

M5Station-BAT

SKU:K124-B



Description

M5Station-BAT is a multi-purpose **industrial level** programmable embedded controller with Espressif **ESP32** SOC, integrated **Wi-Fi** solution, dual core low-power **Xtensa® 32-bit LX6** microprocessor, main frequency up to **240MHz** . Onboard **16M FLASH** , integrated **240*135 1.14" full colour HD IPS display** + **physical keypad** + **rich peripherals, two sets of six expansion ports** + **Low-power sleep/wakeup function** + Integrated IMU **MPU6886** . Supports two types of power supply **USB Type-C, internal rechargeable 18650 battery (exclude battery)** . The integrated high power density boost DC/DC converter SCT12A0DHKR on board ensures the **stability** of the electrical equipment even in complex applications. This device is suitable for industrial control, intelligent buildings, multi-channel data acquisition nodes and prototyping applications.

- **HMI:**

- 1.14" IPS display panel
- 6-axis IMU MPU6886
- 3 physical programmable keys
- 1 ON/OFF button
- 7 programmable RGB LEDs

- **Power supply design:**

- **Input:**

- Integrated 9~24V->5V DC/DC **SY8303** Buck circuit
- **AXP192** power management chip

- **Output:**

- Each interface (6 Grove, 1 USB-A) is electronically switched on/off by **SGM2553D** .

- **INA3221** for voltage/current acquisition for Grove interfaces, and **INA199** for current acquisition for the USB-A
- Integrated high power density fully integrated boost DC/DC converter **SCT12A0DHKR**
- Low power consumption:
 - Integrated RTC **BM8563** to achieve low power sleep/wakeup function
- **Port design:**
 - 6 way Grove expansion interface
 - Port A1/A2 shared the same power and signal pins
 - Port B1/B2/C1/C2 have separate power and signal pins
 - USB Type-A power supply output only, no signal pins
- **Mechanical Design:**
 - **Din rail**
 - **Magnetic suction**
 - **Wall Mount**
 - **Screws**
 - **Ribbon**
- **Programming development:**
 - Supports **UIFlow graphical programming platform** , scripting, compile-free, cloud push
 - Fully compatible with Arduino, ESP32-IDF and other mainstream development platforms
 - Support FreeRTOS, with the help of dual-core and multitasking mechanism, efficient organization of task logic, optimize the execution efficiency of the program.

| Power Management

Operations:

Power on: Click the central power button

Power off: Press and hold the central power button for 4 seconds

| Contains

- 1x M5Station-BAT
- 1x Type-C USB (100cm)
- 1x Allen Wrench

| Applications

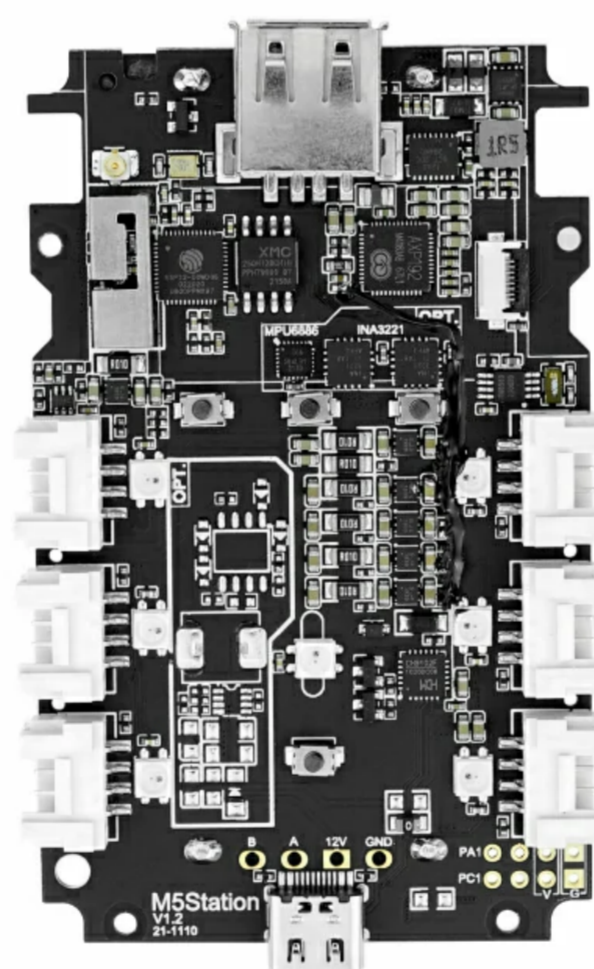
- IoT controllers
- STEM Education
- DIY creations
- Smart Home Devices
- IoT product prototyping

