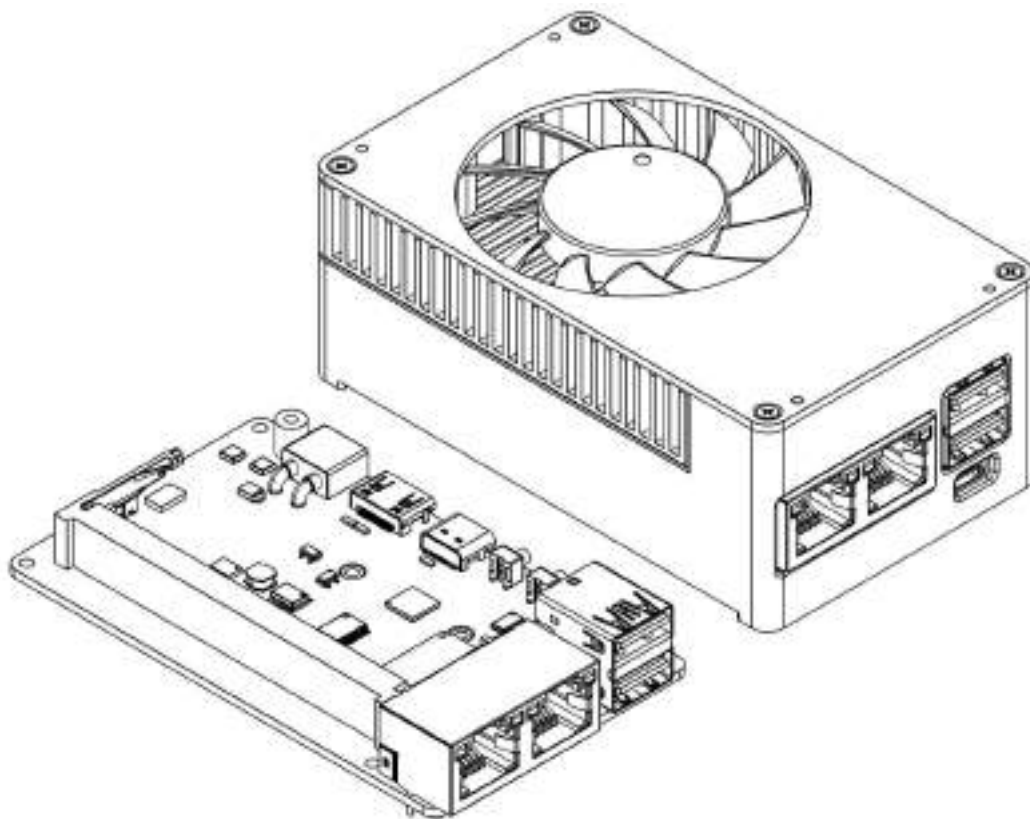


YC-N2401

Jetson Orin Nano/NX Mini Carrier Board Specification

V1.0



Product Use Precautions

- Use the interfaces and power cable harness as instructed to avoid damaging the cables or board.
- Before use, check the power cable harness for aging or damage. Replace it if either is found.
- Operate within the specified conditions, including voltage and temperature. The customer is responsible for losses caused by improper operation.
- Secure the board correctly and use screws that meet the requirements to avoid board damage.
- Disconnect power immediately if sparks, smoke, a burning smell or any other abnormality occurs after power-on.

Revision History

Version	Date	Notes
V1.0	2025 Q3	Initial release of YC-N2401.

Product Overview

YC-N2401 is a compact, high-density carrier board developed for Jetson Orin Nano and Orin NX modules. Its small footprint provides a full set of interfaces, including dual Ethernet and dual USB ports, plus extensive expansion options for 4G/5G modules and other interfaces. Its well-designed stacking structure makes the board easy to use.

Product Features

1. Advanced automotive-grade eFuse IC provides overvoltage, undervoltage, short-circuit, overcurrent and reverse-polarity protection.
2. An ultra-low-resistance buck IC and advanced alloy flat-wire inductor deliver low heat generation, high saturation current and stable module power.
3. 8-layer PCB with 2u ENIG and plugged vias; compact, high-density design measures just 55 x 92mm.
4. Dual USB 3.0 and dual Ethernet ports. The 2.5G Ethernet port supports PTP and jumbo frames up to 16K bytes.
5. M.2 connectors are on the same side, allowing wireless cards and SSDs to be replaced without removing the module. Additional development interfaces support expansion such as 4G/5G and Ethernet.

