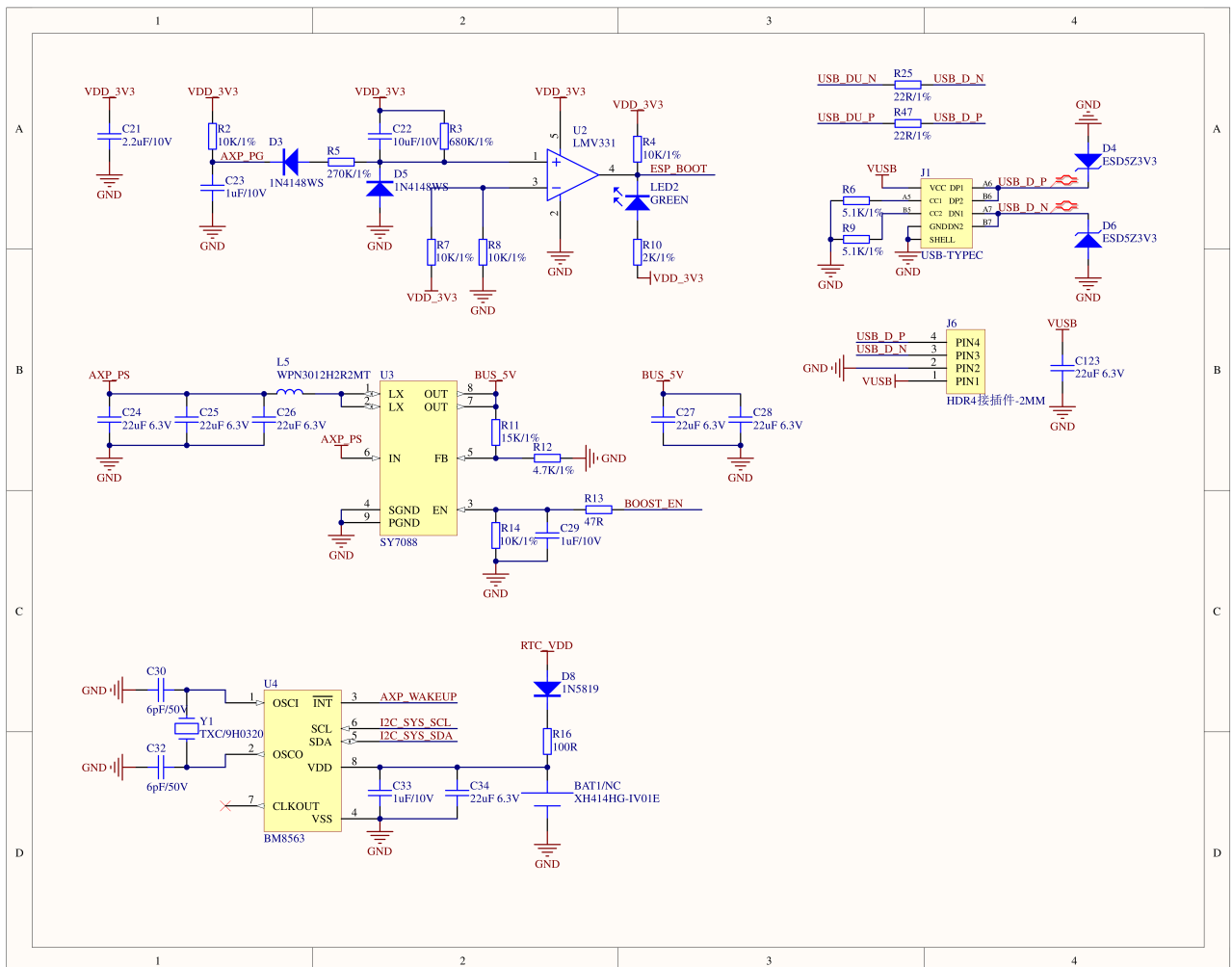