Specification

Spec	Parameters
ESP32-D0WDQ6-V3	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi
Flash	16MB
USB powered	5V@1A
Battery Specification	18650 x 2 (parallel)
Interface	Type-C * 1, GROVE(I2C+I/O+UART) * 6, Full-Size USB Type-A(OUTPUT)
LEDs	SK6812 * 7
Pushbuttons	Power Button, Physical Button \ 3
IPS LCD Screen	1.14"@240*135 ST7789V2
IMU	MPU6686
RTC	BM8563
PMU	AXP192
Voltage/Current Collector	INA3221 + INA199
USB Chips	CH9102F
DC/DC Boost	SCT12A0DHKR
Power Distribution Switch	SGM2553D
Antenna	2.4G 3D Antenna
Operating Temperature	0°C to 60°C

Spec Base Screw	Parameters Hexagon socket cup head M2*8 screw
Net Weight	79.5g
Gross Weight	126.6g

Product Dimensions	92 x 64.5 x 35 mm
Package Size	104.5 x 70.5 x 50mm
Case Material	ABS+PC



Driver Installation

? >Click on the link below to download the driver for your operating system. After extracting the zip package, select the installation package that corresponds to the operating system bit number to install. ([CH9102_VCP_SER_MacOS v1.7](#) may report an error during the installation process, but the installation is actually complete, just ignore it.) If you are unable to download the program properly (timeout or Failed to write to target RAM), you can try to reinstall the device driver.

Driver name	Applicable driver chip	Download link
-------------	------------------------	---------------

CH9102_VCP_SER_Windows	Application for chip	CH9102	Download
CH9102_VCP_SER_MacOS v1.7		CH9102	Download

EasyLoader

EasyLoader是一个简洁快速的程序烧录器,其内置了一个产品相关的案例程序,通过简单步骤将其烧录至主控,即可进行一系列的功能验证.

[Download Windows Version Easyloader](#)

Pin Mapping

key BUTTON A & key BUTTON B & key BUTTON C & power button

ESP32 Chip	GPIO37	GPIO38	GPIO39
BUTTON A	Key Pins		
BUTTON B		Key Pins	
BUTTON C			Key Pins

Color TFT screen

Driver chip:ST7789v2 Resolution:135 * 240 @1.14"

ESP32 Chip	GPIO5	GPIO1	GPIO1	GPIO1	GPIO2	
		5	8	9	3	
AXP192						AXP_LD
Chip						O3
LCD	CS	RESET	SCK	RS	MOSI	LCD_BL

IMU (3-axis gyroscope + 3-axis accelerometer)

ESP32 Chip	GPIO21	GPIO22	GPIO27
MPU6886	SDA	SCL	INT

RTC

ESP32 Chip	GPIO21	GPIO22	
BM8563	SDA	SCL	INT
AXP192			AXP_PWR

Current and Voltage Monitor

ESP32 Chip	GPIO21	GPIO22	Control Channel
INA3221(0x40)	SDA	SCL	AXP_GPIO0,AXP_GPIO1
INA3221(0x41)	SDA	SCL	AXP_GPIO2,AXP_GPIO3,AXP_GPIO4

Internal I2C connection

ESP32 Chip	GPIO21	GPIO22
MPU6886	SDA	SCL
AXP192	SDA	SCL
BM8563	SDA	SCL
INA3221	SDA	SCL

USB to Serial Port

ESP32 Chip	GPIO3	GPIO1
CH9102F	TXD	RXD

Power Management Chips (AXP192)