Product Specifications

Parameter	Specification
Input voltage	12V (9.5-30V supported)
Power connector	XT30
Supported modules	Orin Nano 4GB/8GB Orin NX 8GB/16GB
Ethernet	1x Gigabit Ethernet (RJ45), 9KB jumbo frames 1x 2.5G Ethernet (RJ45), 16KB jumbo frames, PTP
Wireless network card	1x M.2 Key E (2230)
Storage expansion	1x M.2 Key M (2230 NVMe SSD)
Display	1x Mini HDMI V2.1
USB	2x USB 3.2 (10Gbps) 1x USB 2.0 (GH1.25-4P)
USB-C	1x Type-C (USB 2.0), for firmware flashing
Camera interface	1x CSI-22P
Other interfaces	UART, CAN, I2C
RTC battery	1x RTC backup battery connector
Operating temperature	0°C to 45°C

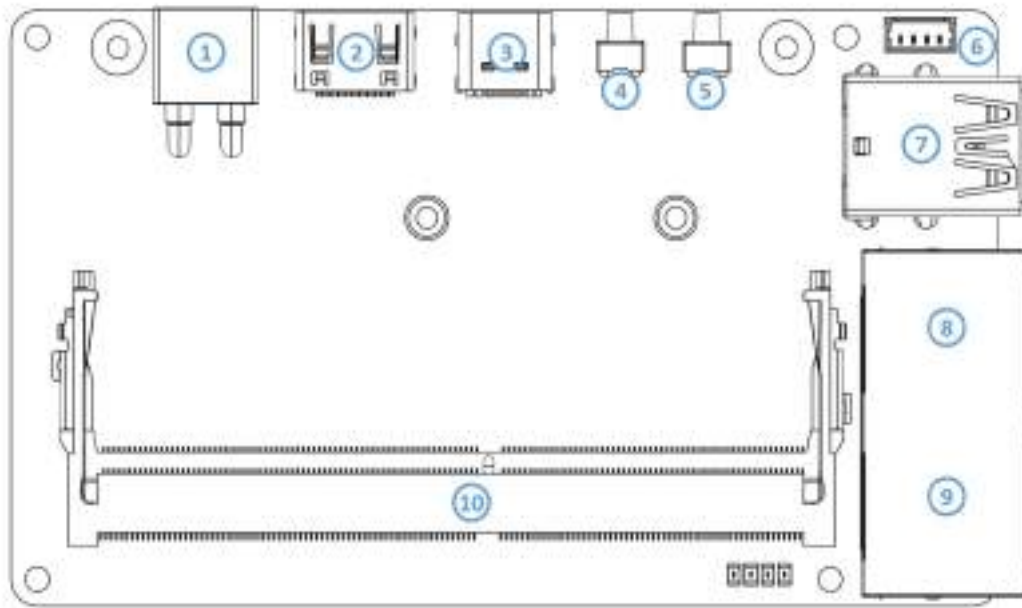
- The board supports 12V power (9.5-30V). Use a power supply with sufficient capacity for stable operation. Improve cooling when input voltage exceeds 15V under heavy load.

- Reverse-polarity protection is provided, but power must never be connected in reverse.

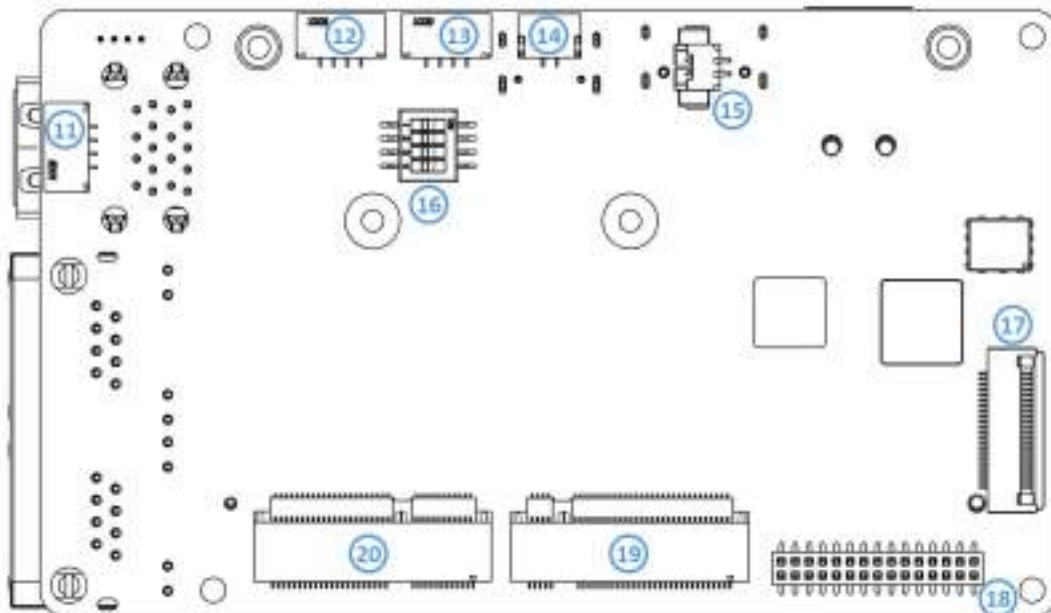
- The combined maximum output current of each USB port group is 2.5A. USB power is cut off if the system detects a current above 2.5A.