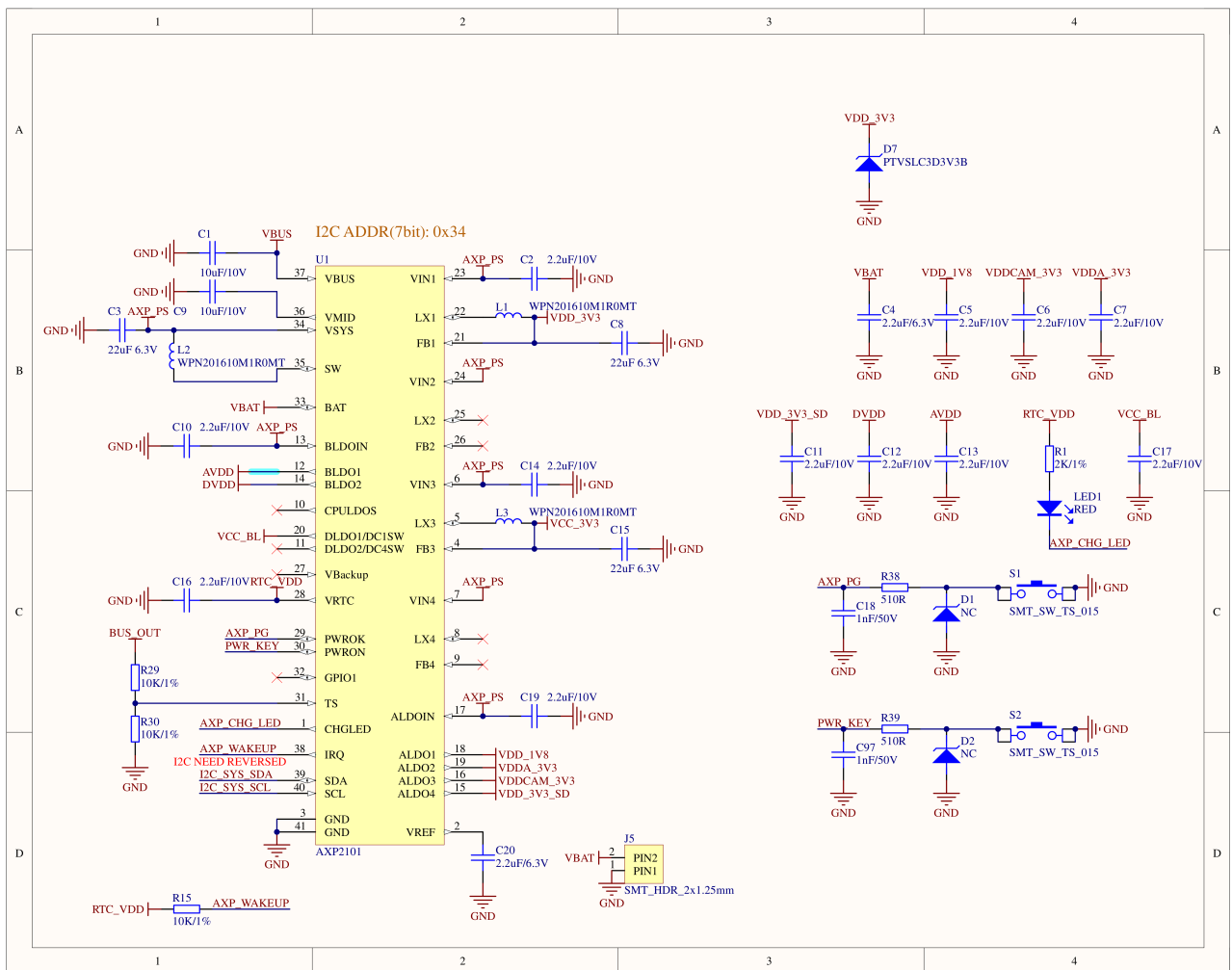
- Smart Home
- Sensor Networks

