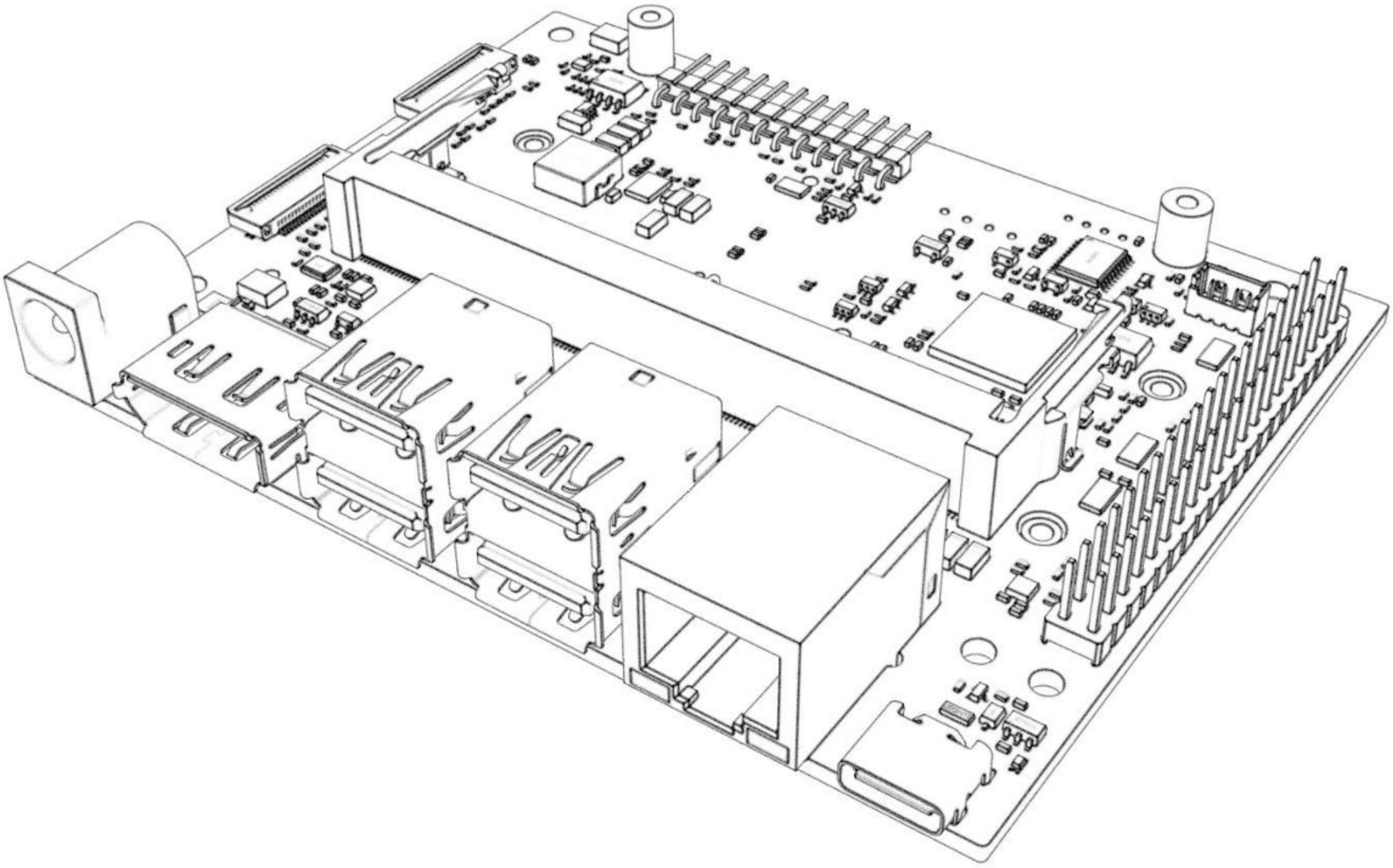
C1902

- C1902□□□□
- C1902 Introduction



C1902????

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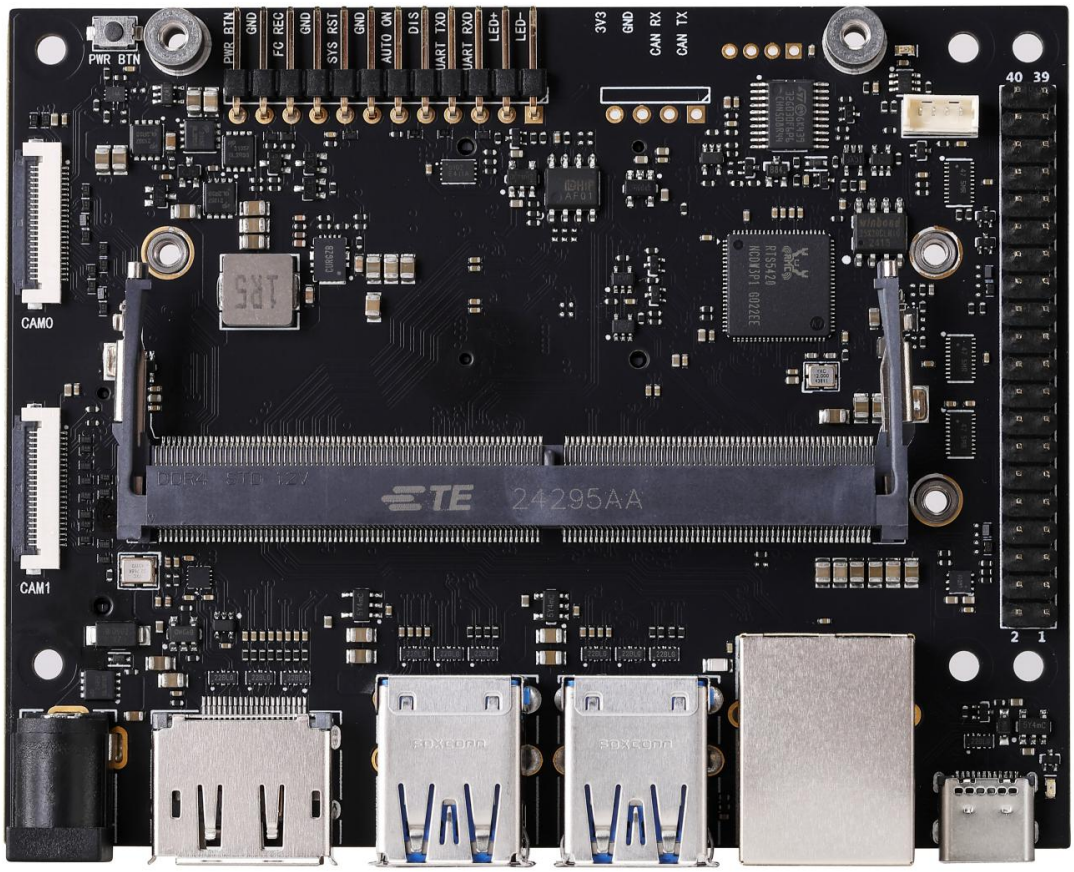
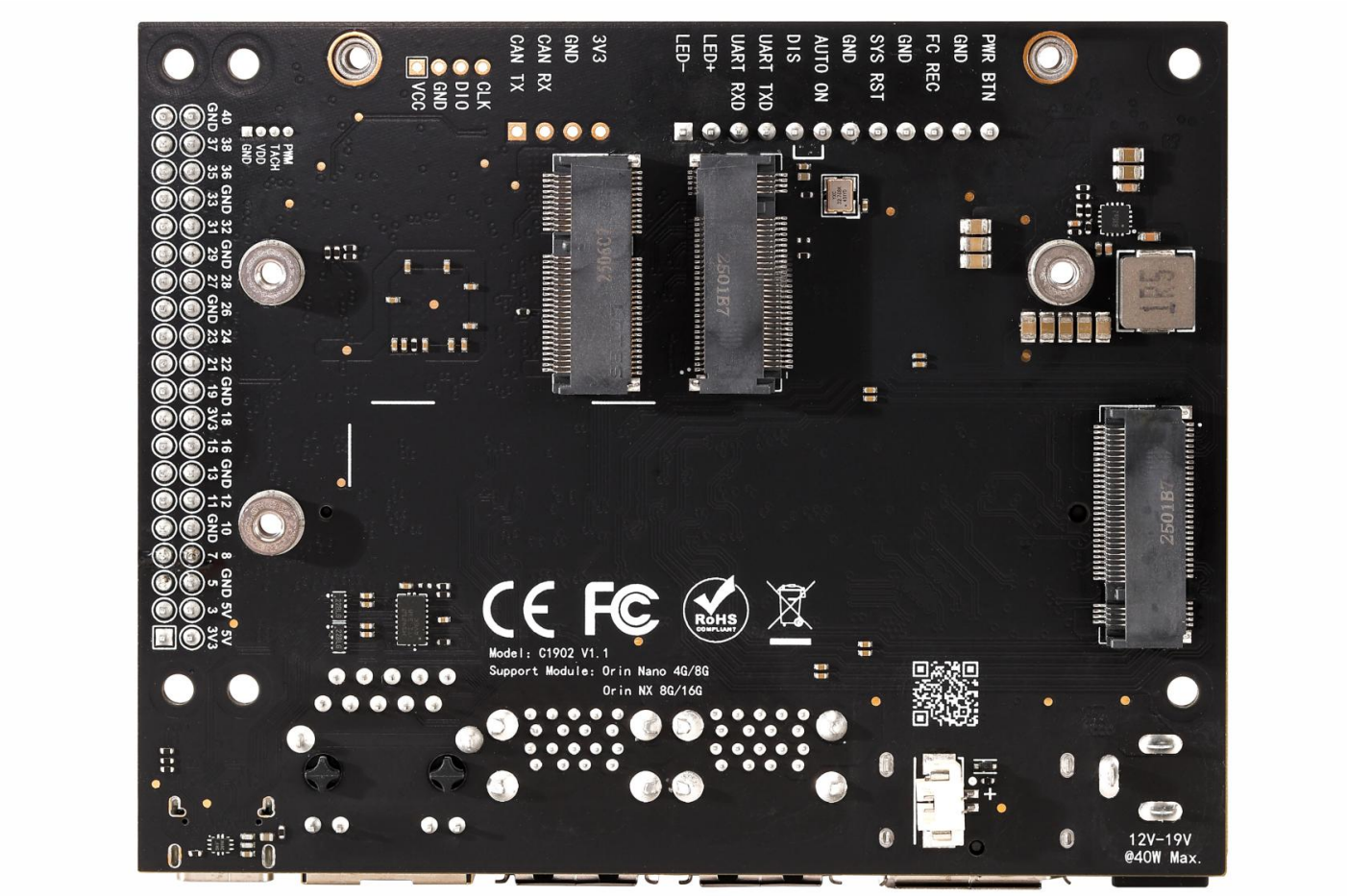
C1902 是一款针对 **Jetson Orin Nano & NX** 核心卡进行研发的载板，该底板基于公版方案进行开发，完美兼容官方设计套件的功能，包括全速的 USB3.0 接口及 TYPE-C 接口。