- **Never insert or remove the module while the carrier board is powered. This will damage both the module and carrier board. The customer is responsible for losses caused by improper operation.**

Interface Layout



- | | | | |
|---|---------------------|----|------------------------------|
| 1 | Power Jack | 6 | Fan Header |
| 2 | Mini HDMI Connector | 7 | USB 3.0 Type A(x2 Stacked) |
| 3 | USB Type C (USB2.0) | 8 | RJ45 Ethernet Socket 1(1G) |
| 4 | REC Button | 9 | RJ45 Ethernet Socket 2(2.5G) |
| 5 | Power Button | 10 | Jetson Orin Module Connector |

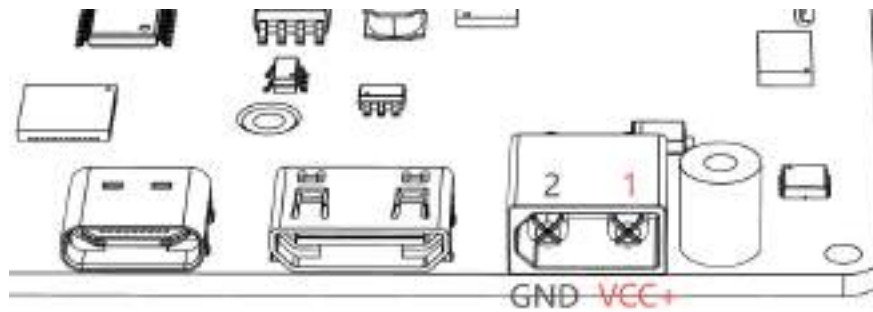


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|----|------------------------------|----|-----------------------------------|
| 11 | USB2.0 Connector (GH1.25 4p) | 16 | 4Pin Switch |
| 12 | UART2 Connector (GH1.25 4p) | 17 | Camera (#1) Connector 22pin 0.5mm |
| 13 | UART1 Connector (GH1.25 4p) | 18 | 30Pin Expansion Header |
| 14 | CAN Bus (GH1.25 2p) | 19 | M.2 Key M Socket |
| 15 | RTC Back-up Coin Cell Socket | 20 | M.2 Key E Socket |

Functions and Interfaces

Power Connector (1)

The power connector is XT30PW-M36, paired with an XT30U-F mating connector. Pin definitions are shown below.



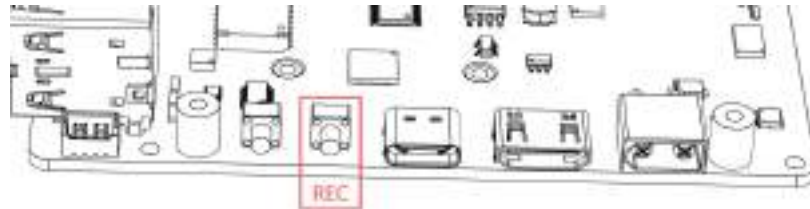
- Recommended input: 12V; supported range: 10-30V. Undervoltage protection: 9.5V; overvoltage protection: 31V.
- Reverse-polarity protection is provided. Always check polarity and confirm it is correct before connecting power.
- Use a supply rated for at least 45W with Orin Nano modules, or at least 60W with Orin NX modules.

Module	Recommended power	USB-C PD requirement
Orin Nano 4GB/8GB	45W	At least 20V / 2.25A
Orin NX 8GB/16GB	60W	At least 20V / 3A

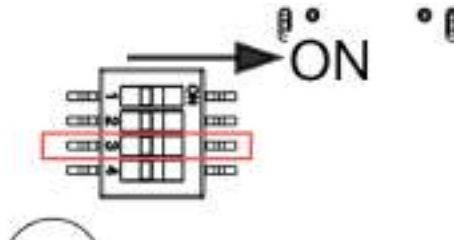
Power Button (5)

YC-N2401 supports two methods of entering recovery mode:

- With power disconnected, hold the REC button and then connect power to enter recovery mode for firmware flashing. Recovery mode lasts only 60 seconds; if no flashing activity is detected, the system automatically proceeds with normal startup.



- Set DIP switch 3 on the rear of the carrier board to ON. The system will then enter recovery mode whenever power is applied.

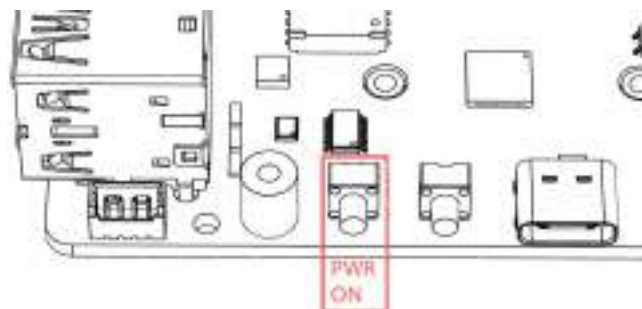


Power Button (5)

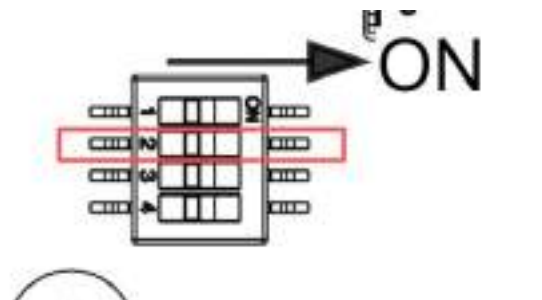
- The YC-N2401 power button (5) works as follows:

While running: press once to open the shutdown screen; hold for 10 seconds to force shutdown.