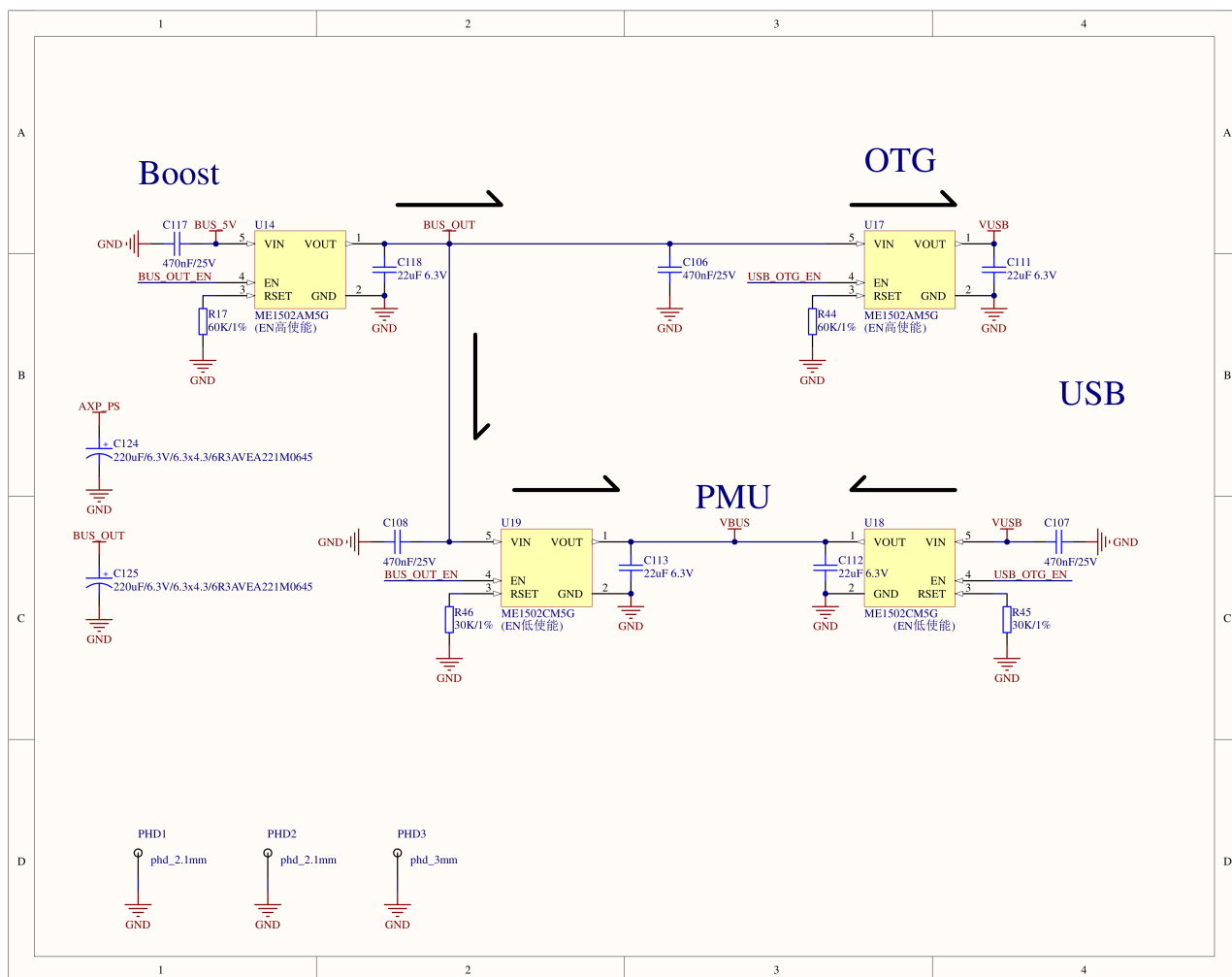
| Specifications

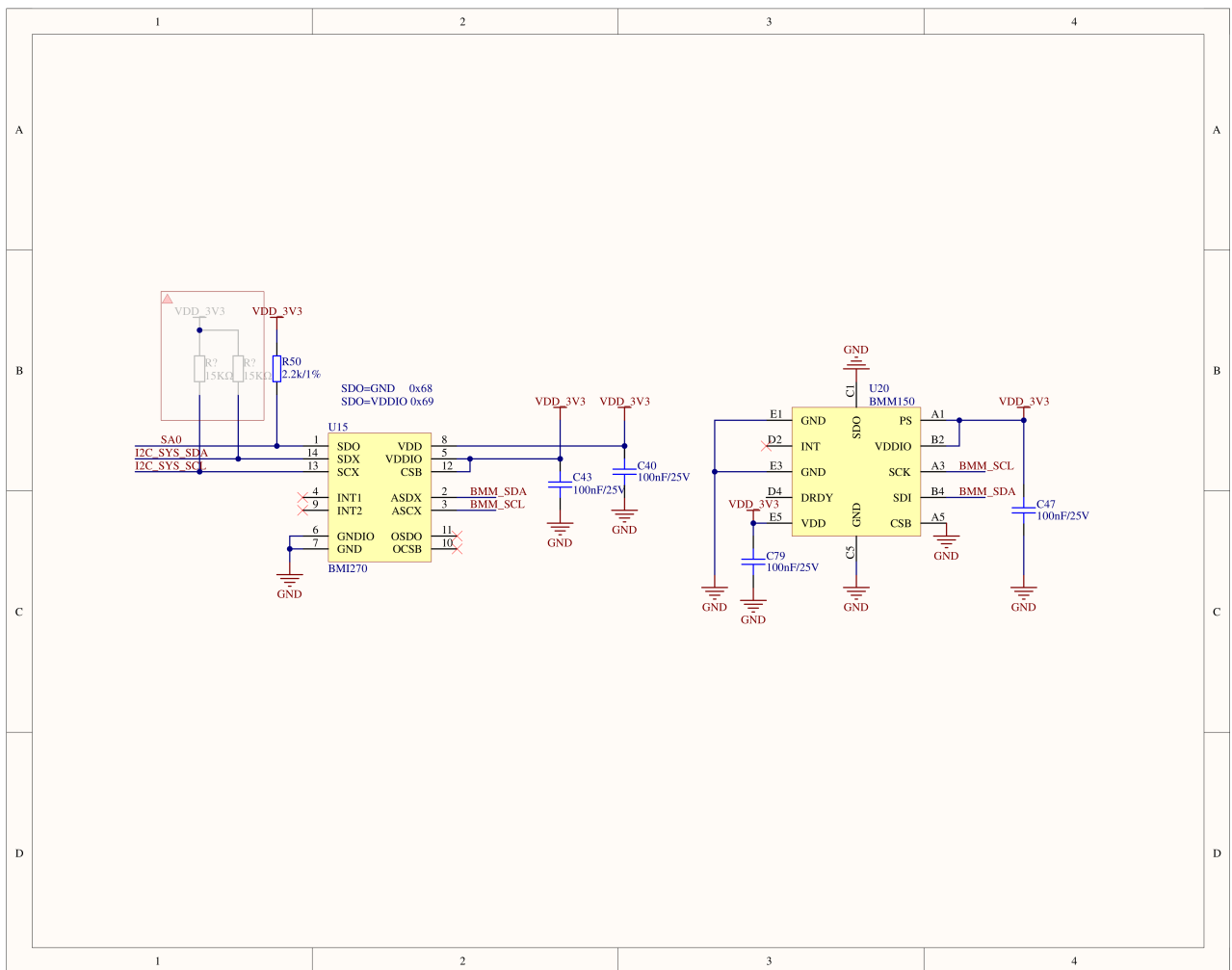
Specification	Parameter
SoC	ESP32-S3 @ Xtensa 32-bit LX7 Dual-core, 240MHz
Flash	16MB
PSRAM	8MB
Wi-Fi	2.4 GHz Wi-Fi
Touch IPS LCD	2.0"@320 x 240 ILI9342C
Camera	GC0308@0.3MP
Proximity Sensor	LTR-553ALS-WA
Power Management	AXP2101
6-axis IMU	BMI270
3-axis Magnetometer	BMM150
RTC	BM8563
Speaker	16bits-I2S Power Amplifier AW88298@1W
Audio Codec	ES7210, Dual Microphone Input
RCP	ESP32-H2-MINI-1 @ RISC-V 32-bit Single-core, 96 MHz
Base DIN Battery	Charging IC: TP4057
	Battery Capacity: 500mAh
Product Size	54.0 x 54.0 x 38.1mm
Product Weight	91.0g
Package Size	101.0 x 64.0 x 41.0mm
Gross Weight	115.7g