PWR BTN
PWR_BTN
GND
FC REC
GND
SYS RST
GND
AUTO ON
DIS
UART TXD
UART RXD
LED+
LED-
3V3
GND
CAN RX
CAN TX
40 39
2 1
CAM0
CAM1
TE
24295AA



背面

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- **C1902** 基于原厂方案进行开发，所有接口功能与原厂一致且可以 直接烧录 **Developer Kit** 固件。
- 支持 **Orin Nano 4G/8G & Orin NX 8G/16G**。
- 高品质 6 层沉金 PCB，全 MLCC 电容以及镀金连接器。
- 支持 **NVME** 硬盘 和 **M.2** 网卡。

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版本	日期	备注
V1.0	2024 Q3	C1902 的第一个版本
V1.1	2025 Q1	1. 修复了一个 GPIO 问题，该问题曾导致 12/35/38/40 号引脚在原厂设备树下不可用。 2. 增加了对 ORIN NANO/NX 全系列的 SUPER 模式的支持。
V1.1.1	2025 Q2	1. 修改 DC 电源输入座子规格，由 DC5521 变为 5525。

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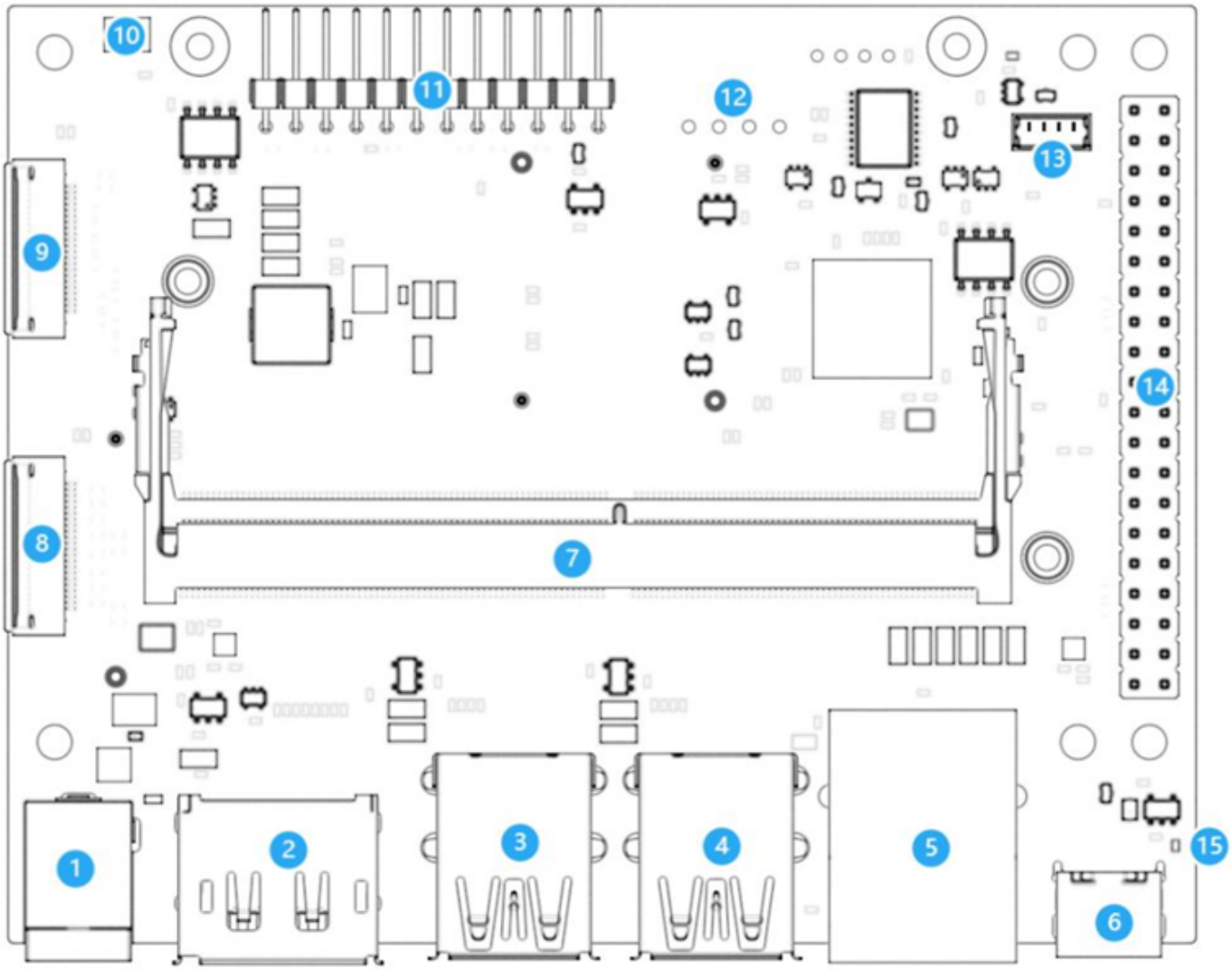
供电电压	12V (兼容 9-19V)
工作温度	0℃ ~ 45℃
支持的核心	Orin Nano 4G/8G Orin NX 8G/16G
电源接口	DC5525
以太网	1x 千兆网口 (RJ45)
无线网卡	1x M.2 Key E
存储扩展	2x M.2 Key M (NVME SSD)
显示	1x DP1.2
USB	4x USB3.2 (10Gbps)
USB C	1x Type C (USB3.0)
相机接口	2x CSI-2 22P
其余接口	和原厂一致
RTC 电池	支持
POE 供电	不支持

- 本底板支持 12V (9V~19V) 供电，请保证电源拥有足够的功率，以保证系统工作正常。
- 当供电电压大于 15V 且负载较大时，请注意加强散热。
- 本产品支持电源输入反接保护，但原则上在任何时刻都不应反接电源。
- 每组 USB 接口合计最大输出电流为 2.5A，当系统监测到电流大于 2.5A 时，会切断 USB 供电输出。
- 背面网卡接口与 M.2 2230 接口相比原厂改为对称布局。
- 禁止在载板未断电时拔插核心卡，该行为会导致核心卡及载板损坏，由不规范操作产生的损失将由客户自行承担。