While shut down: press once to power on.

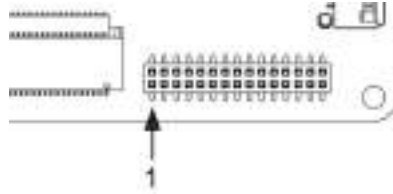


- Disable automatic startup: set rear DIP switch 2 to ON. The board will no longer start automatically when power is applied; press the power button to start it.



Expansion Socket (18)

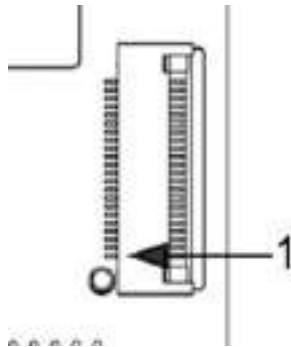
The socket is 2 x 15 pins, 1.27mm pitch. Pin 1 and pin definitions are shown below:



VCC_IN	1	2	VCC_IN
VCC_IN	3	4	VCC_IN
GND	5	6	GND
USB_N	7	8	VDD_5V
USB_P	9	10	VDD_5V
GND	11	12	VDD_3V3
USBSS_RX_N	13	14	GPIO_13
USBSS_RX_P	15	16	GPIO_07
GND	17	18	SPI0_CS1
USBSS_TX_N	19	20	SPI0_CS0
USBSS_TX_P	21	22	SPI0_MOSI
GND	23	24	SPI0_MISO
PG	25	26	SPI0_SCK
CAM_I2C_SCL	27	28	UART0_TXD
CAM_I2C_SDA	29	30	UART0_RXD

- VCC_IN follows the input voltage; current must not exceed 3A. VDD_5V and VDD_3V3 can each provide up to 1A.
- I2C, GPIO, SPI and UART signal levels are 3.3V.
- PG signal: high when the upper board is operating normally.
- The USB 3.0 interface on pins 13, 15, 19 and 21 is disabled by default with official firmware. Follow this tutorial to enable it:
<https://www.linkzeelabs.com/wiki/books/jetson-orin-nano/page/orin-nanonx-usb>

CSI Interface (17)



Pin #	Module Pin Name	Module Pin #	Usage/Description	Type/Dir
1	-	-	+3.3V	Power
2	CAM_I2C_SDA	215	Camera I2C. 2.2 kΩ pull-ups on module. The module CAM_I2C pins connect to an I2C mux. The camera connector #1 (J21) receives the I2C from the mux (second output). The I2C signals on the camera side of the mux have 1 kΩ pull-ups.	Bidir, 3.3V
3	CAM_I2C_SCL	213		Output, 3.3V
4	-	-	Ground	Ground
5	CAM1_MCLK	122	Camera #0 Primary Clock	Output, 1.8V
6	CAM1_PWDN	120	Camera #0 Power-down	Output, 1.8V
7	-	-	Ground	Ground
8	CSI3_D1_P	35	CSI 3 Data 1	Input
9	CSI3_D1_N	33		
10	-	-	Ground	Ground
11	CSI3_D0_P	23	CSI 3 Data 0	Input
12	CSI3_D0_N	21		
13	-	-	Ground	Ground
14	CSI2_CLK_P	30	CSI 2 Clock	Input
15	CSI2_CLK_N	28		
16	-	-	Ground	Ground
17	CSI2_D1_P	36	CSI 2 Data 1	Input
18	CSI2_D1_N	34		
19	-	-	Ground	Ground
20	CSI2_D0_P	24	CSI 2 Data 0	Input
21	CSI2_D0_N	22		
22	-	-	Ground	Ground