RTC	LCD BackLight	ESP32-3.3V MPU6886,SK6812,INA3221,CH902F
LDO1	LDO3	DC-DC1

External battery power indicator

AXP192	BAT
LED	VCC

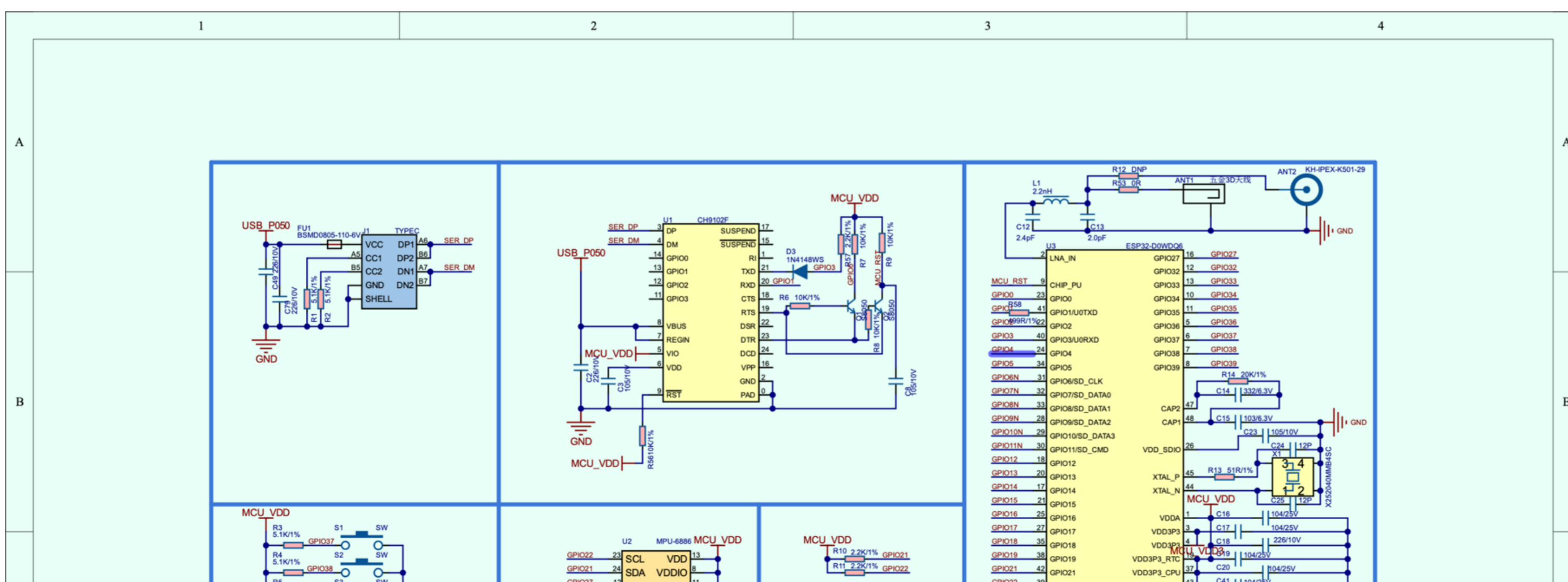
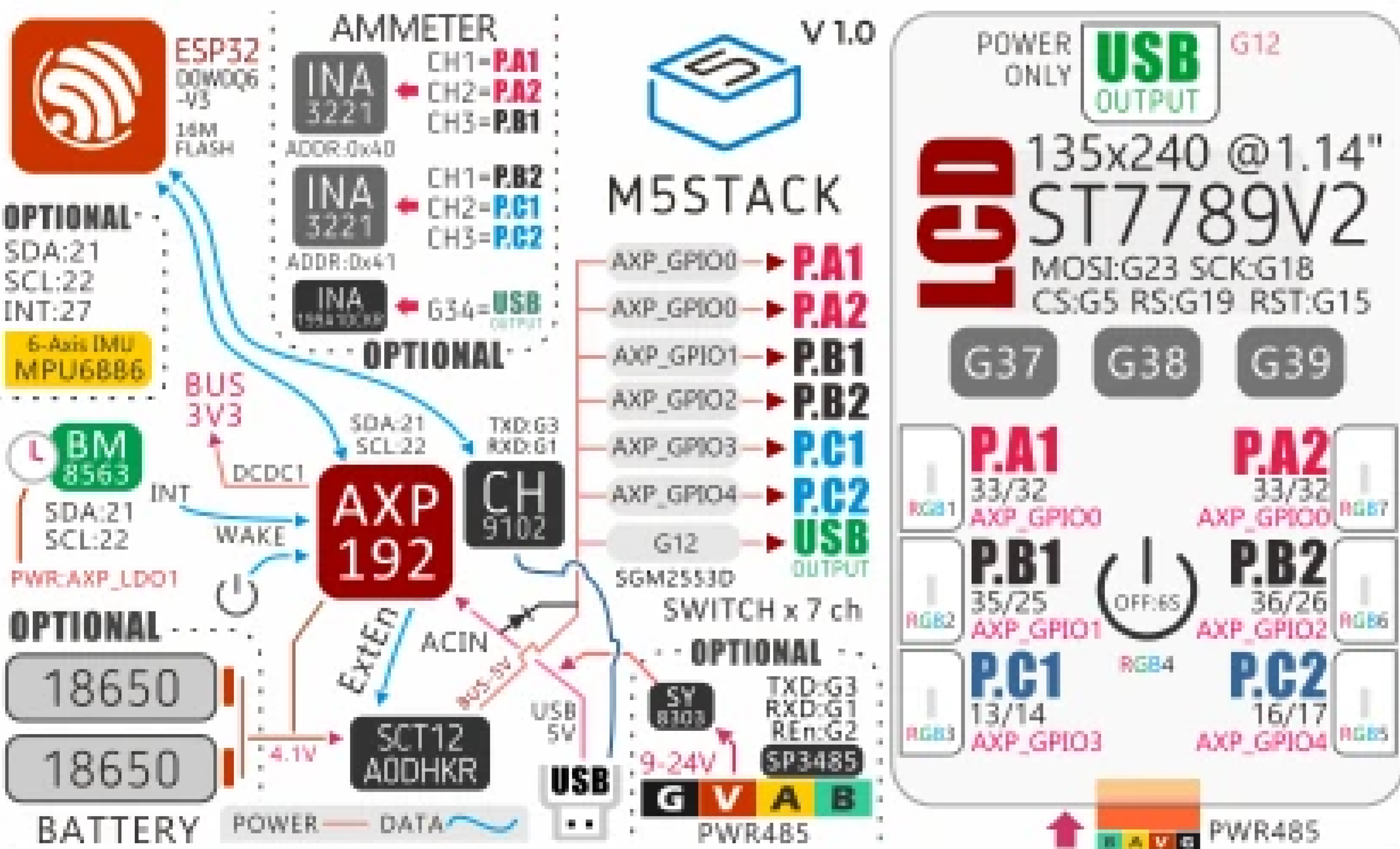
M5Station Port Description