功能对比:

规格参数	原厂载板	**C1902** (本产品)	**C1901**
供电电压	19V	12V (兼容 9-19V)	12V (兼容 9-19V)
电源接口	DC5525	DC5525	DC5521 (兼容 DC5525插头)
以太网	1x 千兆网口 (RJ45)	1x 千兆网口 (RJ45)	1x 千兆网口 (RJ45)
无线网卡	1x M.2 Key E	1x M.2 Key E	1x M.2 Key E
存储扩展	2x M.2 Key M	2x M.2 Key M	2x M.2 Key M
显示接口	1x DP 1.2	1x DP 1.2	1x HDMI (1080P)
USB 接口	4x USB 3.0	4x USB 3.0	3x USB 3.0 + 1x USB 2.0 (需改设备树)



规格参数	原厂载板	**C1902** (本产品)	**C1901**
USB Type-C	1x Type-C (USB 3.0)	1x Type-C (USB 3.0)	1x Type-C (USB 2.0)
相机接口	2x CSI-2 2lane	2x CSI-2 2lane	2x CSI-2 2lane
RTC 电池	不支持	支持	支持
POE 供电	支持 （但未焊接 ）	不支持	不支持
其余接口	-	和原厂一致	和原厂一致

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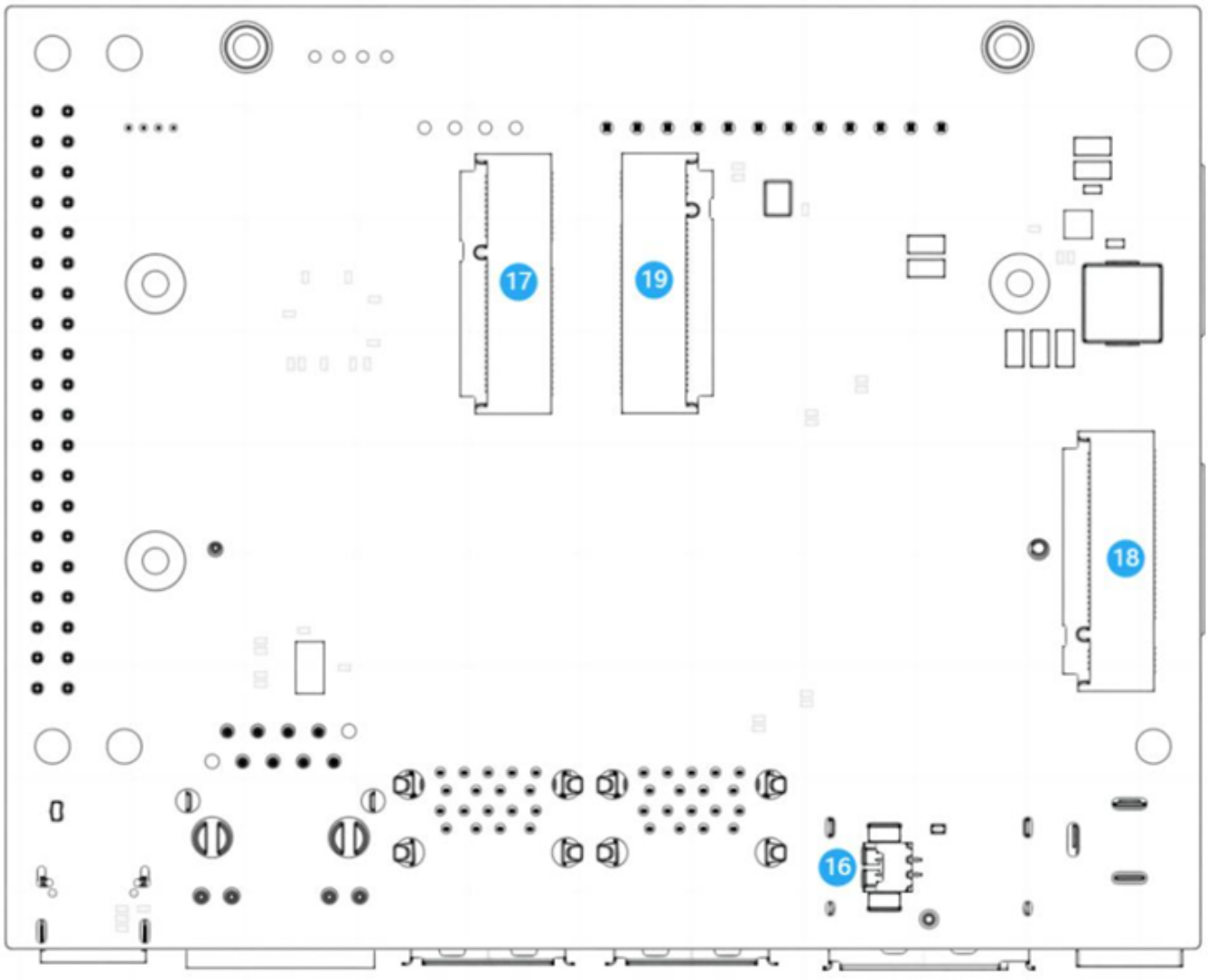
序号	名称	备注
1	电源输入接口	接头规格: DC5525
2	DP接口	DP1.2输出接口
3	USB Type-A 接口	2 x USB 3.0
4	USB Type-A 接口	2 x USB 3.0



序号	名称	备注
5	以太网接口	1000Mbps (千兆) 网口
6	USB Type-C 接口	用于烧录固件
7	260-pin SO-DIMM 接口	连接 Jetson核心卡
7	40Pin GPIO 接口	包含 (3x) I2C, (2x) SPI, UART, I2S, GPIOs
8	CSI0 接口	22P-CSI 接口
9	CSI1 接口	22P-CSI 接口
10	启动按钮	
11	12-pin 调试接口	
12	CAN 调试接口	未焊接
13	风扇接口	支持 PWM调速
14	40pin拓展接口	
15	Power LED	

序号	名称	备注
16	RTC 接口	RTC时钟电池
17	M.2 Key E	2230规格
18	M.2 Key M	2280规格
19	M.2 Key M	2230规格