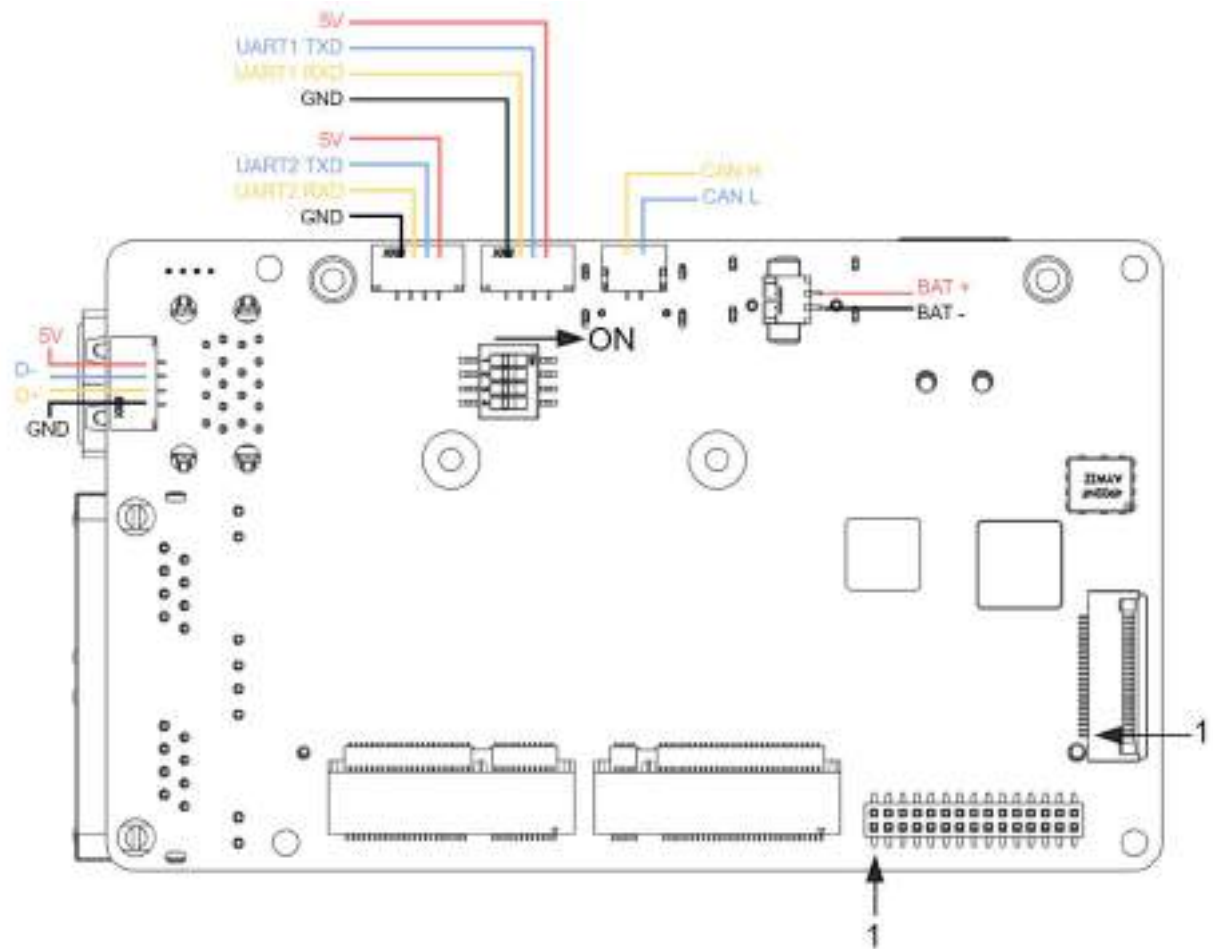
Note: In the Type/Dir column, Output is to camera module. Input is from camera module. Bidir is for bidirectional signals.

Legend	Ground	Power	Reserved
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For instructions on using the CSI camera interface, see:

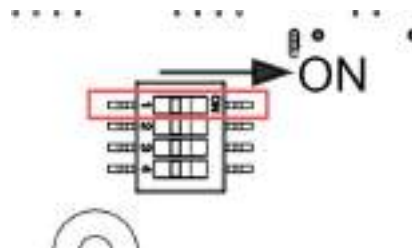
<https://www.linkzeelabs.com/wiki/books/jetson-orin-nano/page/b534b>

USB, UART and CAN



- RTC battery connector (15): MX1.25-2P. Check battery polarity; reverse connection is prohibited. Configure the RTC after connecting the battery to enable the clock.

- CAN interface (14): GH1.25-2P, with pin definitions shown above. The termination resistor is disconnected by default. Set rear DIP switch 1 to ON to connect the 120-ohm termination resistor.



- UART (12)(13): GH1.25-4P connectors, 3.3V signal levels. UART2 is for debugging only. The maximum current of the 5V output is 0.5A.

- USB 2.0 interface (11): GH1.25-4P connector. The maximum current of the 5V output is 0.5A.

