TWOWIN TW-T805 User Guide

Smarter World, Better Life

图为信息科技(深圳)有限公司

TWOWIN INFORMATION TECHNOLOGY Co. Ltd

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Document Revision Log

Document Version

Version1.0

Document Version No.	Revision Date	Revision Content
V1.0	2023/04//16	Initial Release
V1.1	2024/12/21	Remake

Preface

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Safety Warnings and Precautions

- Safety Instructions

Before using this product, read this document carefully to understand its basic operation and comply with the safety instructions therein to ensure personal safety and avoid equipment damage. The manufacturer shall not be held liable for any issues related to equipment or personal property damage caused by improper operation.

- Personal Safety

• Wear anti-static workwear and gloves/wrist straps before operating the device. Remove conductive items such as jewelry and watches to prevent electric shock or burns.
• In case of fire, evacuate the building/equipment area immediately, activate the fire alarm, or call the fire department. Under no circumstances should you re-enter a burning building.

- Equipment Safety

• Securely fix the device to the floor or stable objects (e.g., walls or mounting racks) before operation.
• Do not block ventilation openings during system operation.
• Use tools to tighten screws when installing panels.
• Remove all packaging materials from the equipment area after installation.

- Power Requirements

• Input power for the TW-T505 Edge Computing Platform must be stable and reliable, with a power rating of 25W.
• Power range: 12–24 V DC; Current: 5A (MAX).

- nvironmental Requirements

• Operating temperature: -20°C to +50°C.
• Ventilation: Ensure proper airflow around the installed platform.

- Grounding Requirements

• The power adapter's supply must be properly grounded. In special cases, use the grounding screw on the platform for grounding.

For grounded devices only:

• Ground the device before installation and remove the ground wire last during disassembly.
• Do not damage grounding conductors.
• Do not operate the device without a grounded conductor.

• Permanently connect the device to protective earth. Check electrical connections before operation to confirm reliable grounding.

- ESD Protection

Electronic components are sensitive to electrostatic discharge (ESD). While key interfaces on circuit boards are ESD-protected, not all components are fully shielded. Follow ESD safety measures when handling circuit boards:

• Store and transport boards in anti-static bags until deployment.
• Discharge body static (e.g., wear grounding wrist straps) before touching the device.
• Operate only in ESD-safe areas.
• Avoid moving the device on carpeted surfaces.

- Basic Installation Requirements

Only trained and authorized personnel may install, operate, or maintain the device.

• Only qualified and trained personnel are allowed to install, operate, or maintain the device.
• Only certified professionals may dismantle safety features or repair the device.
• Replacements or modifications (including software) must be performed by TwoWin-certified personnel.
• Report any faults or errors that may compromise safety to the responsible person immediately.

Introduction

The TW-T805 is a computing platform designed based on the NVIDIA® Jetson Orin NX series module. It comes with an integrated Orin NX module, pre-installed Ubuntu operating system, and AI processing capabilities of 70/100 TOPS floating-point operations. Equipped with a fan cooling system, it offers excellent thermal performance. Its compact size and modern design, combined with a variety of I/O interfaces and a bottom bracket for easy on-site installation, ensure stable operation. The TW-T805 is widely applicable in industries such as security, logistics, finance, retail, and judicial sectors, making it an ideal carrier for deploying AI computing power at the edge for deep learning. It is suitable for end products such as robots, drones, unmanned delivery vehicles, portable medical devices, and intelligent law enforcement equipment.

Overview of the TW-T805 Edge Computing Platform**
- Embedded NVIDIA® Jetson Orin NX
- Supports M.2 KEY M (NVMe 2242)
- Supports multiple interfaces (e.g., USB/Ethernet/Serial)
- Supports dual-band WiFi and 4G modules
- Active fan cooling design
- Built-in Ubuntu system and Jetpack SDKs

Product Specifications

Processor and Core Module

Processor	NVIDIA Jetson Orin NX	
AI	70TOPS	100TOPS
CPU	6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3	8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
CPU Max Frequency	2.0 GHz	
GPU	1024-core NVIDIA Ampere GPU with 32 Tensor Cores	
GPU Max Frequency	765 MHz	918 MHz
Memory	8 GB 128-bit LPDDR5 102.4 GB/s	16 GB 128-bit LPDDR5 102.4 GB/s
Storage	Supports external NVMe(Only supports mvme solid state drive storage)	

Interface

	Interface	Quantity	Note
Network	Ethernet	1	RJ45 Gigabit Ethernet Port
Video output	HDMI	1	HDMI 2.0 Compatible with 1.4 (Output Only)
Storage	M.2	1	PCIE NVME 2242 SSD
Function Key	Power	1	Button
	REC	1	Button
	RES	1	Button
USB	USB	2	USB 3.0 5V 1A
Serial Port (GH1.25 Terminal 4PIN)	CAN	1	Supports CANFD
	RS232	1	Standard 232
	DEBUG	1	TTL 3.3V Debug Serial Port Baud Rate: 115200

Codec

Video Encode	1x 4K60 | 3x 4K30 | 6x 1080p60 | 12x 1080p30 (H.260) 1x 4K60 | 2x 4K30 | 5x 1080p60 | 11x 1080p30 (H.264)
Video Decode	1x 8K30 | 2x 4K60 | 4x 4K30 | 9x 1080p60| 18x 1080p30 (H.260) 1x 4K60 | 2x 4K30 | 5x 1080p60 | 11x 1080p30 (H.264)

Power Supply

Power Supply	Spec
Input Type	DC （55*21）
Input Voltage	Wide input 12-24V DC
Typical consumption	35W

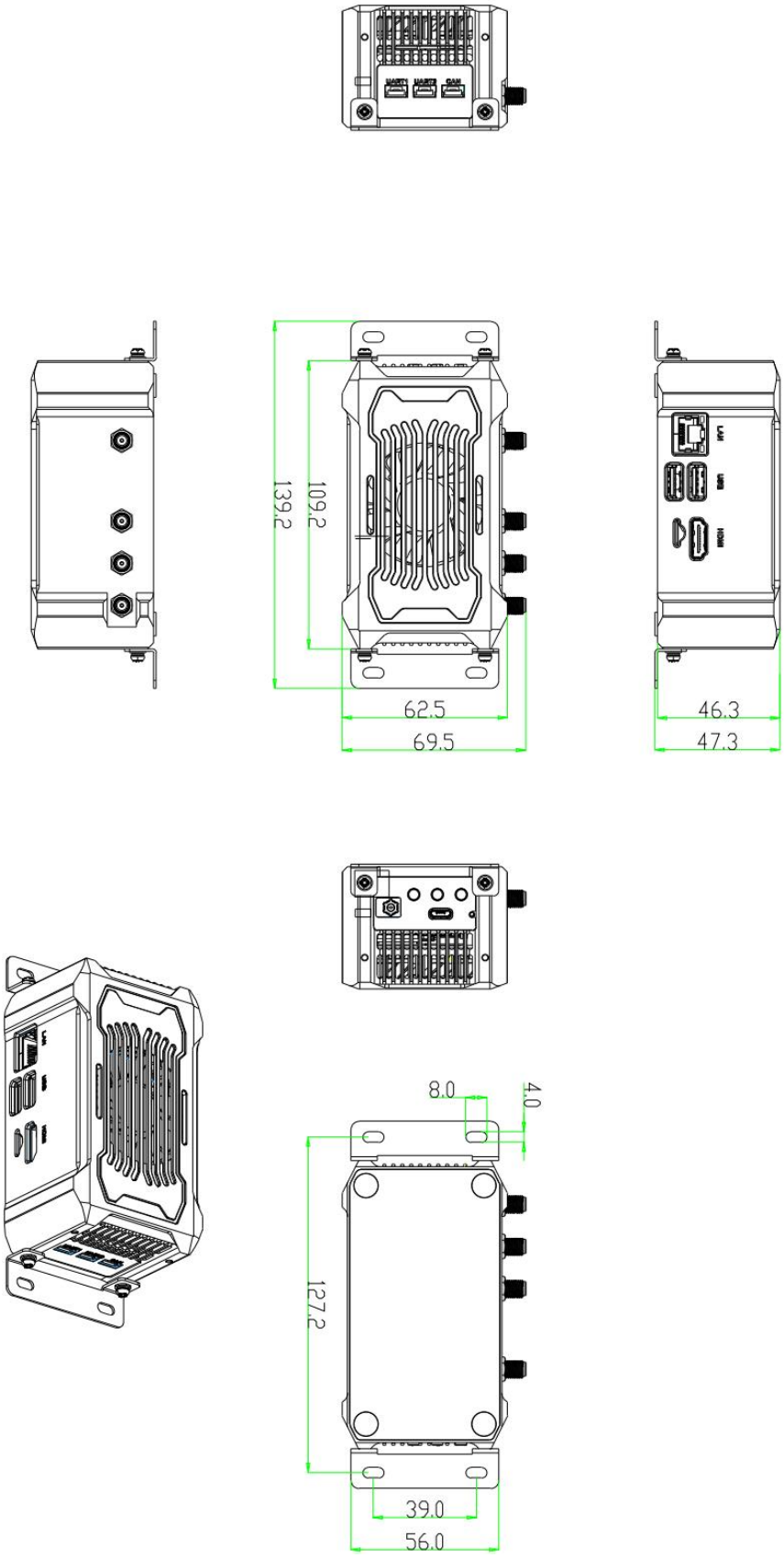
Structure

Mechanical	Spec
Dimensions (W×H×D)	109.2mm x 62.5mm x 46.3mm
Weight	320g

Environment

Environmental	Spec
Operating Temperature	-20℃- +50℃
Storage Humidity	10%-90% non-condensing

Size and Dimension



Service & Support

Technical Support

If you encounter problems, or you think your product has defects, please visit our website with your questions, browse our FAQ column to find solutions to common problems, you can also contact us by phone or WeChat, we will promptly make the appropriate arrangements according to your needs, for you to solve the problem.