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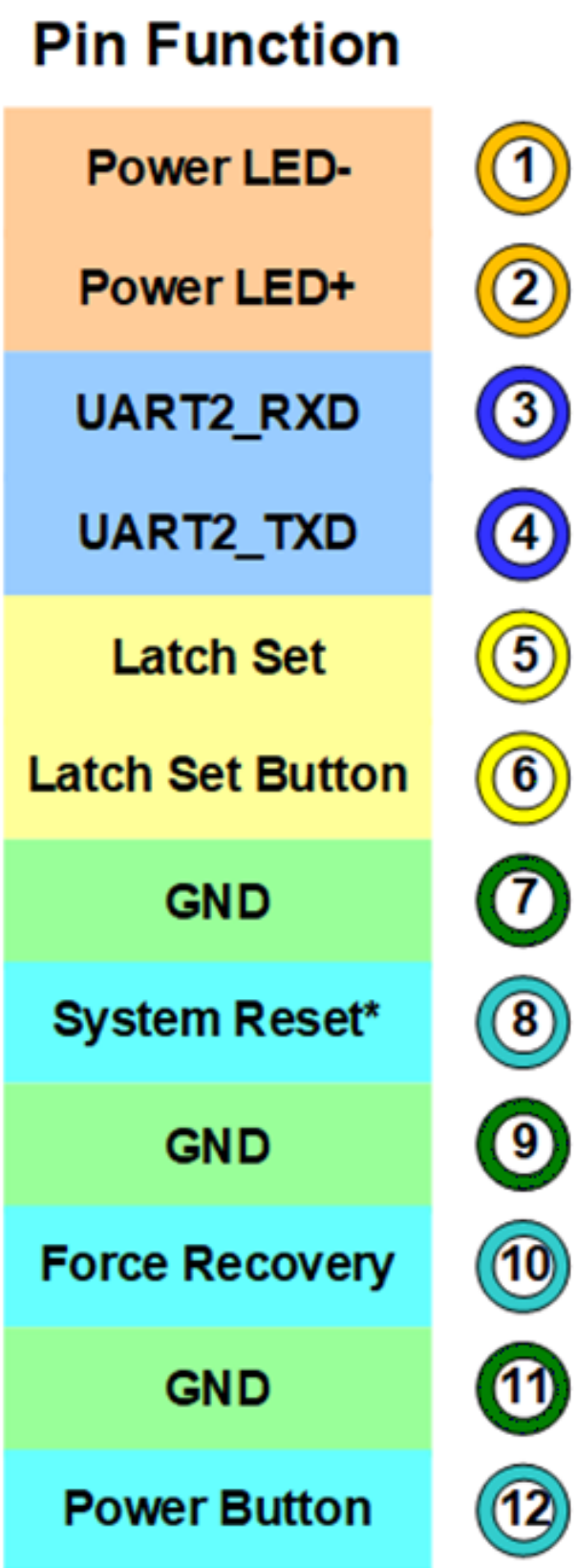
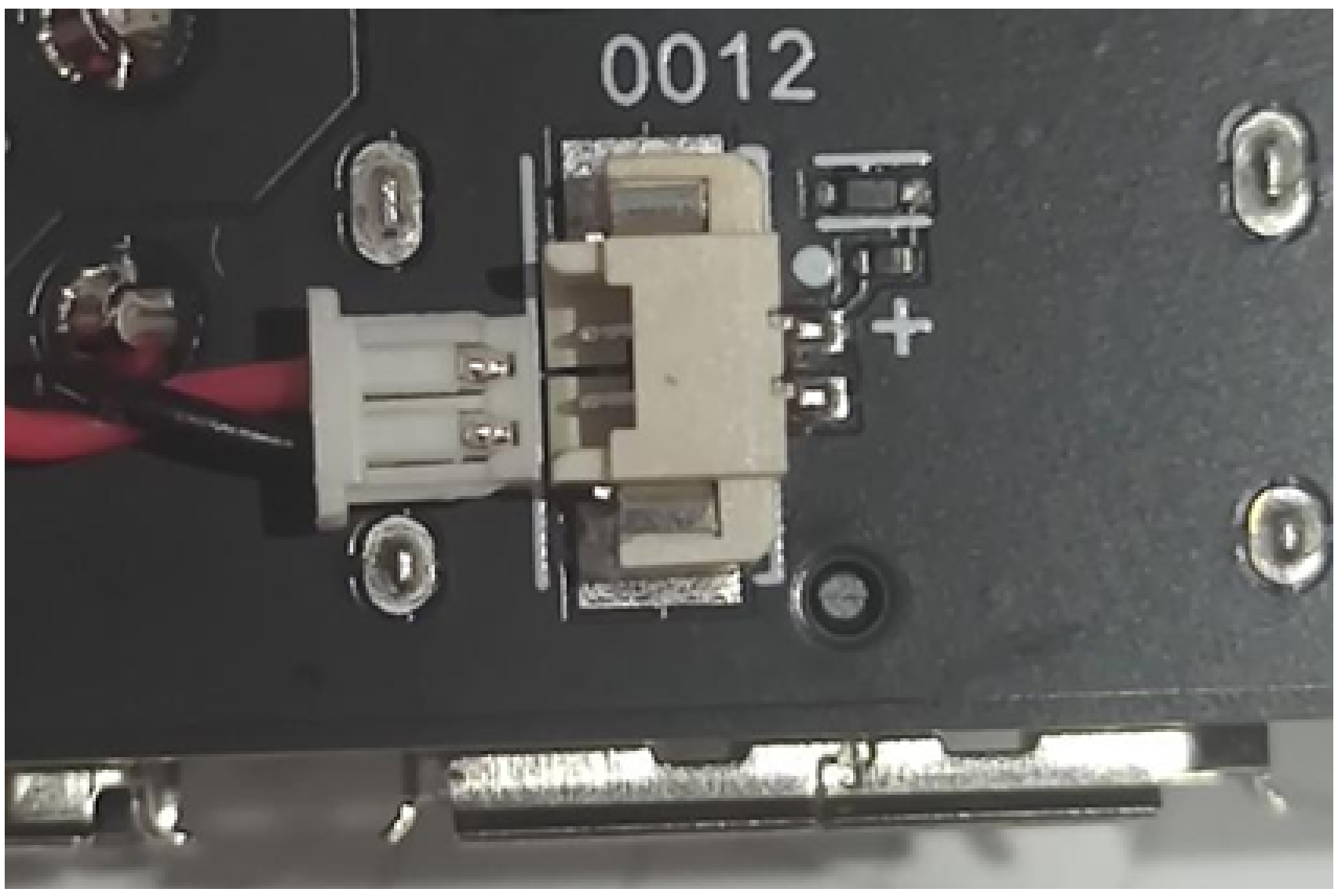
- 启动按钮 **(10)**：相比于原厂载板， C1902多设置了一个启动按钮，该按钮具有以下功能：
  - 系统启动时 ：按动一次进入关机界面，长按 10 秒强制关机。
  - 系统关闭时 ：按动一次进行开机。
- **40PIN**排针 **(14)**： 40Pin GPIO排针中的 5V 输出具有倒灌保护，该 5V 输出最大电流为 0.8A ，过流会关断输出，参考定义如下（实际以核心卡为准）。

Sysfs GPIO	Name	Pin	Pin	Name	Sysfs GPIO
	3.3 VDC *Power*	1	2	**5.0 VDC** *Power*	
	I2C1_SDA *I2C Bus 7*	3	4	**5.0 VDC** *Power*	
	I2C1_SCL *I2C Bus 7*	5	6	**GND**	
144 gpio492	**GPIO9** *AUDIO_MCLK*	7	8	**UART1_TX** */dev/ttyTHS0*	
	GND	9	10	**UART1_RX** */dev/ttyTHS0*	
112 gpio460	**UART1_RTS**	11	12	**I2S0_SCLK**	*50* gpio398
122 gpio470	**SPI1_SCK**	13	14	**GND**	
85 gpio433	**GPIO12** *Alt: PWM*	15	16	**SPI1_CS1**	*126* gpio474
	3.3 VDC *Power*	17	18	**SPI1_CS0**	*125* gpio473
135 gpio483	**SPI0_MOSI**	19	20	**GND**	
134 gpio482	**SPI0_MISO**	21	22	**SPI1_MISO**	*123* gpio471
133 gpio481	**SPI0_SCK**	23	24	**SPI0_CS0**	*136* gpio484
	GND	25	26	**SPI0_CS1**	*137* gpio485
	I2C0_SDA *I2C Bus 1*	27	28	**I2C0_SCL** *I2C Bus 1*	
105 gpio453	**GPIO01**	29	30	**GND**	





- **12Pin**调试接口 **(11)** 定义如下:

Pin Function

Power LED-	1
Power LED+	2
UART2_RXD	3
UART2_TXD	4
Latch Set	5
Latch Set Button	6
GND	7
System Reset*	8
GND	9
Force Recovery	10
GND	11
Power Button	12

- 固态硬盘必须使用单面版本，使用双面贴片版本固态硬盘，有可能发生干涉，引起短路。
- 电池接口 (4): 相比于原厂载板， C1901 多设置了一个 RTC 电池连接器，该连接器型号为 MX1.25-2P，电池电压为 3V。使用电池时，请确认好极性，禁止接反电池。