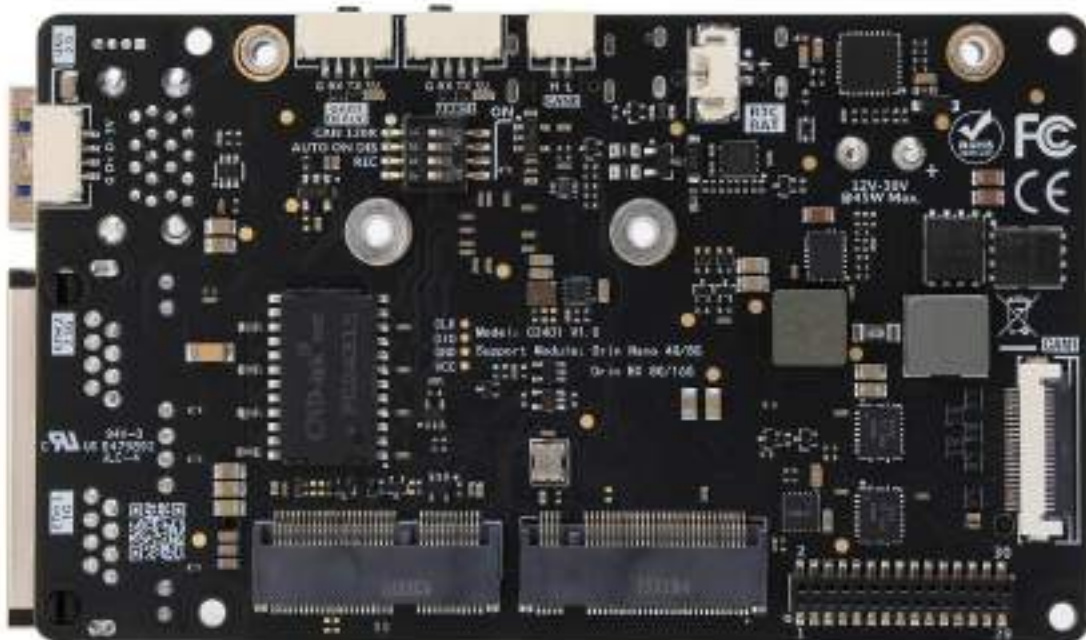
For RTC configuration and use of UART and other interfaces, see:

<https://www.linkzeelabs.com/wiki/books/jetson-orin-nano/page/3c778>

Product Photos



Front



Rear



Front

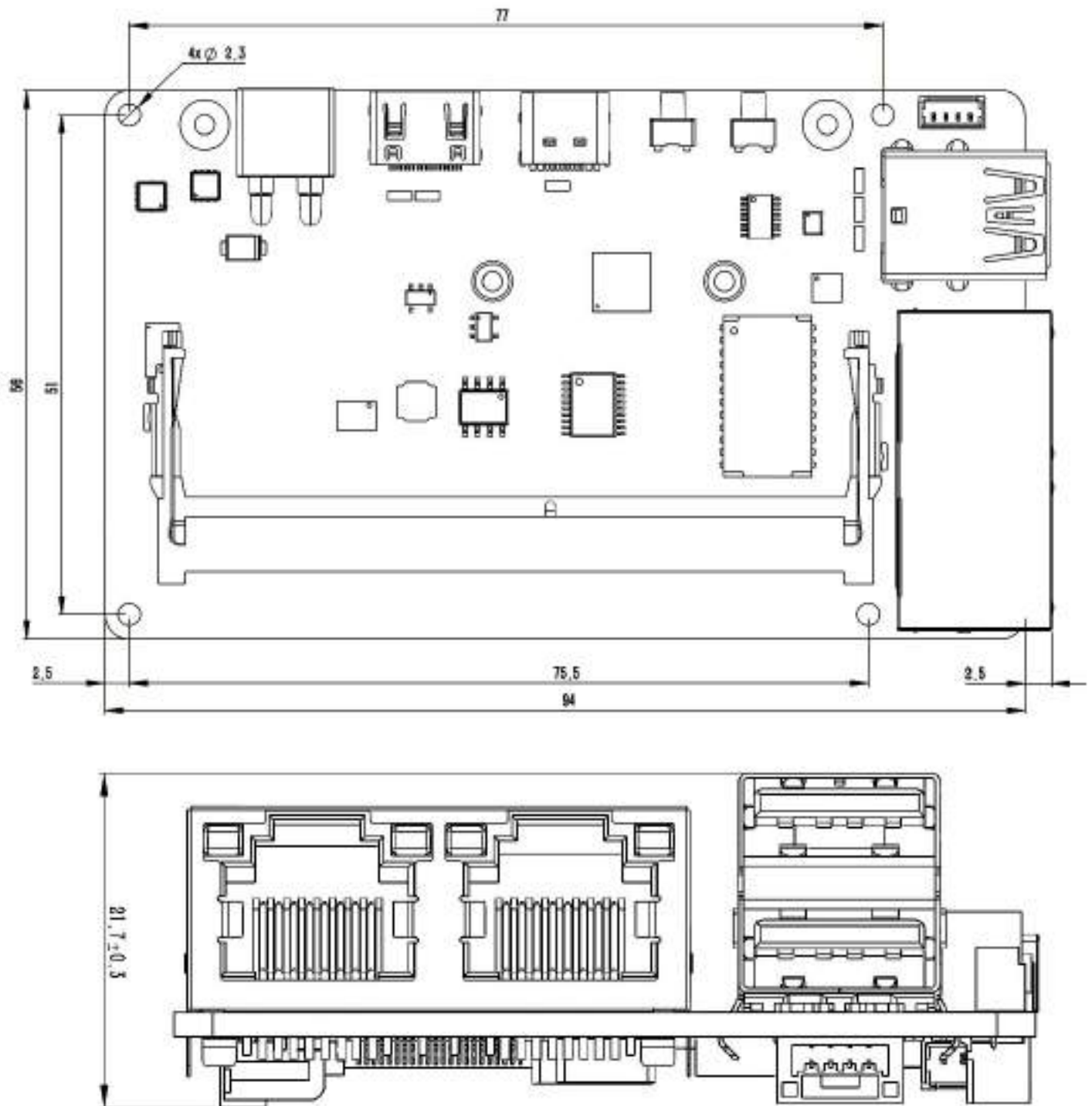


Rear



Carrier Board Dimensions

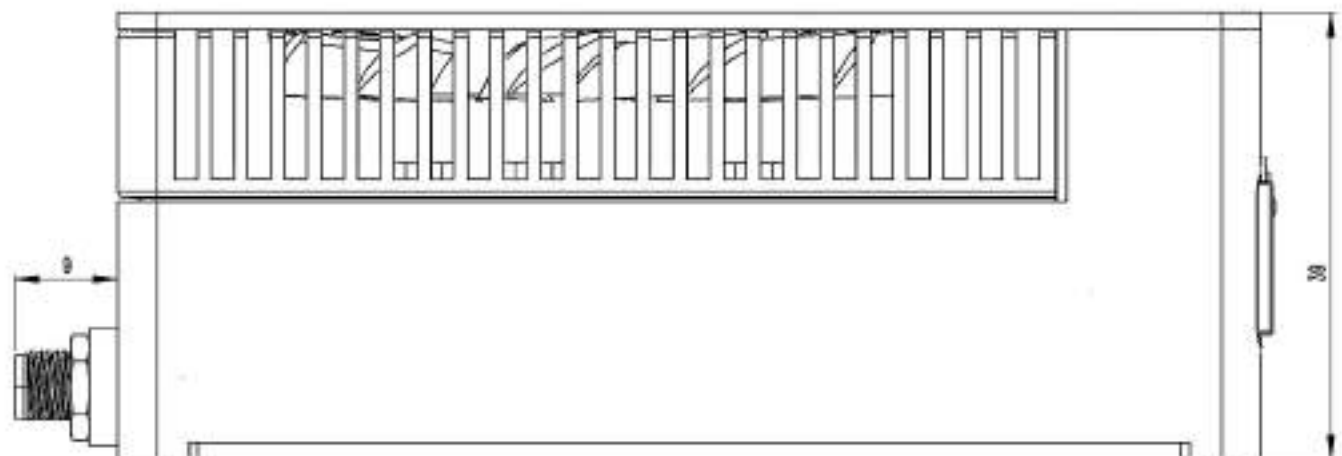
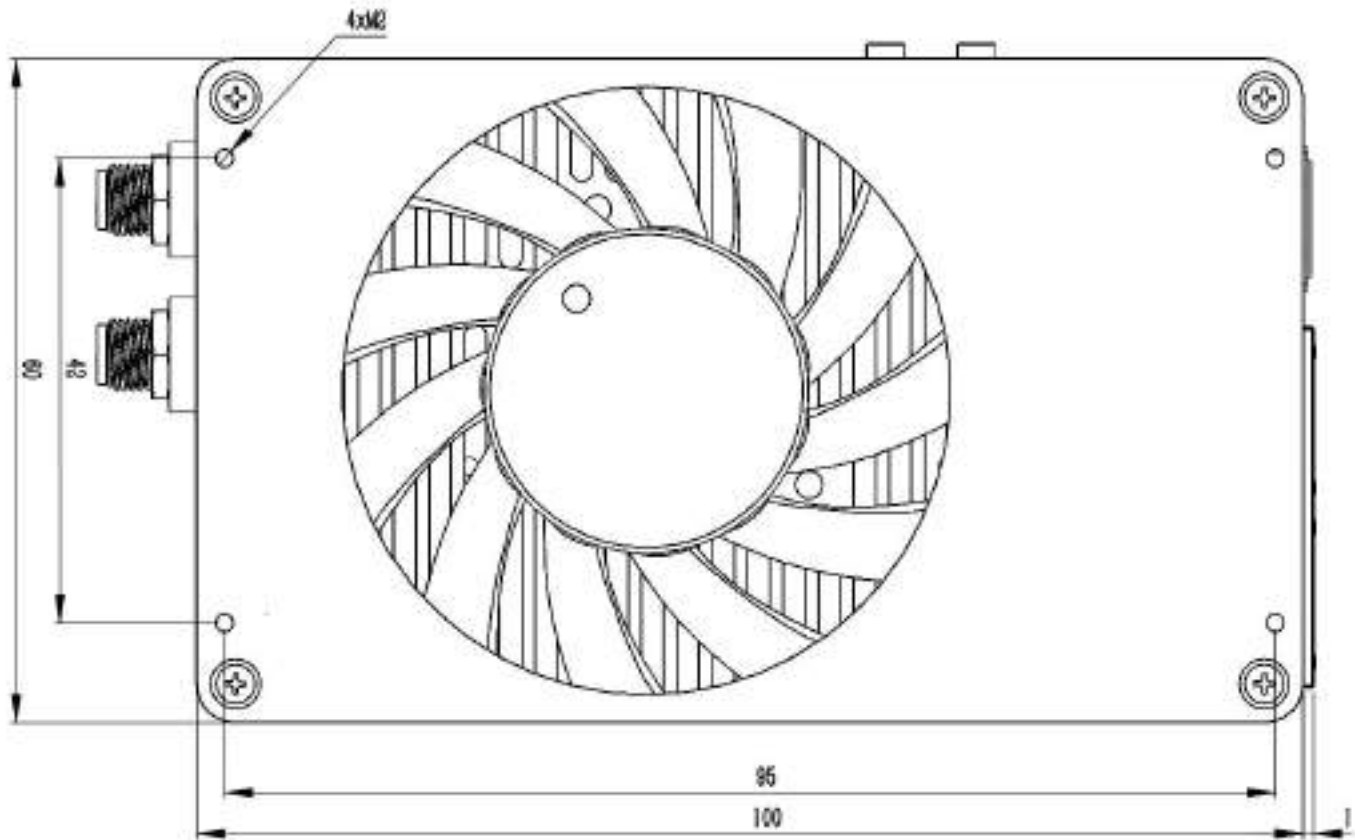
Units: mm