Warranty

Warranty period: Twowin equipment warranty period of one year from the date of purchase. Warranty regulations: the warranty period products, if there is a failure of non-man-made damage to the figure for the warranty will be free of charge. Please contact us through the purchase platform customer service dialogue and telephone for warranty assistance (for details, please refer to the warranty regulations of Twowin Information Technology (Shenzhen) Co.)

Interface Description

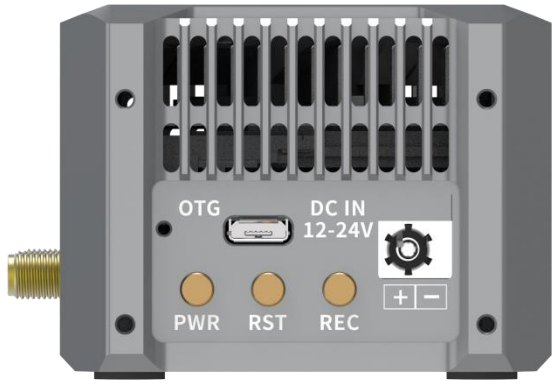
Front Interface

TW-805 Front Interface Diagram

Interface	Interface Name	Interface Description
HDMI	High-Definition Video Interface	Standard HDMI 2.0 Interface
SIM	nanoSIM Card Slot	Not available if 4G module is not selected
USB	2xUSB	USB3.0（5V@1A）
LAN	RJ45	Gigabit Ethernet Port

Left Side Interfaces

TW-805 Left Side Interface Diagram



Interface	Interface Name	Interface Description
DC	Power Interface	12-24V
Power_LED	Power Status Indicator	When powered on: Indicator is solid red (internal display)
PWR	Button	Long press for 10 seconds to shut down, short press to bring up system shutdown options
REC	Button	Single press has no obvious effect, used in combination with the reset button to enter flashing mode
RES	Button	Reset button: Used alone for reset and reboot, used with REC to enter flashing mode
OTG	Micro USB2.0	USB 2.0, can be used for flashing and connecting via SSH (192.168.55.1)

Note: Recovery mode, also known as flashing mode, is mainly used for reinstalling the system. The method to enter recovery mode on this device is as follows:
First, press and hold the REC button, then press and hold the RES button without releasing the REC button. After 2 seconds, release the RES button, and finally release the REC button.
On the host terminal, enter `lsusb` to check if "nvidia corp" is listed. If it is, it indicates successful entry. If not, check if the data cable is properly connected, if the host USB is properly connected, and if the button sequence and timing are correct. It is recommended to use a USB 3.0 interface on the host side.

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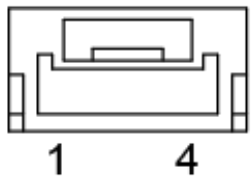
Right Side Interfaces

TW-T805 Right Side Interface Diagram

Interface	Interface Model Specification	Interface Description
CAN	GH1.25 Terminal 4PIN	Supports CAN FD
DEBUG	GH1.25 Terminal 4PIN	Debug Serial Port (Baud Rate: 115200)
RS232	GH1.25 Terminal 4PIN	Standard 232 Interface (/dev/ttyTHS1)

Serial Port Description

RS232



Connector Pin Sequence

232 Serial Port Connector Pin Definition (Interface Model: GH 1.25-4PIN)			
PIN#	Definition	PIN#	Definition
1	GND (Green)	2	RS232_RX (Yellow)
3	RS232_TX (Black)	4	GND (Red)

CAN Interface

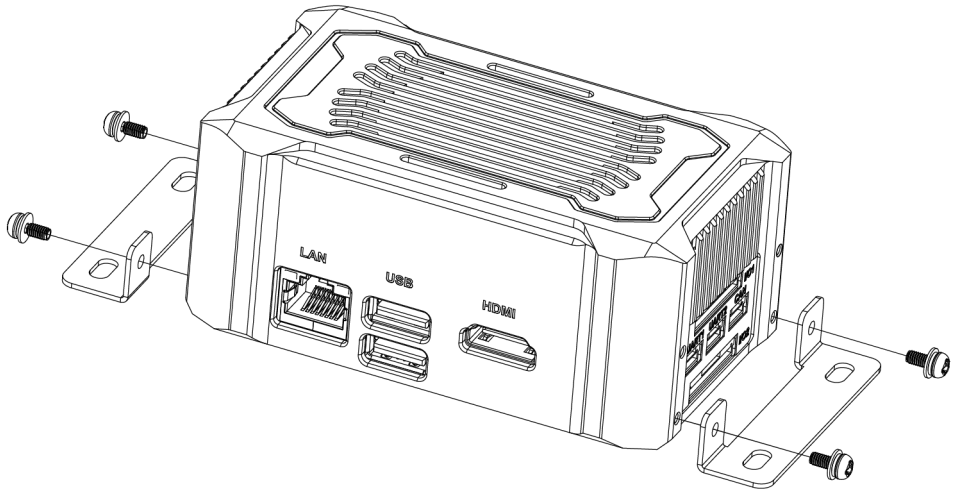
CAN Connector PIN Definition (Interface Model: GH 1.25-4PIN)			
PIN#	Definition	PIN#	Definition
1	GND (Green)	2	CAN_L0 (Yellow)
3	CAN_H0 (Black)	4	GND (Red)

DEBUG Interface

DEBUG Connector PIN Definition (Interface Model: GH 1.25-4PIN)			
PIN#	Definition	PIN#	Definition
1	GND (Green)	2	USB_RX (Yellow)
3	USB_TX (Black)	4	GND (Red)

Installation Method for Expansion Devices

Installing the Box Bracket

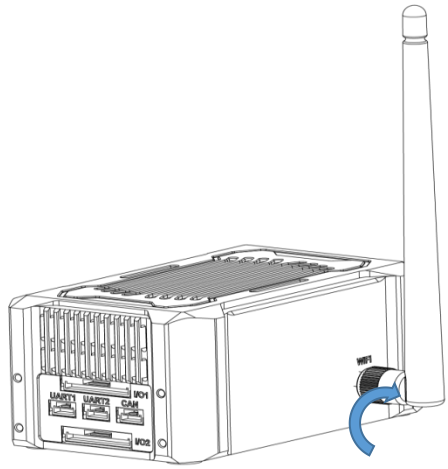


Installing the Box Bracket

The box is designed to be installed in any convenient space within the working environment while maintaining a well-ventilated surrounding.

1. Install the bracket by using 4 screws to secure the bracket to the base plate of the box through the holes on each bracket.
2. Fix the box to the desired location where you intend to mount it.

Installing the WiFi Antenna



Antenna Installation

1. Align the SMA male connector of the WIFI antenna with the SMA female connector on the box and tighten it clockwise.
2. Bend the antenna upward at a 90-degree angle.

Feature Introduction

System Overview

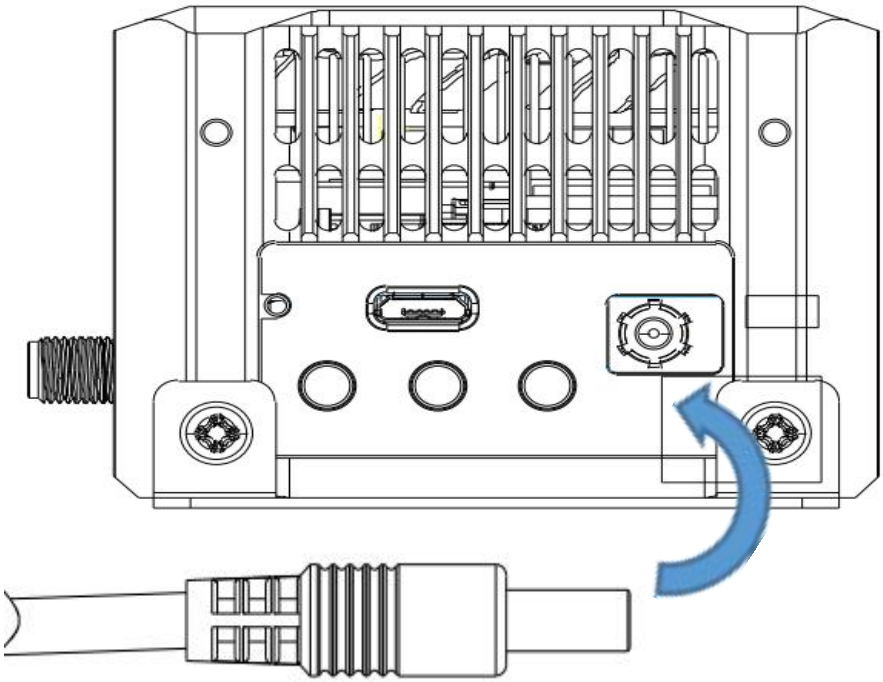
The T805 device is equipped with and pre-installed with the Ubuntu system, which starts up immediately upon powering on.
Default username: `nvidia` Password: `nvidia`
Our company has not set up a root username and password. If you need to access the root user, please execute the following command:
```bash
sudo -s
```
Enter the password: `nvidia`

Note: Since the interface driver on this device is developed by our company and differs from the interface driver of the NVIDIA development board, using the `upgrade` command will upgrade the kernel and overwrite the device tree. If you must use `upgrade` for updates, please run the following commands before proceeding:

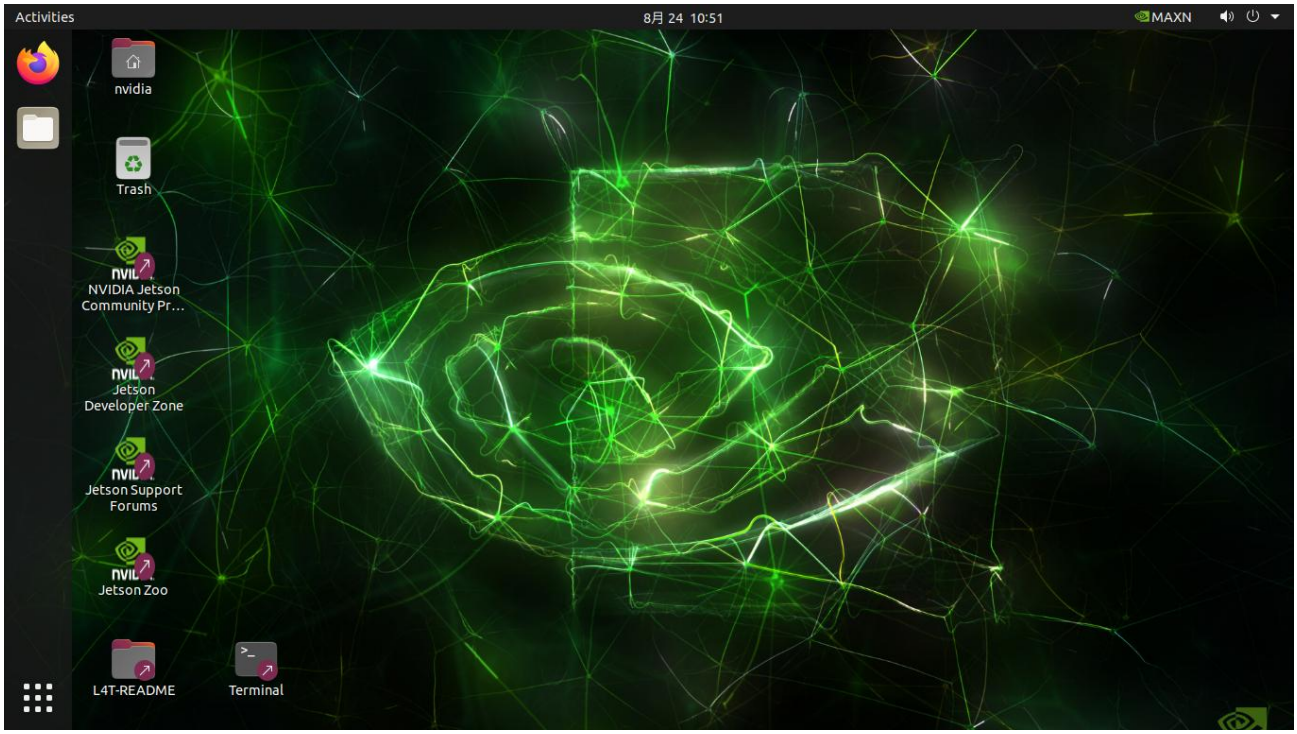
sudo mv /etc/apt/sources.list.d/nvidia-l4t-apt-source.list /etc/apt/sources.list.d/nvidia-l4t-apt-source.list.bak
sudo apt-get update
sudo apt-get upgrade

Power On/Off

Power On: The TW-T805 device is set to power on automatically by default when connected to a power source. Insert the power cable into the device as shown in the figure below, ensuring the DC end is properly connected to the power adapter.



Connect the monitor to the device via the HDMI interface, and the startup screen is as shown in the figure:



Startup Desktop

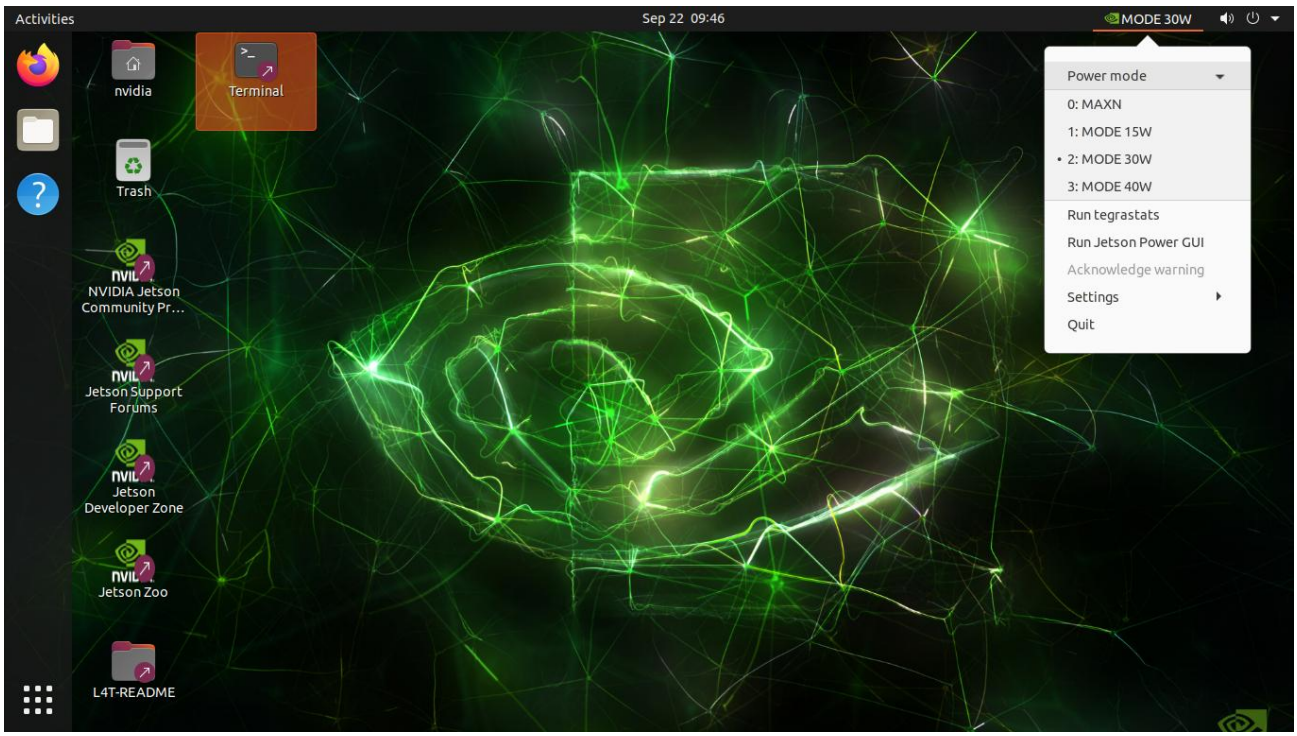
Shutdown: The system internally executes a shutdown to enter software shutdown mode.

Restart: Execute `$ sudo reboot` in the command line to complete the restart; alternatively, you can restart by pressing the reset button (a single press is sufficient).

Note: Please do not directly unplug the main power supply to shut down the system, as this operation carries the risk of damaging the disk.

Work Mode Switching

Different work modes utilize varying CPU cores and power levels, allowing you to select according to your needs. Click the option indicated by the arrow to choose the mode (the example below illustrates the work modes of the AGX Orin module).



CAN Functionality Test

1. can_test Directory (Located under /home/nvidia/twork)

The can_test directory contains the following files:

canSendTest: Executable file for CAN communication transmission test

canRecvTest: Executable file for CAN communication reception test

canUp.sh: Script for loading CAN communication driver

ko file: SPI-CAN driver module

2. Driver Loading, Setting, and Enabling the CAN Interface

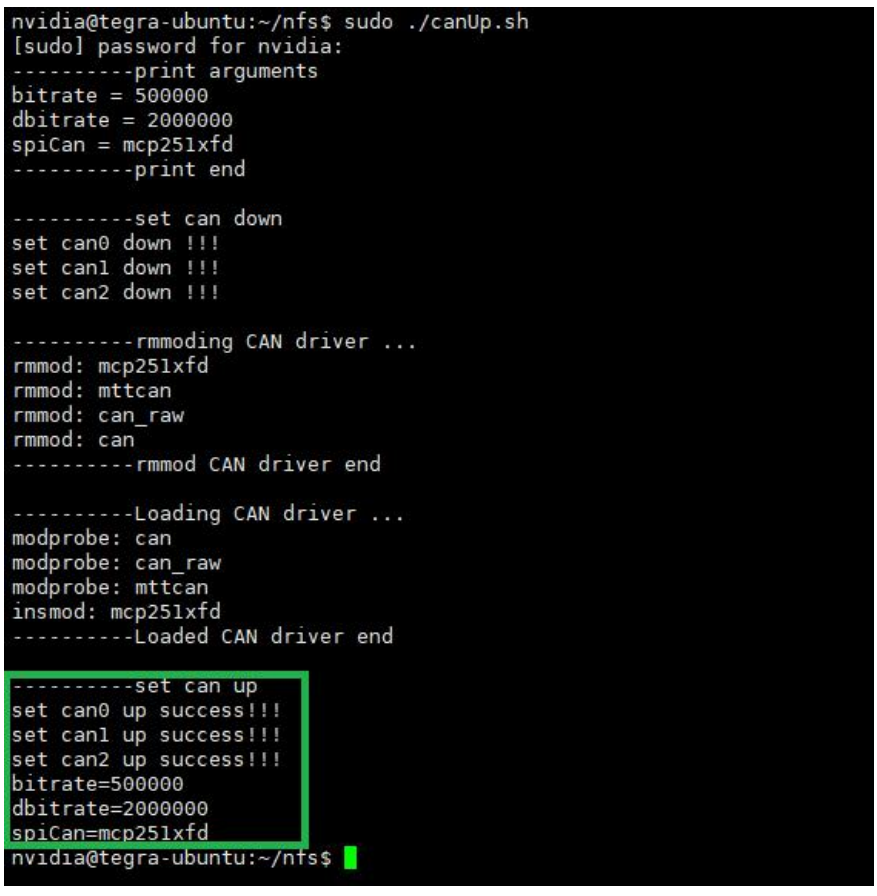
Run the following command in the current directory:

sudo ./canUp.sh

After the execution, the message "set can0 up success!!!" will be printed, indicating that the can0 interface has been set up and enabled.