接入电池后，需要进行配置才能启用 RTC 时钟，详情请参考 RTC 说明

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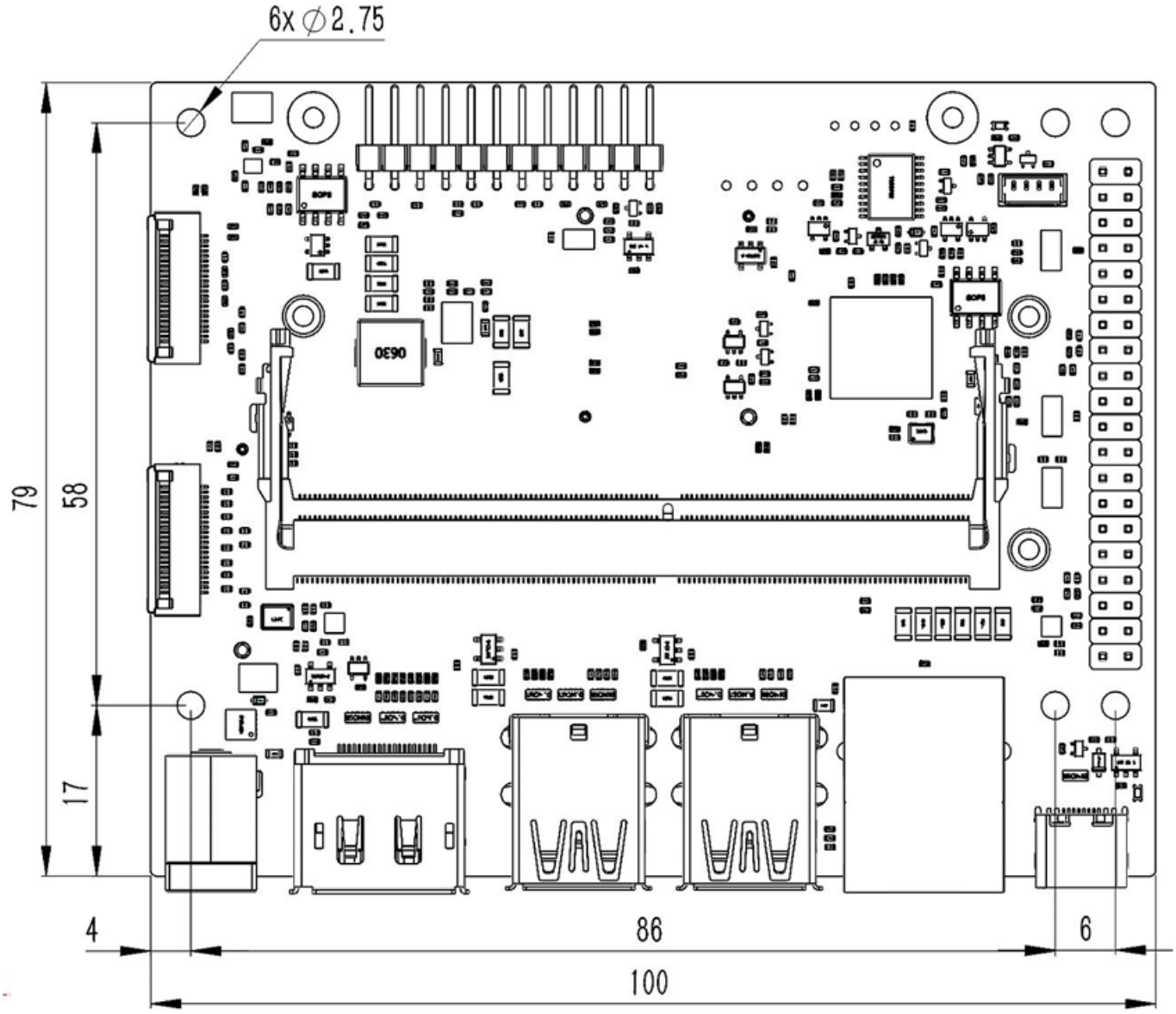

螺钉位置	推荐的规格	备注
载板固定孔	M2.5 螺钉或铜柱	螺钉或铜柱直径不得大于 6mm
核心卡、硬盘	M2.5 x 4 薄头螺钉	推荐使用薄头螺钉，以避免干涉
网卡	M2.5 x 4 薄头螺钉	推荐使用薄头螺钉，以避免干涉

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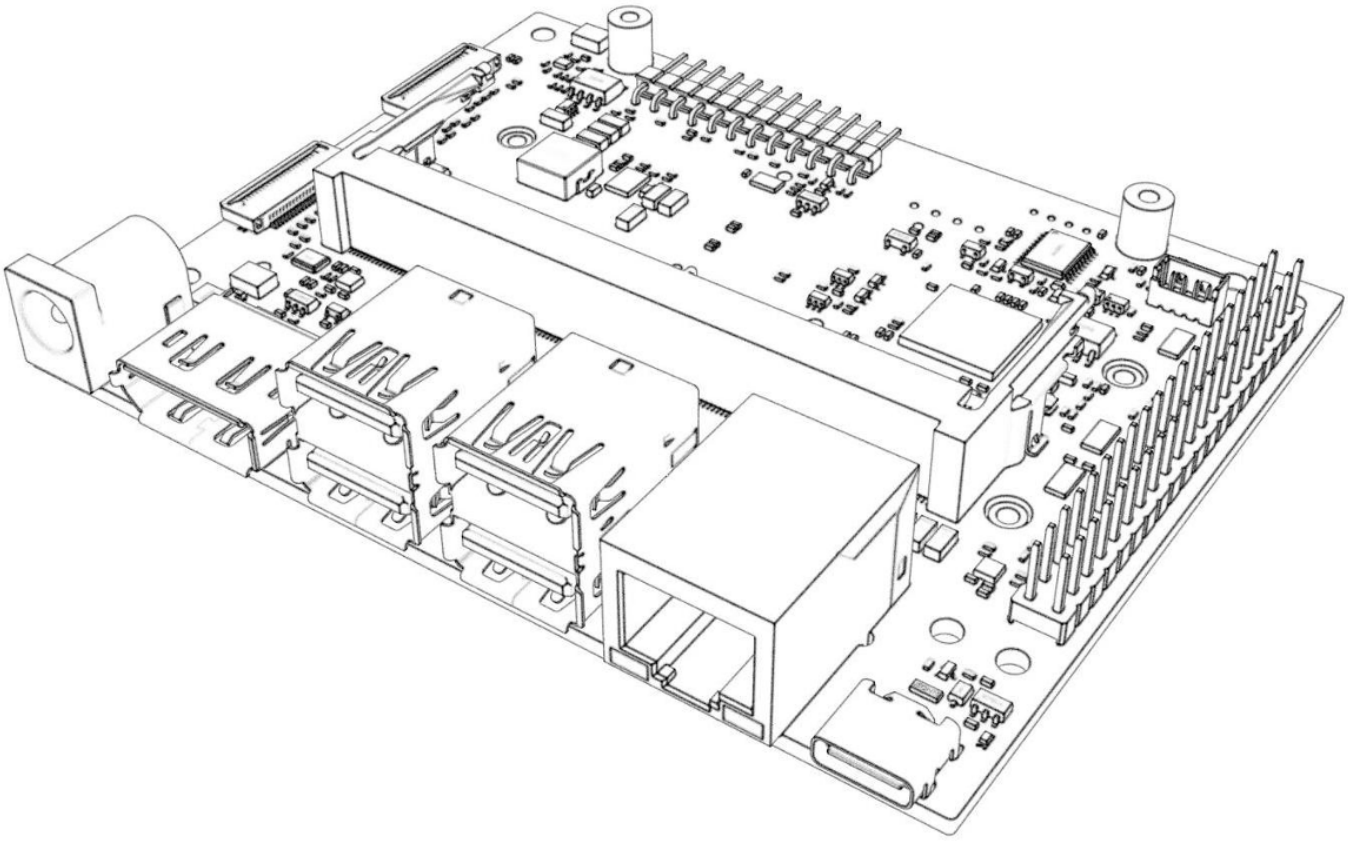
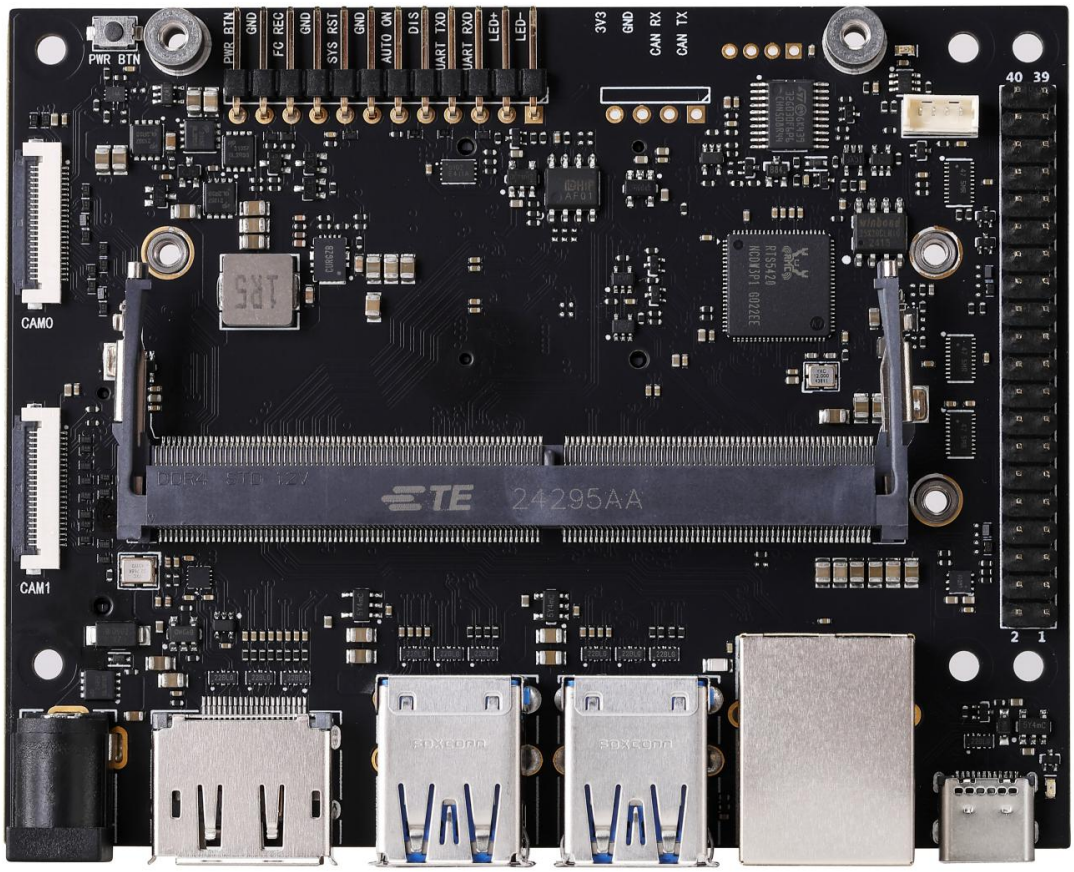
- Jetson Orin C1902 刷机教程
- Jetson 基础教程
- JetPack 配置说明
- Jetson AI 视觉教程
- Jetson 大模型教程
- C1901/1902 USB 设备树替换说明