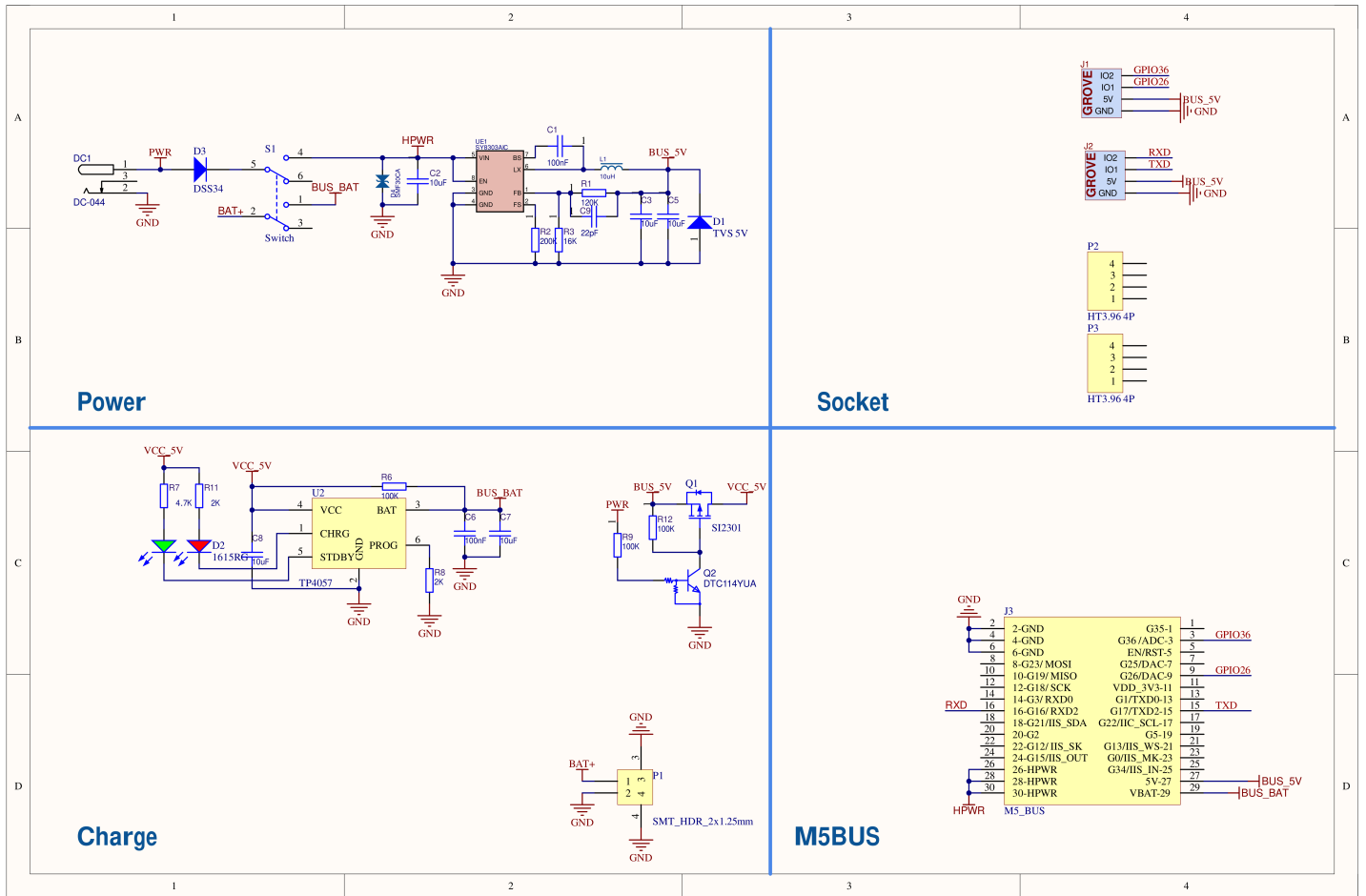
Schematics

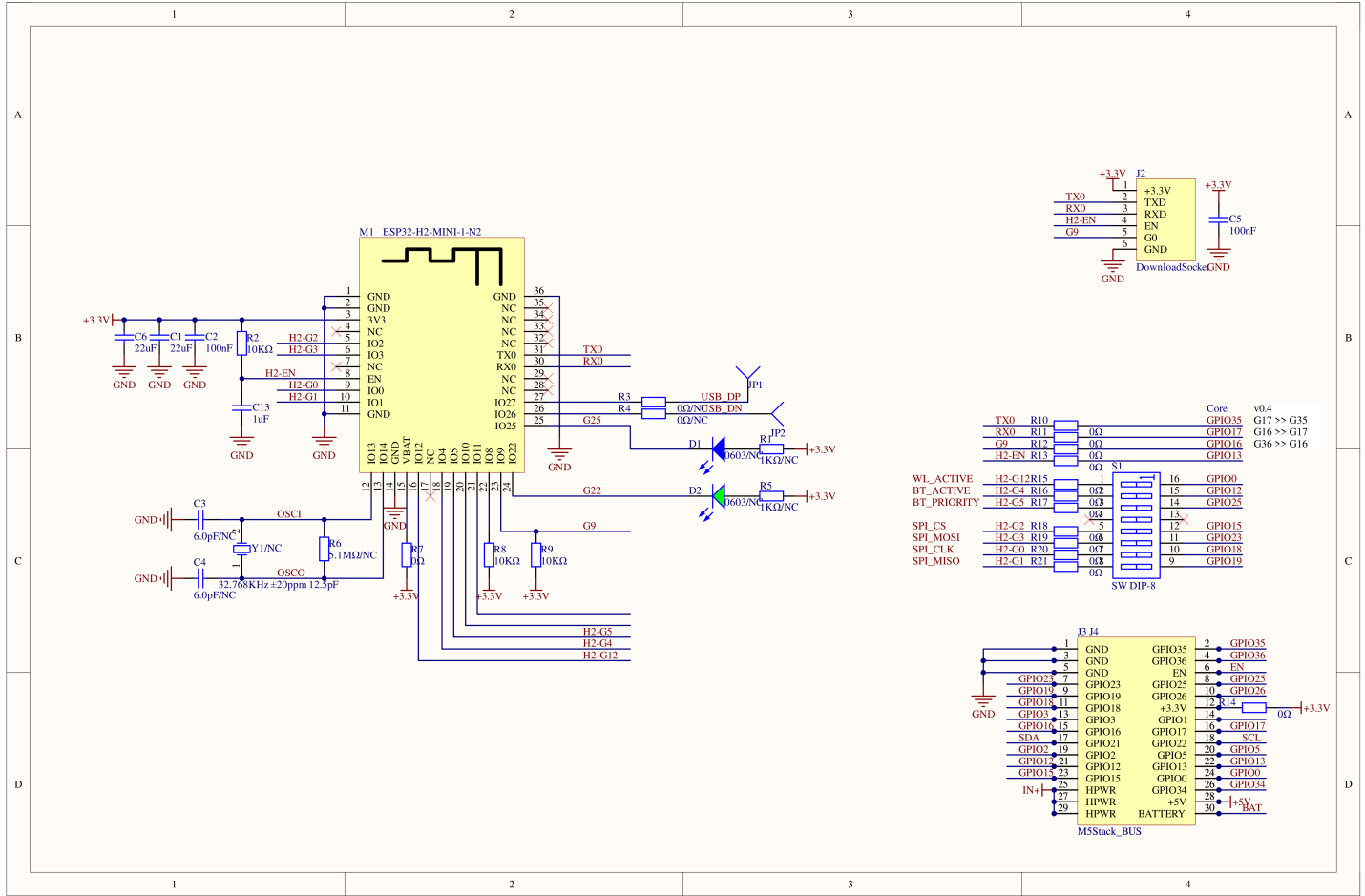
- [CoreS3 Schematics PDF](#)
- [Base DIN Schematics PDF](#)
- [Module Gateway H2 Schematics PDF](#)