For example, as shown in the figure below, after running, can0, can1, and can2 will be available. (Note: T805 actually has only one CAN channel; the actual number of CAN channels should be based on the device specifications.)

Pay attention to the bitrate baud rate.



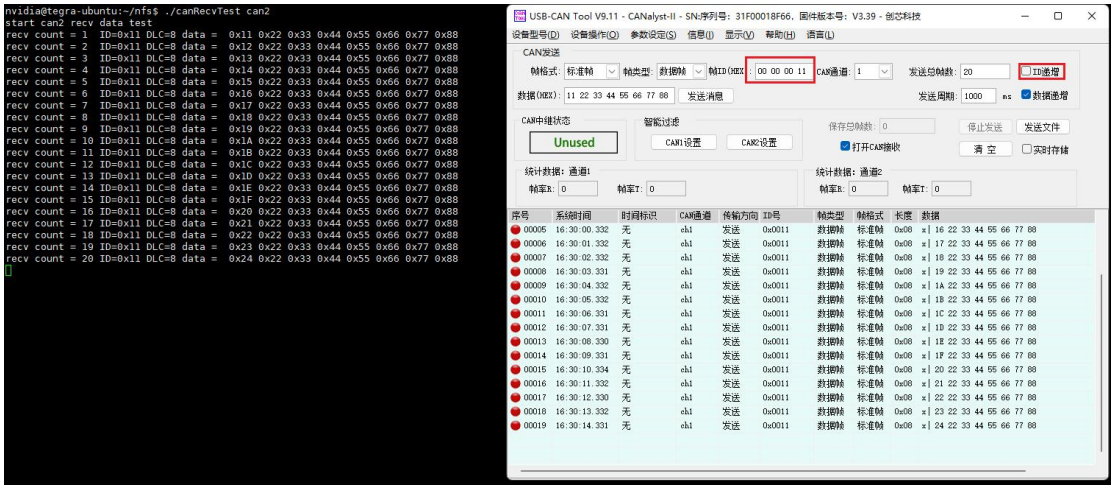
3. CAN Receive Test (Using CAN2 as an Example)

Run the command `./canRecvTest can2`. This test demo defaults to receiving frame ID 0x11.

After running the command, wait for CAN2 to receive data.

In the USB-CAN tool, set the frame ID to "00 00 00 11" and uncheck the ID increment option. Set the baud rate to the bitrate obtained in the previous step. Click the "Send Message" button to transmit data to the CAN bus.

The terminal window will then display the data sent from the USB-CAN.



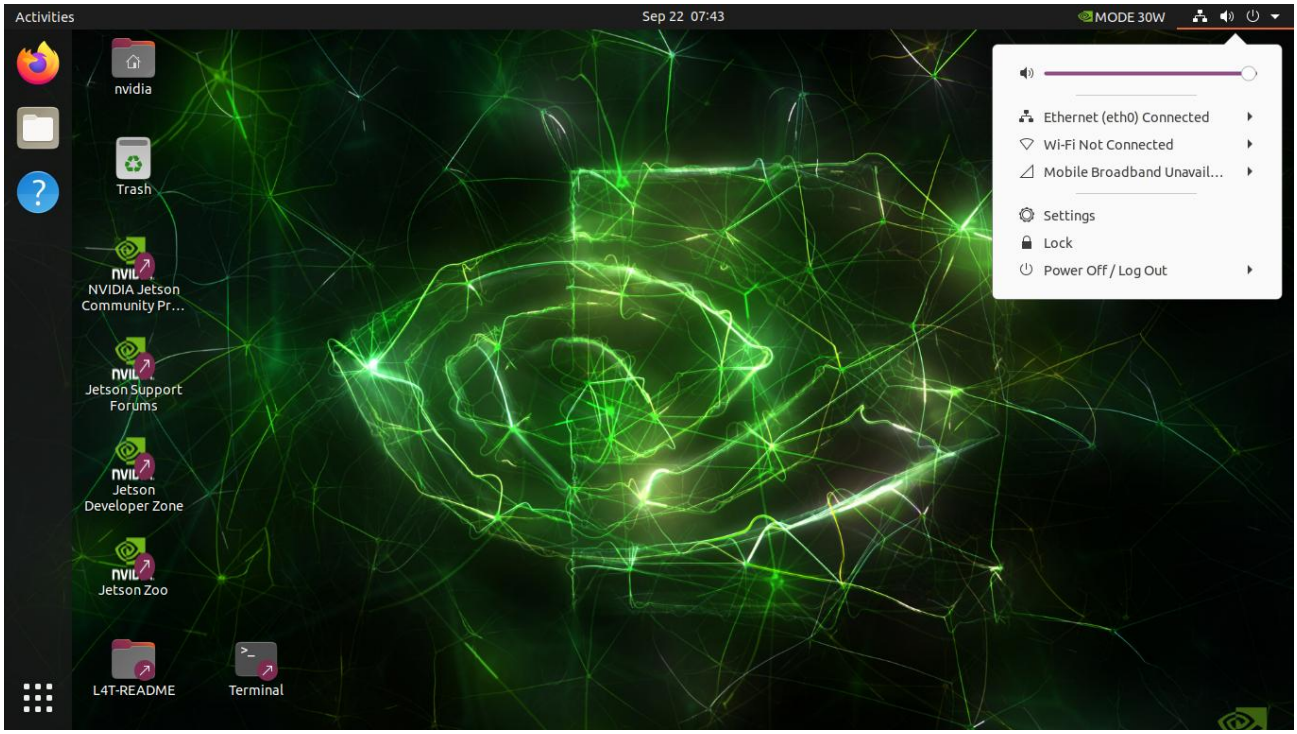
4. CAN Send Test (Taking CAN2 Test as an Example)

Run the command ./canSendTest can2. This test demo alternately sends data with frame IDs 0x11 and 0x22 by default.

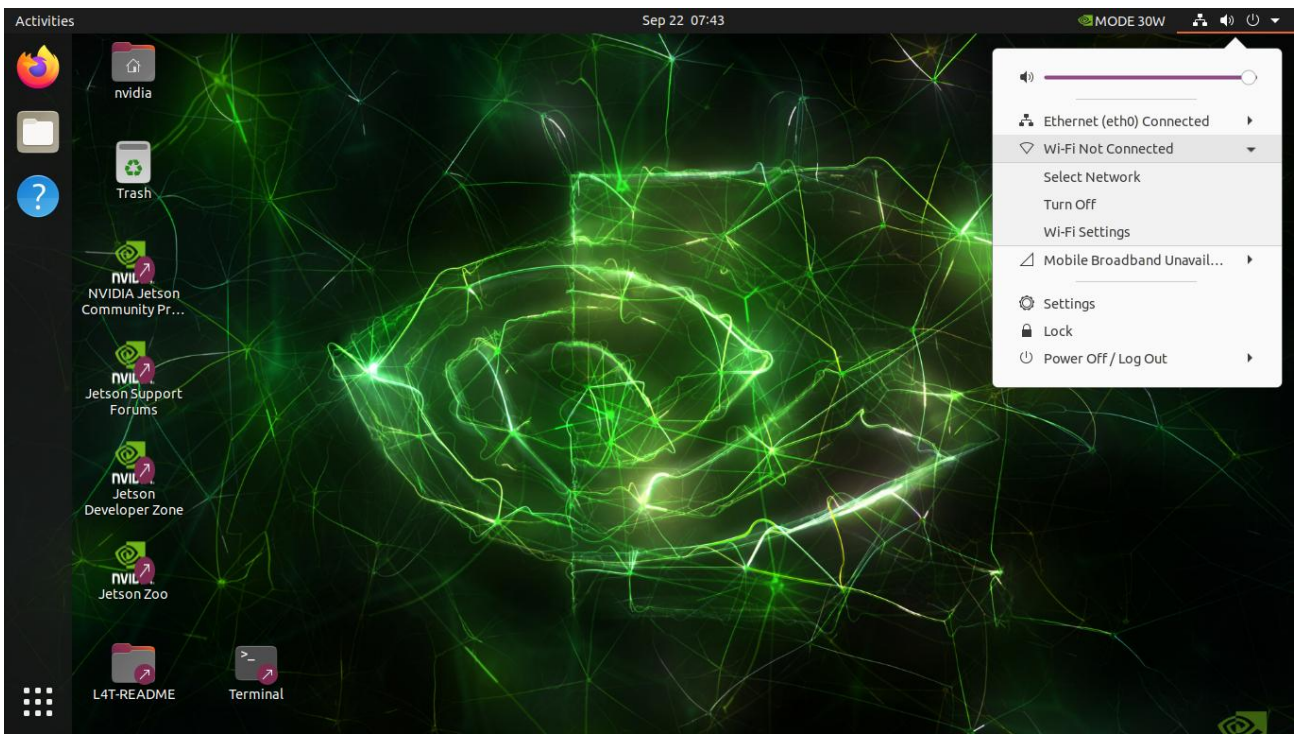
After running the command, the USB-CAN will receive the data sent by CAN2.