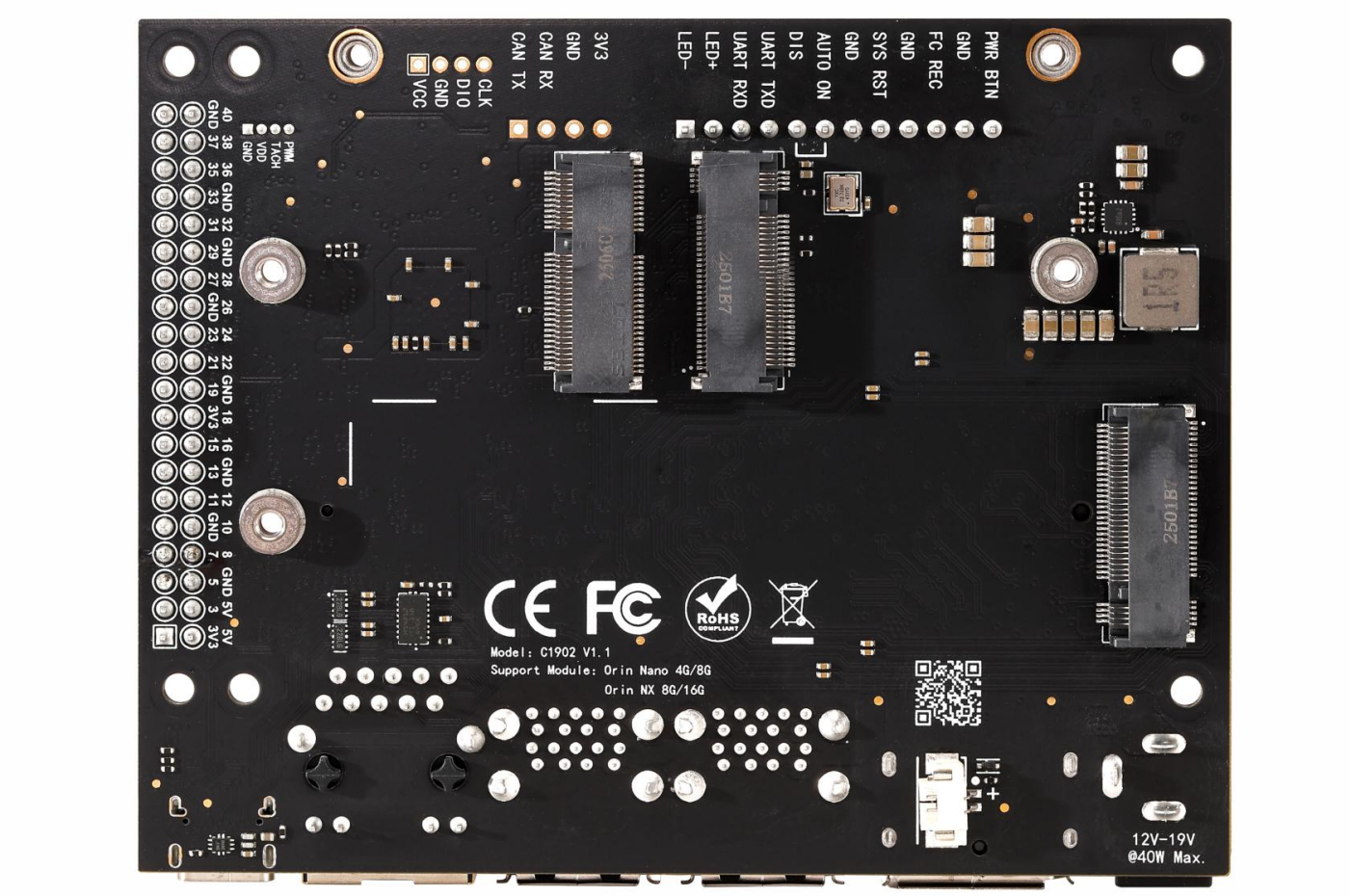
C1902 Introduction



Introduction

The C1902 is a development board specifically designed for Jetson Orin Nano & NX modules. Built on a standard board design, it fully supports the official developer kit's features, including full-speed USB3.0 and Type-C ports.


PWR BTN
PWR_BTN
GND
FC REC
GND
SYS RST
GND
AUTO ON
DIS
UART TXD
UART RXD
LED+
LED-
3V3
GND
CAN RX
CAN TX
40 39
2 1
CAM0
CAM1
TE
24295AA



Fearture

- C1902 was developed based on the original manufacturer's solution, with all interface functions matching the original manufacturer's and supporting direct firmware flashing via Developer Kit
- Compatible with NVIDIA® Jetson Orin Nano (4GB/8GB) and Orin NX (8GB/16GB) modules.
- Premium 6-layer gold-plated PCB with full MLCC capacitors and gold-plated connectors
- Supports M.2 NVMe SSD and M.2 Wi-Fi module

History

Version	Date	Description
V1.0	2024 Q3	The first version of C1902
V1.1	2025 Q1	1. Fixed a GPIO issue that previously caused pins 12/35/38/40 to be unavailable under the original device tree. 2. Enhanced support for the SUPER mode across the entire ORIN NANO/NX series

Version	Date	Description
V1.1.1	2025 Q2	3. Modify the DC power input socket specifications from DC5521 to DC5525

Datasheet

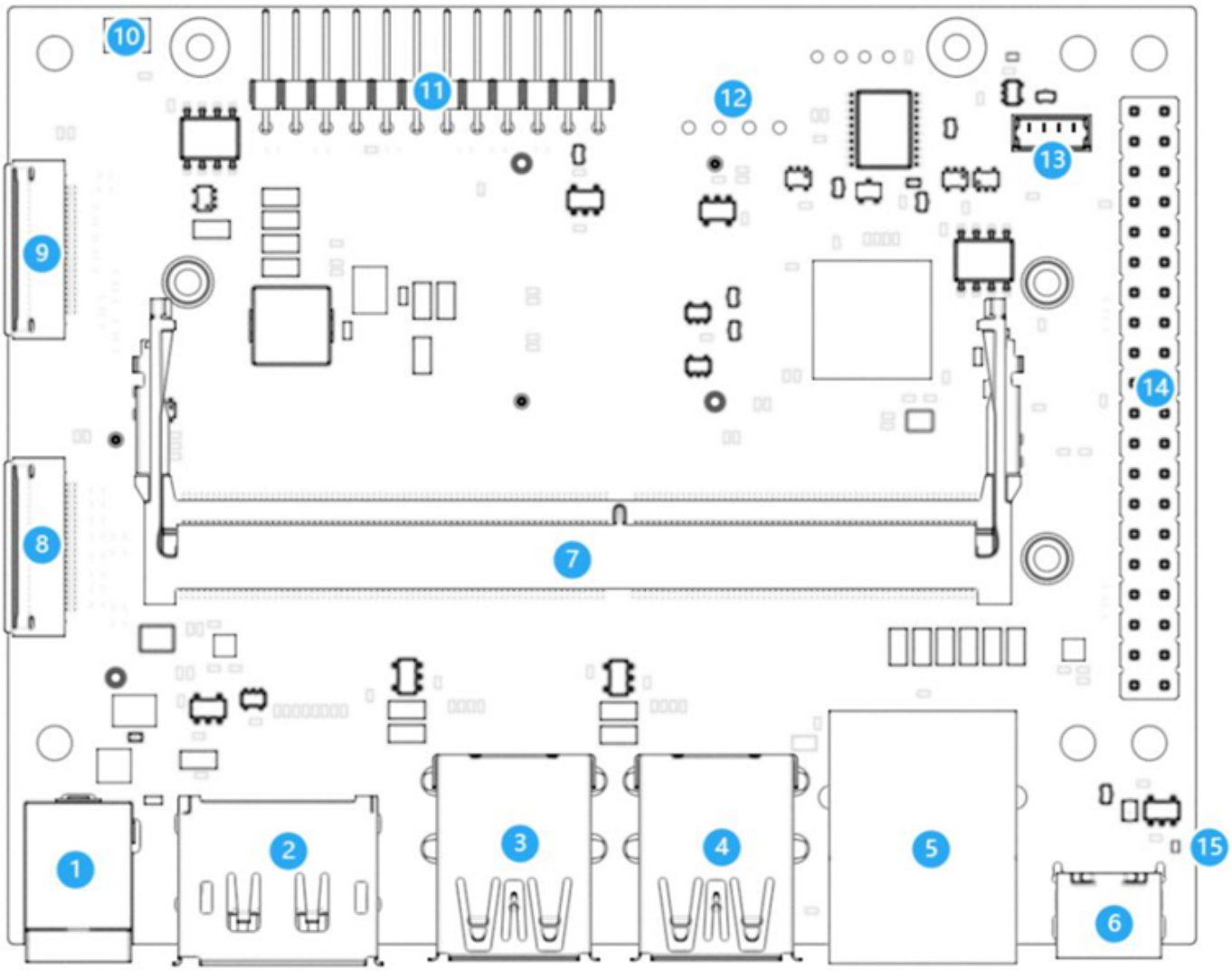
Supply Voltage	12V (compatible with 9-19V)
Operating Temperature	0℃~45℃
Supported Module	Orin Nano 4G/8G Orin NX 8G/16G
Power Connector	DC5525
Ethernet	1x Gigabit Ethernet Socket (RJ45)
Wireless Network Adapter	1x M.2 Key E
External Storage	2x M.2 Key M (NVME SSD)
DisplayPort	1x DP V1.2
USB	4x USB3.2 (10Gbps)
USB C	1x Type C (USB3.0)
Camera	2x CSI-22P
Other	Consistent with original specs
RTC	support
POE	not supported