PinMap

LCD

ESP32-S3	G37	G36	G3	G35
ILI9342C	MOSI	SCK	CS	DC

Touch

ESP32-S3	G12	G11
FT6336U (0x38)	I2C_SYS_SDA	I2C_SYS_SCL

IMU

ESP32-S3	G12	G11
BMI270 (0x69)	I2C_SYS_SDA	I2C_SYS_SCL

ESP32-S3	BMI270_ASDx	BMI270_ASCx
BMM150 (0x10)	BMM_SDA	BMM_SCL

RTC

ESP32-S3	G12	G11
BM8563 (0x51)	I2C_SYS_SDA	I2C_SYS_SCL

AXP2101	IRQ
BM8563	AXP_WAKEUP

Audio

ESP32-S3	G12	G11	G34	G33	G13	G14	G0
ES7210 (0x40)	I2C_SYS_SDA	I2C_SYS_SCL	I2S_BCK	I2S_WCK	I2S_DAT0		I2S_MCLK
AW88298 (0x36)	I2C_SYS_SDA	I2C_SYS_SCL	I2S_BCK	I2S_WCK		I2S_DAT1	

ALS & PS Sensor

ESP32-S3	G12	G11
LTR-553ALS-WA (0x23)	I2C_SYS_SDA	I2C_SYS_SCL

IO Expansion (AW9523B)

ESP32-S3	G12	G11
AW9523B (0x58)	I2C_SYS_SDA	I2C_SYS_SCL

AW9523B	P0_0	P0_1	P0_2	P0_3	P0_4	P0_5
FT6336U	TOUCH_RST					
Power Control		BUS_OUT_EN				
AW88298			AW_RST			
ES7210				ES_INT		
microSD					TF_SW	
Power Control						USB_OTG_EN

AW9523B	P1_0	P1_1	P1_2	P1_3	P1_7
Camera	CAM_RST				
LCD		LCD_RST			
Touch			TOUCH_INT		
AW88298				AW_INT	
Power Control					BOOST_EN

microSD

ESP32-S3	G35	G37	G36	G4
microSD	MISO	MOSI	SCK	CS

Camera

GC0308	Camera Pin	ESP32-S3
SCCB Clock	SIOC	G11
SCCB Data	SIOD	G12
System Clock	XCLK	-1
Vertical Sync	VSYNC	G46
Horizontal Reference	HREF	G38
Pixel Clock	PCLK	G45
Pixel Data Bit 0	D0	G39
Pixel Data Bit 1	D1	G40
Pixel Data Bit 2	D2	G41
Pixel Data Bit 3	D3	G42
Pixel Data Bit 4	D4	G15
Pixel Data Bit 5	D5	G16
Pixel Data Bit 6	D6	G48
Pixel Data Bit 7	D7	G47
Camera Reset	RESET	-1
Camera Power Down	PWDN	-1

Module Gateway H2 (RCP)

Module Gateway H2	ESP32-S3
RXD	G10
TXD	G17
MOSI	G37
MISO	G35
CLK	G36
CS	G13
WL_ACTIVE	G0
BT_PRIORITY	G5
BT_ACTIVE	G6
EN	G7
G9	G18