WiFi Connection (if equipped)

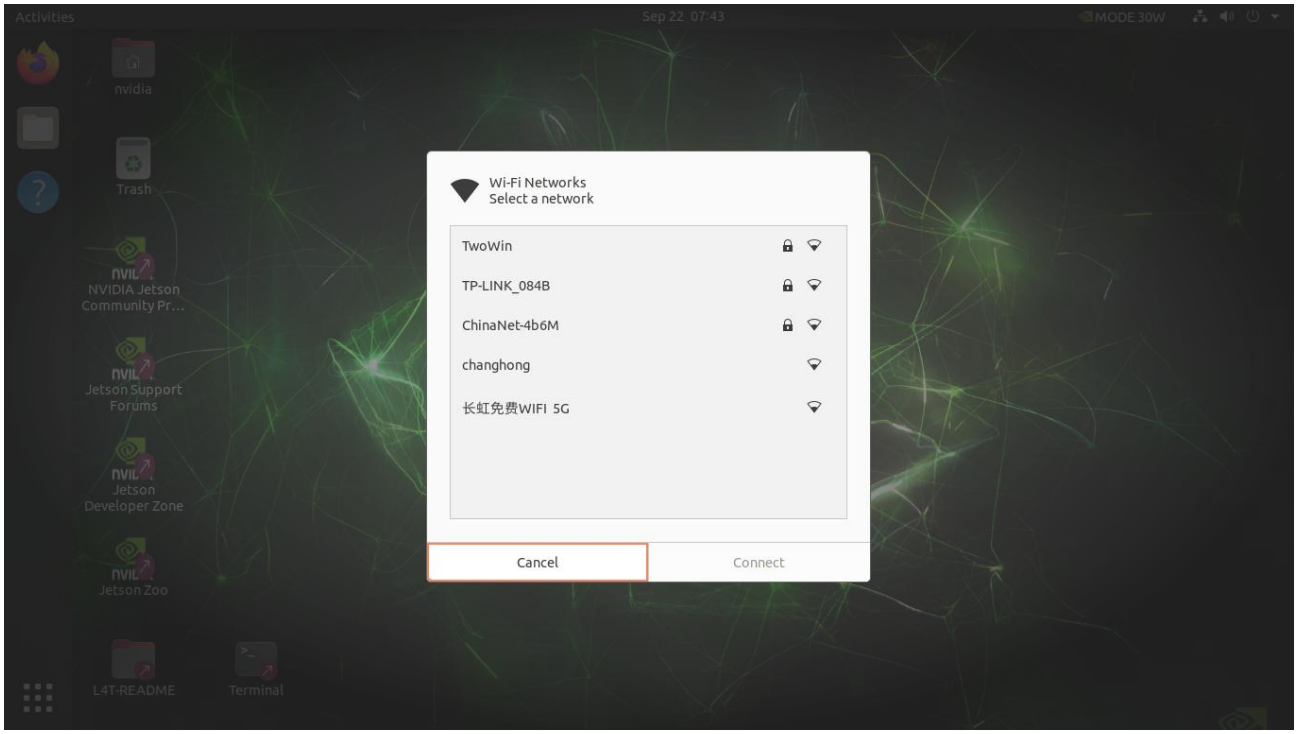
1. Click the network icon as indicated by the arrow to access the network settings.