- The carrier board requires a 12V(compatible with 9-19V) DC power supply. To ensure normal system operation, a power adapter with sufficient current output must be used. Additionally, under high load conditions with an input voltage exceeding 15V, adequate heat dissipation must be provided to prevent overheating.
- This product includes reverse-polarity protection. Nevertheless, do not connect the power supply in reverse.
- The over-current protection (OCP) threshold for all USB ports is 2.5A. Exceeding this limit will trigger an automatic shutdown of the power output.
- In contrast to the original M.2 2230 interface, the backplane's network interface now features a symmetrical layout.
- Do not hot-swap the module. Always power off the board before inserting or removing the module. Failure to do so may damage the module and the carrier board. Damage caused by improper operation is not covered under warranty.

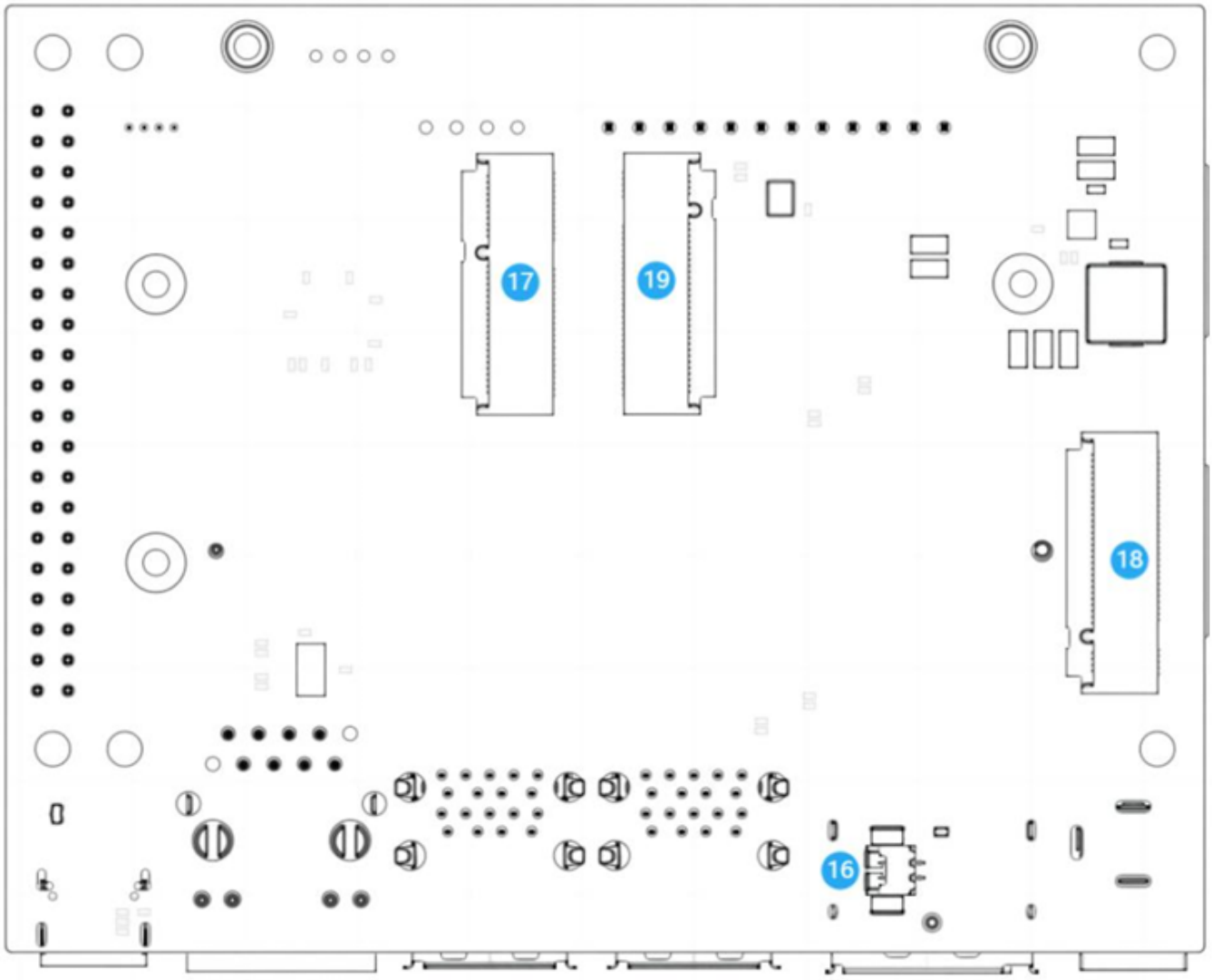
Camparison

	Original	C1901 V1.3	C1902 V1.1
Supply Voltage	19V	12V (compatible with 9-19V)	12V (compatible with 9-19V)
Power Connector	DC5525	DC5521 (compatible with DC5525)	DC5525
Ethernet	1x Gigabit Ethernet Socket (RJ45)	1x Gigabit Ethernet Socket (RJ45)	1x Gigabit Ethernet Socket (RJ45)
Wireless Network Adapter	1x M.2 Key E	1x M.2 Key E	1x M.2 Key E
External Storage	2x M.2 Key M	2x M.2 Key M	2x M.2 Key M
Display	1x DP V1.2	1x HDMI (1080P)	1x DP V1.2
USB	4x USB3.0	3x USB3.0+1 xUSB2.0 (requires device tree modification)	4x USB3.0
USB C	1x Type C (USB3.0)	1x Type C (USB2.0)	1x Type C (USB3.0)
Camera	2x CSI-22P	2x CSI-22P	2x CSI-22P
RTC	Not Supported	Supported	Supported
Other	-	Match the original	Match the original
POE	Supported (Not Populated)	Not Supported	Not Supported
SUPER Mode	Only ORIN NANO series is supported	Only ORIN NANO series is supported	Supports the ORIN Nano/NX series

Interface Layout



1	Power Jack	**9**	Camera (#0) Connector (22p, 0.5 mm)
2	DP Connector	**10**	Power Button
3	USB 3.0 Type A(x2 Stacked)	**11**	Button Header (1x12, 2.54 mm)
4	USB 3.0 Type A(x2 Stacked)	**12**	CAN Bus Header (1x4, 2.54 mm)
5	RJ45 Ethernet Socket	**13**	Fan Header
6	USB Type C	**14**	40-pin Expansion Header(2x20, 2.54 mm)
7	Jetson Orin Module Connector	**15**	Power LED
8	Camera (#1) Connector (22p, 0.5 mm)		



16	RTC Socket	**18**	M.2 Key M Socket (4-lane)
17	M.2 Key E Socket (75-pin)	**19**	M.2 Key M Socket (2-lane)

Feature Deatial

- Power Button **(10)**: The C1902 incorporates an additional function button not present on the reference board. Its operation is as follows:
  System Running:A short press enters the shutdown menu; a long press (10 seconds) forces a power-off.When the system is off: press once to power on.
  System Off: A short press powers on the system.