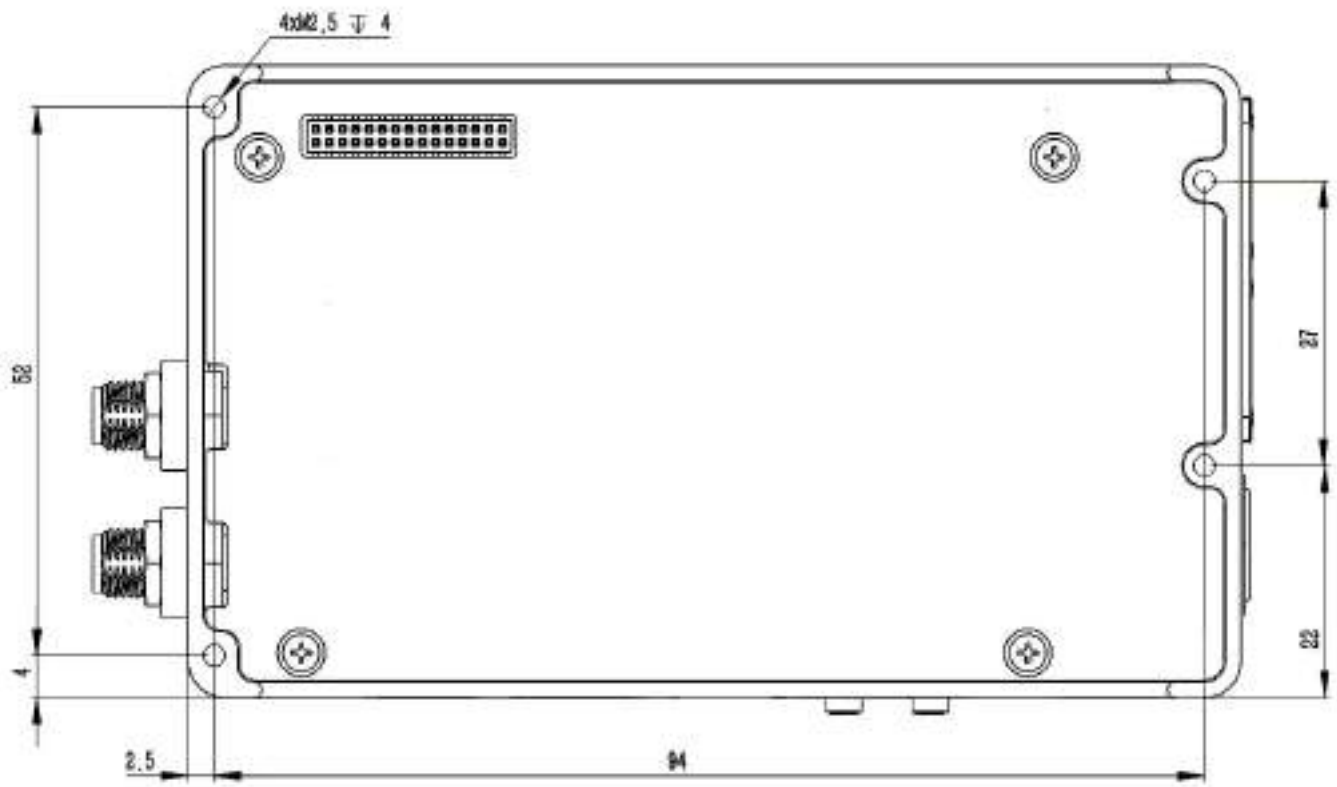


Mounting point	Recommended screw	Notes
Carrier board holes	M2 screw or brass standoff	Maximum screw or standoff diameter: 4.5mm
Module	M2.5 x 4 low-profile screw	Maximum screw diameter: 5mm
M.2 connector	M2.5 x 4 low-profile screw	Maximum screw diameter: 5mm

Kit Dimensions

Units: mm





Development Resources

- Jetson Developer Guide
- Jetson Download Center
- Documentation Downloads
- [Nvidia Jetson Github](#)
- SDK Manager Download