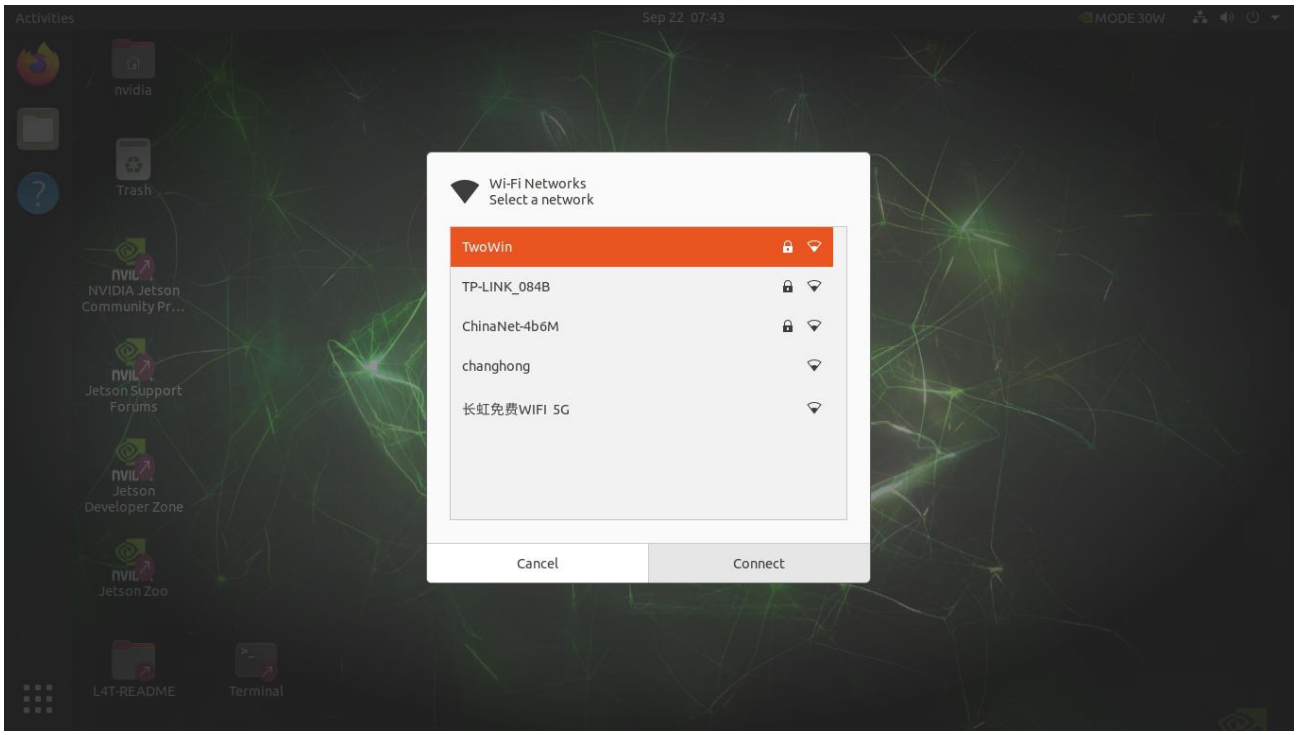


2. Select the third option, click on "Select Network" under the network settings.

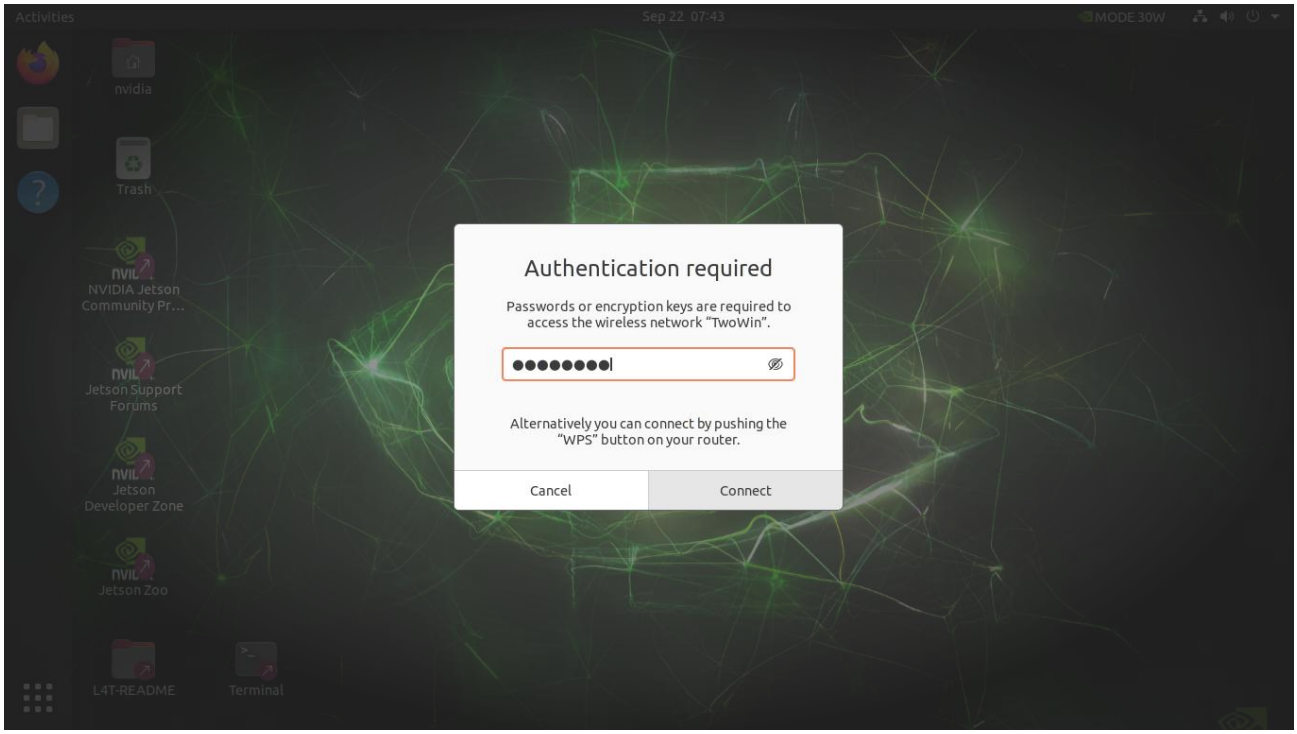


3. Select the currently searched available network, find a suitable Wi-Fi, and click "Connect" after selecting it.





4. Enter the Wi-Fi password.



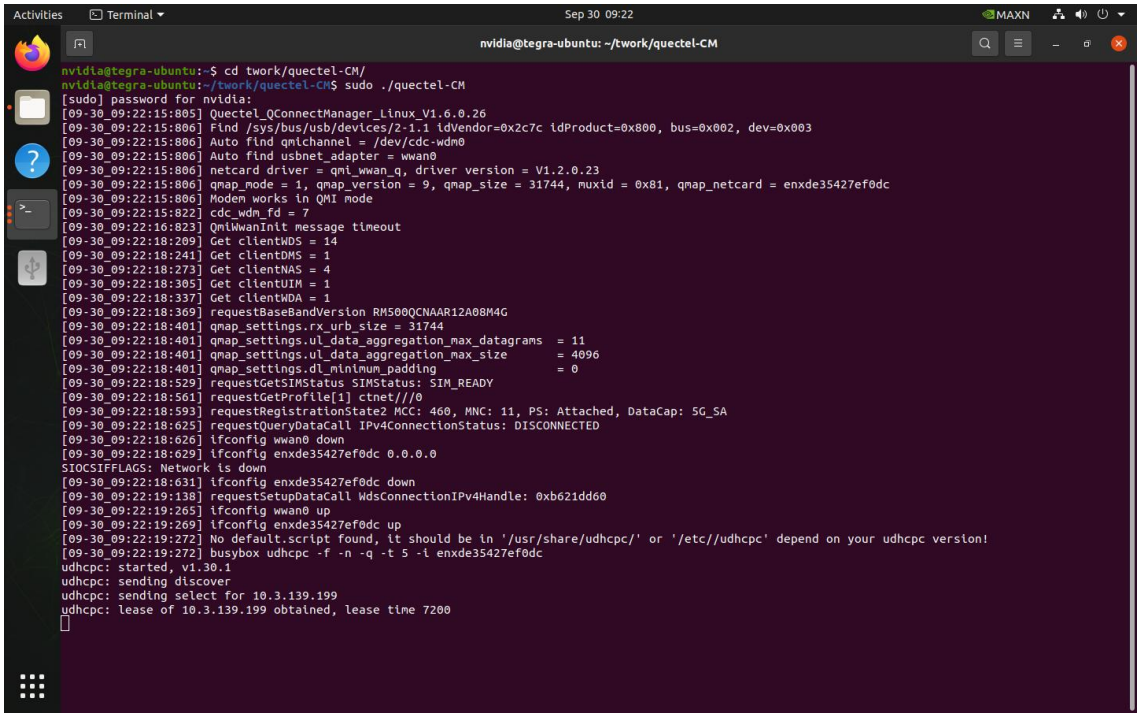
5. After connecting to the internet, open a webpage to confirm if the network is functioning properly.

4G Dial-Up Internet (Optional)

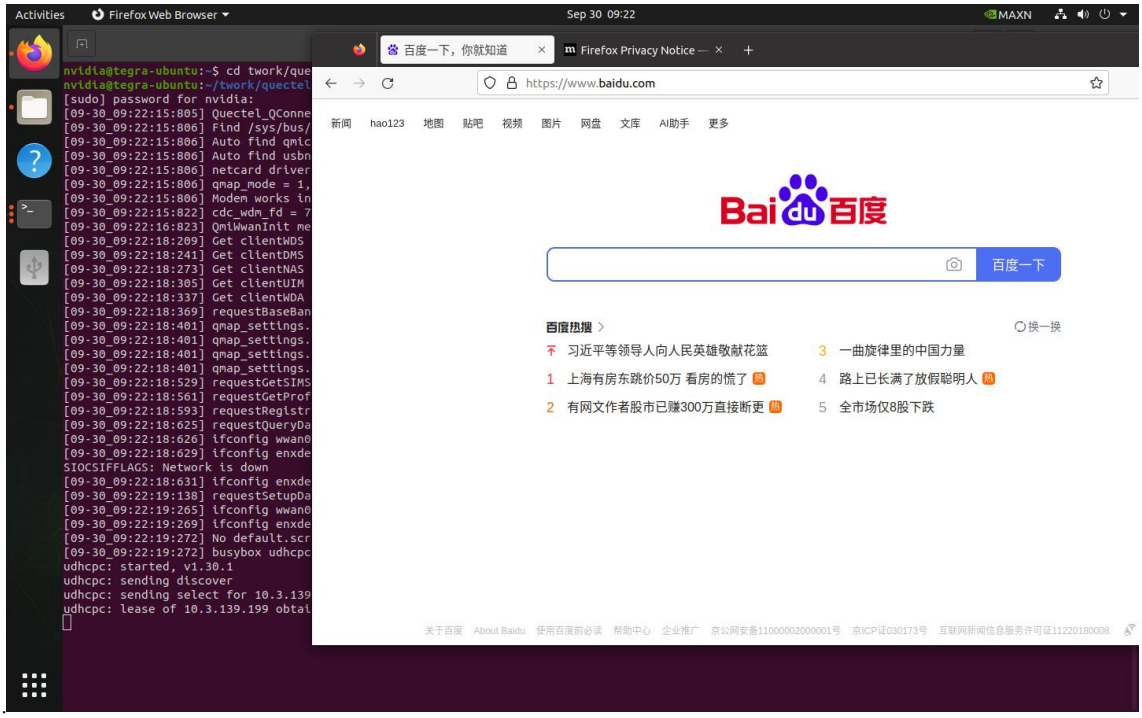
Note: Dial-up requires a SIM card to be inserted. This device does not support SIM card hot-swapping. Please ensure the SIM card is inserted before powering on the device.

Locate the 4G dial-up file in the main directory: /home/nvidia/twork/quectel-CM #The path may vary, please refer to the actual path.

sudo ./quectel-CM



The appearance of an IP address indicates a successful dial-up connection, and you can now access the internet



Note: The dialing port cannot be exited. If exited, the dialing process will terminate. It is recommended to choose to perform dialing in the background in advance.

Jtop Installation

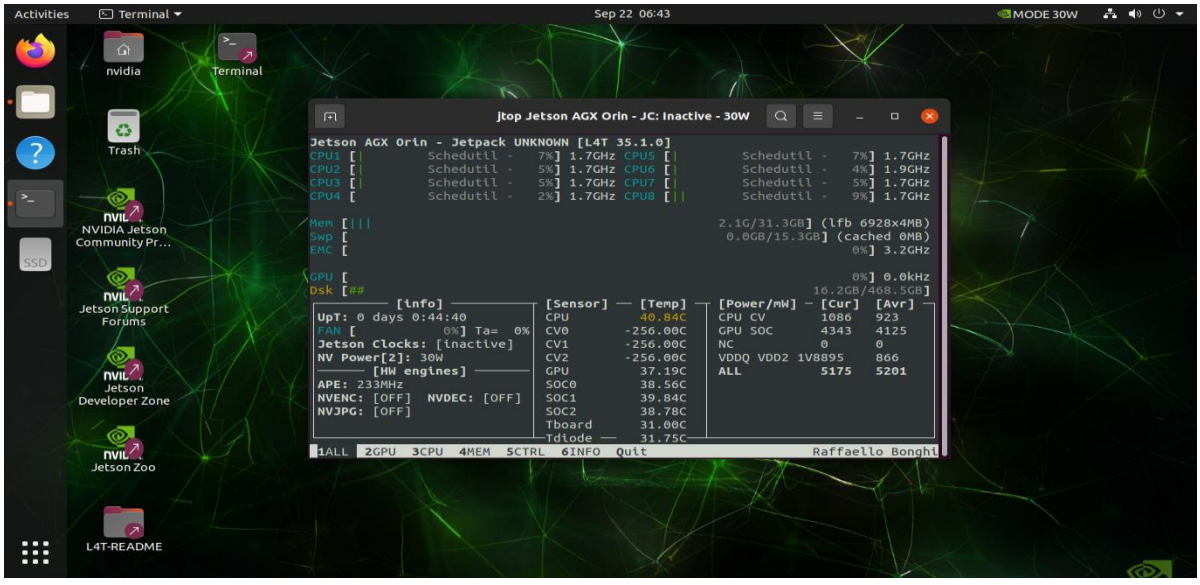
jtop (a system monitoring utility that runs on the terminal and allows real-time viewing and control of the NVIDIA Jetson status) is also very easy to install. If the JetPack SDK is already installed on the Jetson product, you can follow the steps below to install and run it:

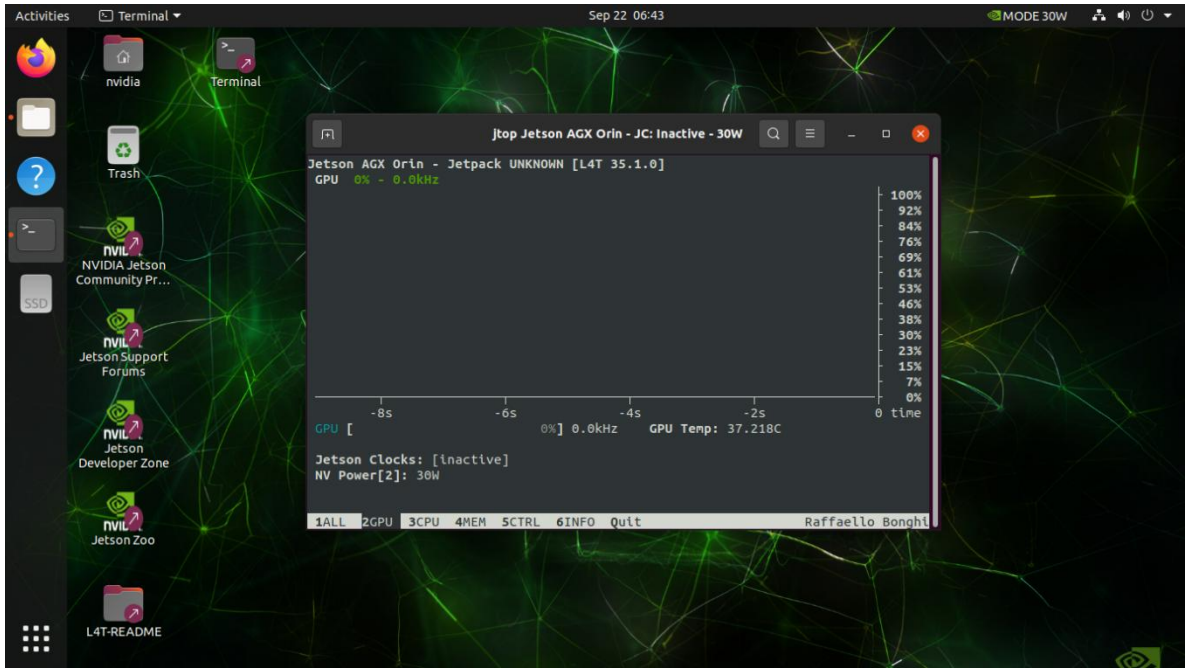
Installation:
```bash
sudo apt install python3-pip
sudo pip3 install jetson-stats
```