HY2.0-4P

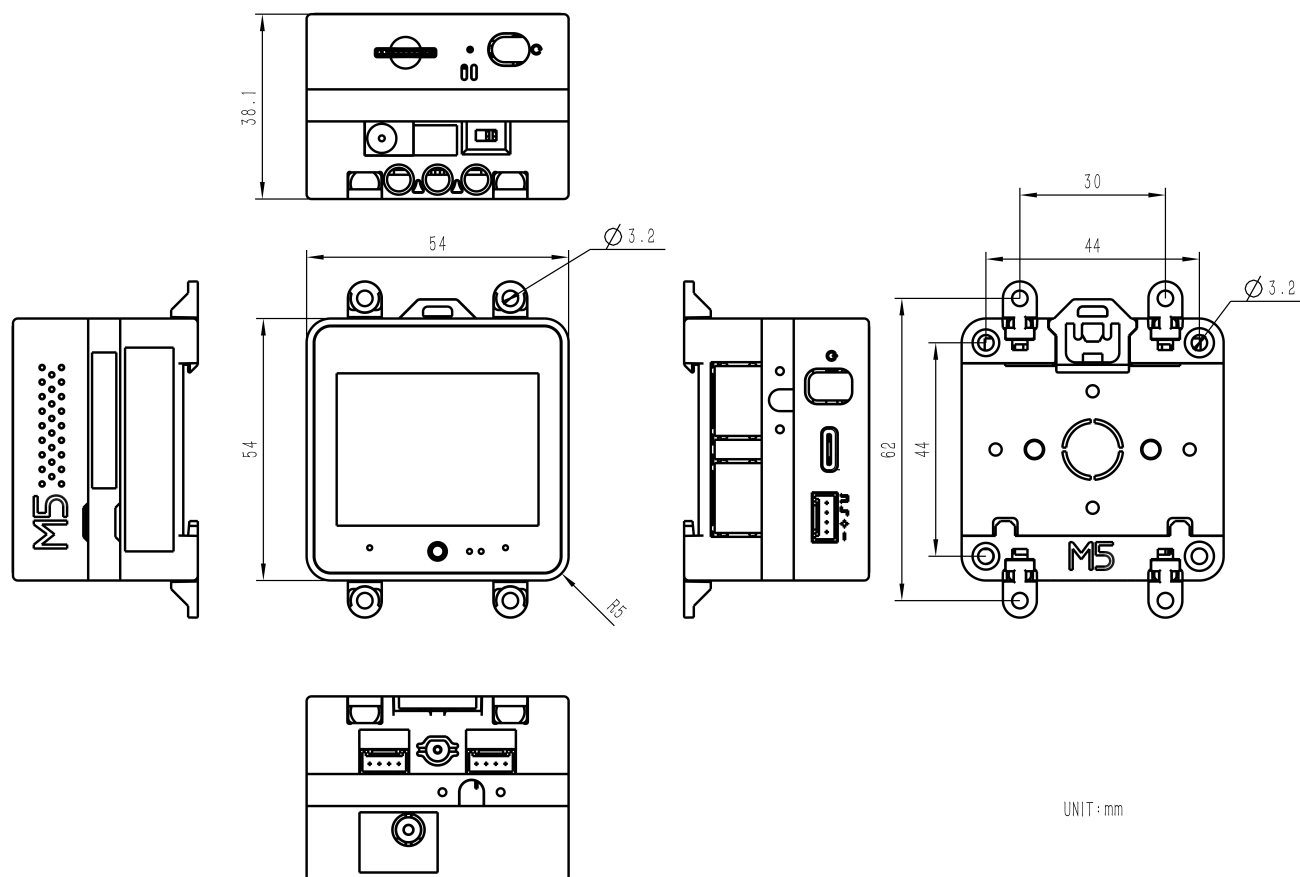
HY2.0-4P	Black	Red	Yellow	White
PORT.A	GND	5V	G2	G1
PORT.B	GND	5V	G9	G8
PORT.C	GND	5V	G17	G18

CoreS3 M5-Bus

FUNC	PIN	LEFT	RIGHT	PIN	FUNC
	GND	1	2	G10	ADC
	GND	3	4	G8	PB_IN
	GND	5	6	RST	EN
MOSI	G37	7	8	G5	GPIO
MISO	G35	9	10	G9	PB_OUT
SCK	G36	11	12	3V3	
RXD0	G44	13	14	G43	TXD0
PC_RX	G18	15	16	G17	PC_TX
Int SDA	G12	17	18	G11	Int SCL
PORT.A SDA	G2	19	20	G1	PORT.A SCL
GPIO	G6	21	22	G7	GPIO
I2S_DOUT	G13	23	24	G0	I2S_LRCK
	HVIN(Base DIN)	25	26	G14	I2S_DIN
	HVIN(Base DIN)	27	28	5V	
	HVIN(Base DIN)	29	30	BAT	

| Model Size

- [CoreS3 Thread BR Model Size PDF](#)



Softwares

ESP-IDF

- [ESP Thread BR ESP Zigbee Gateway](#)
- [ESP Thread BR ESP Thread Border Router](#)
- [ESP Thread BR Bi-directional IPv6 Connectivity](#)
- [ESP Thread BR NAT64](#)
- [ESP Thread Border Router SDK](#)

Other

- [CoreS3 Thread BR Factory Firmware Restoration Guide](#)

Videos

- [CoreS3 Thread BR Product Introduction and Feature Demonstration](#)

[K149-CoreS3-Thread-BR-video-EN.mp4](#)