- Expansion Header **(14):** The 40-pin GPIO header provides a 5V output rail with reverse current protection. It supports a maximum current of 0.8A and is safeguarded by over-current protection (OCP), which automatically disables the output upon detecting a fault. Actual performance depends on the specific system-on-module (SOM) in use. Please refer

to the specifications below.

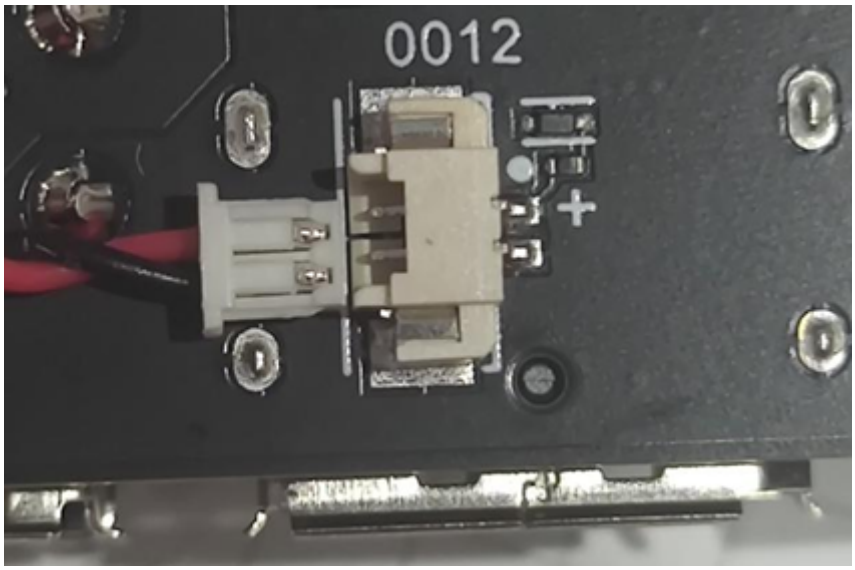
Sysfs GPIO	Name	Pin	Pin	Name	Sysfs GPIO
	3.3 VDC *Power*	1	2	**5.0 VDC** *Power*	
	I2C1_SDA *I2C Bus 7*	3	4	**5.0 VDC** *Power*	
	I2C1_SCL *I2C Bus 7*	5	6	**GND**	
144 gpio492	**GPIO9** *AUDIO_MCLK*	7	8	**UART1_TX** */dev/ttyTHS0*	
	GND	9	10	**UART1_RX** */dev/ttyTHS0*	
112 gpio460	**UART1_RTS**	11	12	**I2S0_SCLK**	*50* gpio398
122 gpio470	**SPI1_SCK**	13	14	**GND**	
85 gpio433	**GPIO12** *Alt: PWM*	15	16	**SPI1_CS1**	*126* gpio474
	3.3 VDC *Power*	17	18	**SPI1_CS0**	*125* gpio473
135 gpio483	**SPI0_MOSI**	19	20	**GND**	
134 gpio482	**SPI0_MISO**	21	22	**SPI1_MISO**	*123* gpio471
133 gpio481	**SPI0_SCK**	23	24	**SPI0_CS0**	*136* gpio484
	GND	25	26	**SPI0_CS1**	*137* gpio485
	I2C0_SDA *I2C Bus 1*	27	28	**I2C0_SCL** *I2C Bus 1*	
105 gpio453	**GPIO01**	29	30	**GND**	

Reference link: https://jetsonhacks.com/pinouts/

- The 12Pin Header **(11)** is defined as follows:

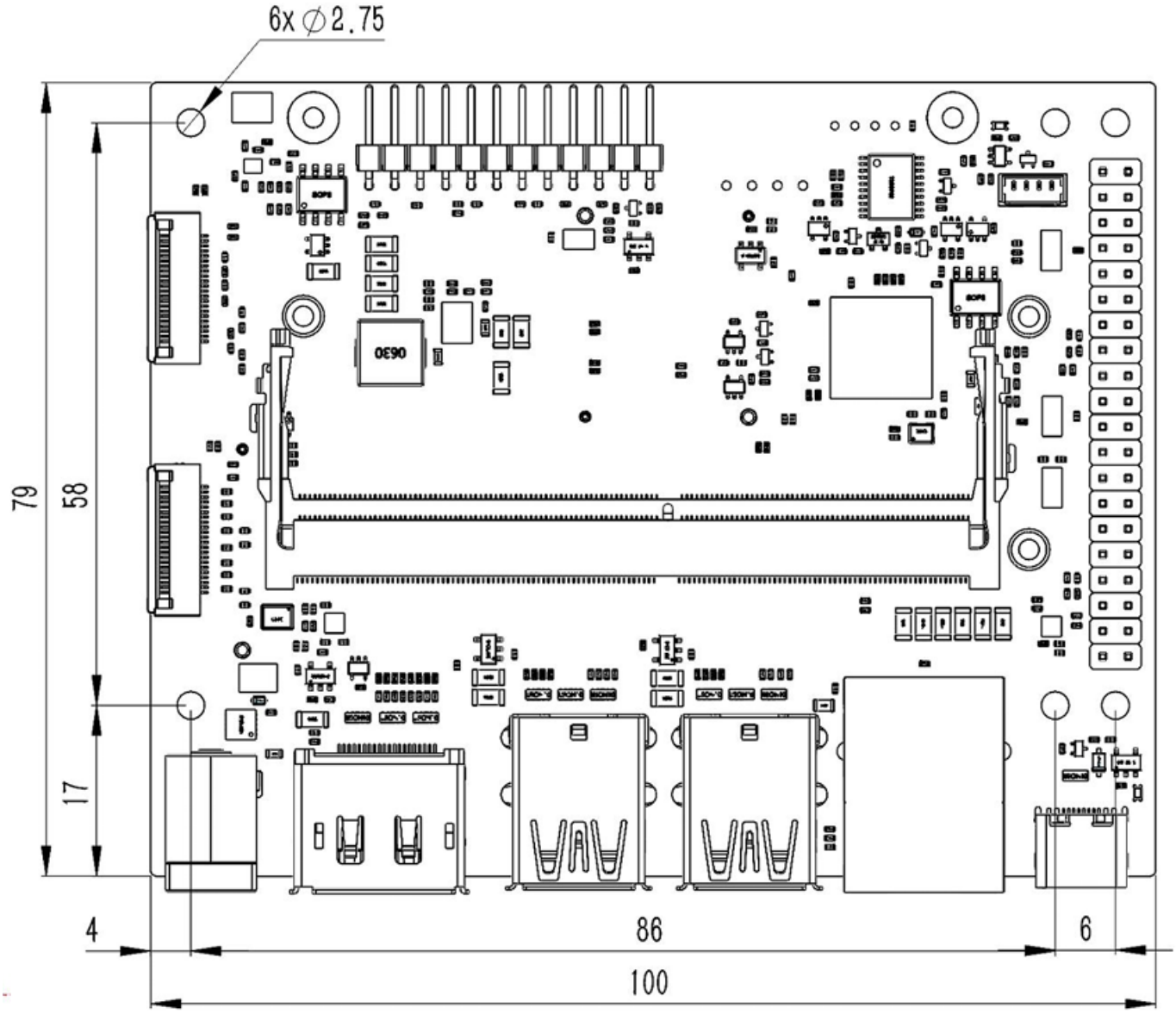
Pin Function	
Power LED-	1
Power LED+	2
UART2_RXD	3
UART2_TXD	4
Latch Set	5
Latch Set Button	6
GND	7
System Reset*	8
GND	9
Force Recovery	10
GND	11
Power Button	12

- The RTC battery port (16) on the C1902 board features an additional MX1.25-2P connector compared to the original factory board. When using RTC batteries, ensure correct polarity and avoid reverse connections.



After connecting the battery, configure the device to enable RTC clock. For details on RTC configuration and UART interface usage, please refer to RTC

Mechanical Dimensions (mm)



Screw Location	Recommended Specification	Note
Carrier Board Mounting Holes	M2.5 screws or standoffs	The diameter of the screw or standoff must not exceed 5mm.
Module	M2.5 × 4 pan head screws	
Hard Drive & Network Card	M2.5 × 4 pan head screws	Pan head screws are recommended.

Support

- Jetson Orin C1902 □□□□
- Jetson □□□□
- JetPack □□□□

- Jetson AI □□□□
- Jetson □□□□□
- C1901/1902 USB □□□□□□□