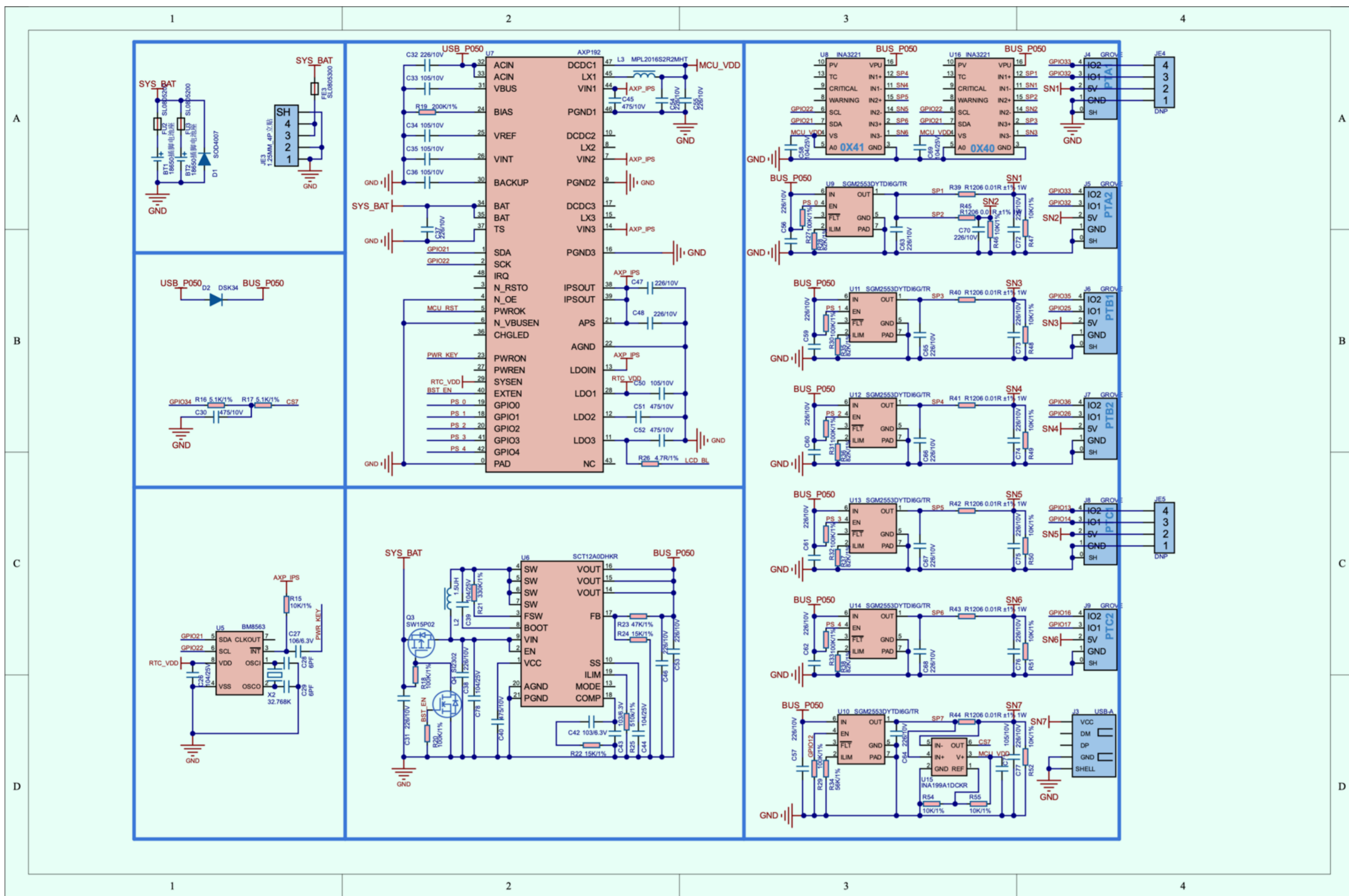
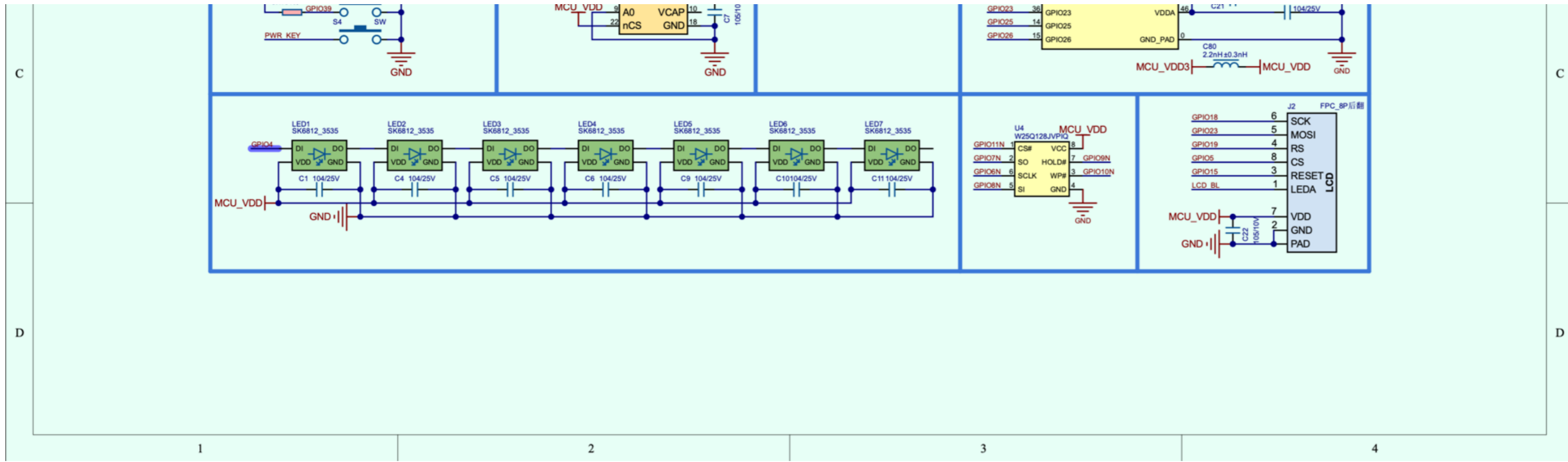
PORT	PIN	Metering Port	Notes:
PORT-A1(red)	G32/33(SDA/SCL)	AXP_GPIO0	I2C
PORT-A2(red)	G32/33(SDA/SCL)	AXP_GPIO0	I2C
PORT-B1(black)	G25/35(OUT/IN)	AXP_GPIO1	DAC/ADC
PORT-B2(black)	G26/36(OUT/IN)	AXP_GPIO2	DAC/ADC
PORT-C1(blue)	G14/13(TX/RX)	AXP_GPIO3	UART

Energy consumption parameters

Operating current	Standby current \ (off)
146.3mA	31.6uA

Schematic





○ [Schematic PDF](#)

Related Link

○ **Datasheet**

- [ESP32](#)
- [ST7789v2](#)
- [SY8303AIC](#)
- [SP3485](#)
- [SCT12A0DHR](#)
- [INA3221_EN](#)
- [INA199_EN](#)
- [SGM2553](#)
- [BM8563](#)
- [MPU6886](#)
- [AXP192 datasheet](#)
- [AXP192 register](#)

Version differentiation

PWR485 (RS485 + power
input)

MPU6886 on board, can carry two 18650 batteries
(parallel)

Example

Arduino

- [M5Station Lib](#)