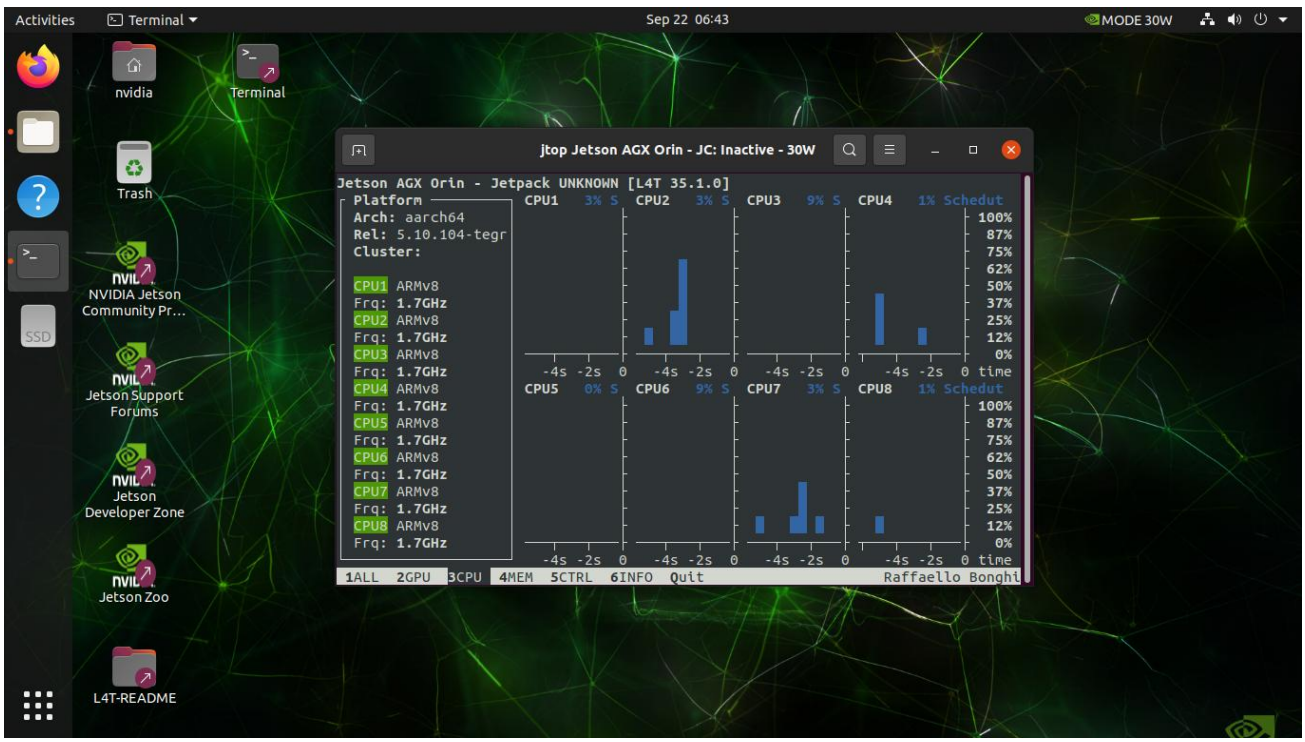
Run:
```bash
sudo jtop
```

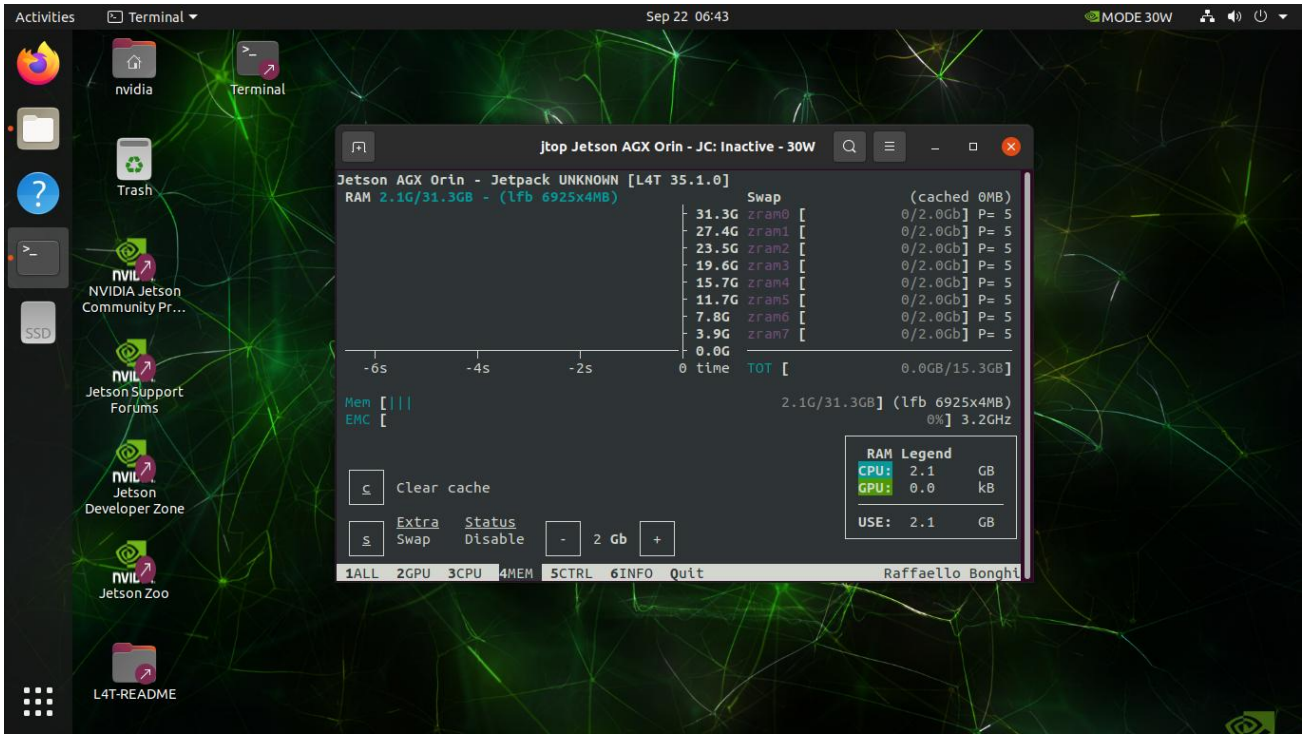
After launching, the interface will appear as shown below. Press the number keys 1, 2, 3, 4, 5, or 6 to switch between pages, and press Q to exit.

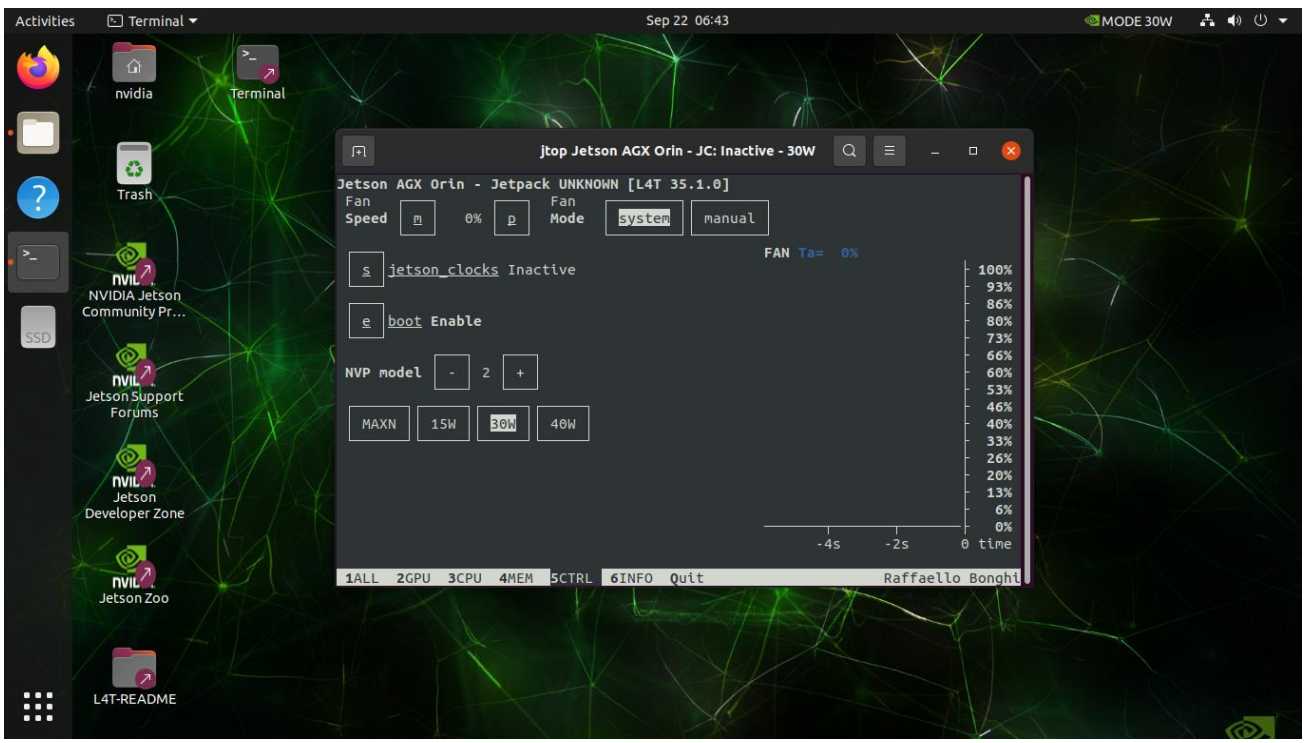
Note: This step is usually pre-installed on factory devices. The image below uses the AGX Orin module with jtop version 4.0.0 as an example. There may be slight differences in other versions, so please refer to the actual version for accuracy:

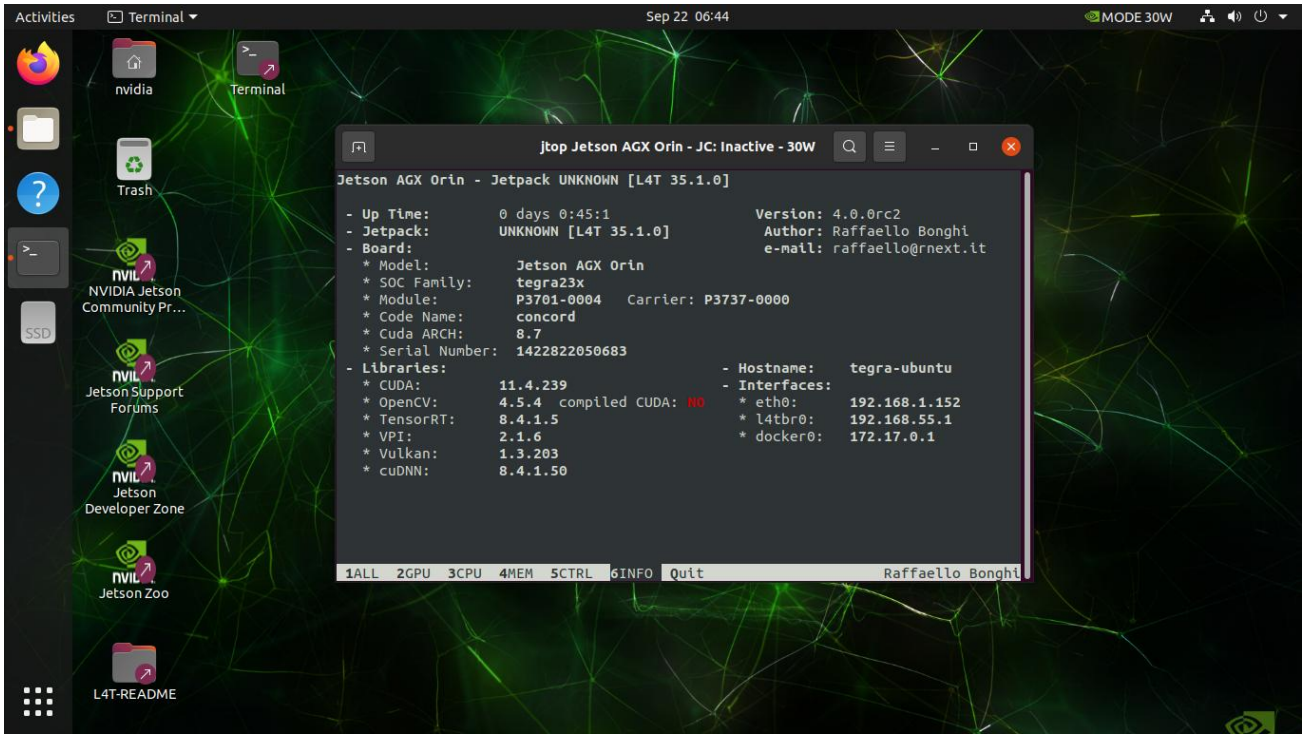



Activities
Terminal
Sep 22 06:43
MODE 30W
nvidia
Terminal
Trash
NVIDIA Jetson Community Pr...
Jetson Support Forums
Jetson Developer Zone
Jetson Zoo
L4T-README
jtop Jetson AGX Orin - JC: Inactive - 30W
Jetson AGX Orin - Jetpack UNKNOWN [L4T 35.1.0]
GPU 0% - 0.0kHz
100%
92%
84%
76%
69%
61%
53%
46%
38%
30%
23%
15%
7%
0%
-8s -6s -4s -2s 0 time
GPU [0%] 0.0kHz GPU Temp: 37.218C
Jetson Clocks: [inactive]
NV Power[2]: 30W
1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit
Raffaello Bonghi


Activities
Terminal
Sep 22 06:43
MODE 30W
nvidia
Terminal
Trash
NVIDIA Jetson Community Pr...
Jetson Support Forums
Jetson Developer Zone
Jetson Zoo
L4T-README
jtop Jetson AGX Orin - JC: Inactive - 30W
Jetson AGX Orin - Jetpack UNKNOWN [L4T 35.1.0]
Platform
Arch: aarch64
Rel: 5.10.104-tegr
Cluster:
CPU1 ARMv8
Frq: 1.7GHz
CPU2 ARMv8
Frq: 1.7GHz
CPU3 ARMv8
Frq: 1.7GHz
CPU4 ARMv8
Frq: 1.7GHz
CPU5 ARMv8
Frq: 1.7GHz
CPU6 ARMv8
Frq: 1.7GHz
CPU7 ARMv8
Frq: 1.7GHz
CPU8 ARMv8
Frq: 1.7GHz
CPU1 3% S CPU2 3% S CPU3 9% S CPU4 1% Schedut
CPU5 0% S CPU6 9% S CPU7 3% S CPU8 1% Schedut
100%
87%
75%
62%
50%
37%
25%
12%
0%
-4s -2s 0 time
1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit
Raffaello Bonghi


Activities
Terminal
Sep 22 06:43
MODE 30W
nvidia
Terminal
Trash
NVIDIA Jetson Community Pr...
Jetson Support Forums
Jetson Developer Zone
Jetson Zoo
L4T-README
jtop Jetson AGX Orin - JC: Inactive - 30W
Jetson AGX Orin - Jetpack UNKNOWN [L4T 35.1.0]
RAM 2.1G/31.3GB - (lfb 6925x4MB)
Swap (cached 0MB)
31.3G zram0 [0/2.0Gb] P= 5
27.4G zram1 [0/2.0Gb] P= 5
23.5G zram2 [0/2.0Gb] P= 5
19.6G zram3 [0/2.0Gb] P= 5
15.7G zram4 [0/2.0Gb] P= 5
11.7G zram5 [0/2.0Gb] P= 5
7.8G zram6 [0/2.0Gb] P= 5
3.9G zram7 [0/2.0Gb] P= 5
0.0G
-6s -4s -2s 0 time
TOT [0.0GB/15.3GB]
Mem [|||
2.1G/31.3GB] (lfb 6925x4MB)
EMC [
0%] 3.2GHz
RAM Legend
CPU: 2.1 GB
GPU: 0.0 kB
USE: 2.1 GB
c Clear cache
s Extra Swap Status Disable - 2 Gb +
1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit
Raffaello Bonghi


Activities
Terminal
Sep 22 06:43
MODE 30W
nvidia
Terminal
Trash
NVIDIA Jetson Community Pr...
Jetson Support Forums
Jetson Developer Zone
Jetson Zoo
L4T-README
jtop Jetson AGX Orin - JC: Inactive - 30W
Jetson AGX Orin - Jetpack UNKNOWN [L4T 35.1.0]
Fan Speed m 0% p
Fan Mode system manual
FAN Ta= 0%
s jetson_clocks Inactive
e boot Enable
NVP model - 2 +
MAXN 15W 30W 40W
100%
93%
86%
80%
73%
66%
60%
53%
46%
40%
33%
26%
20%
13%
6%
0%
-4s -2s 0 time
1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit
Raffaello Bonghi


Activities
Terminal
Sep 22 06:44
MODE 30W
nvidia
Terminal
Trash
NVIDIA Jetson Community Pr...
Jetson Support Forums
Jetson Developer Zone
Jetson Zoo
L4T-README
SSD
jtop Jetson AGX Orin - JC: Inactive - 30W
Jetson AGX Orin - Jetpack UNKNOWN [L4T 35.1.0]
- Up Time: 0 days 0:45:1
- Jetpack: UNKNOWN [L4T 35.1.0]
- Board:
* Model: Jetson AGX Orin
* SOC Family: tegra23x
* Module: P3701-0004 Carrier: P3737-0000
* Code Name: concord
* Cuda ARCH: 8.7
* Serial Number: 1422822050683
- Libraries:
* CUDA: 11.4.239
* OpenCV: 4.5.4 compiled CUDA: NO
* TensorRT: 8.4.1.5
* VPI: 2.1.6
* Vulkan: 1.3.203
* cuDNN: 8.4.1.50
Version: 4.0.0rc2
Author: Raffaello Bonghi
e-mail: raffaello@rnext.it
- Hostname: tegra-ubuntu
- Interfaces:
* eth0: 192.168.1.152
* l4tbr0: 192.168.55.1
* docker0: 172.17.0.1
1ALL 2GPU 3CPU 4MEM 5CTRL 6INFO Quit
Raffaello Bonghi

Warranty Policy of Twowin Information Technology (Shenzhen) Co., Ltd.

Important Notes

Twowin Information Technology (Shenzhen) Co., Ltd. warrants that each embedded product provided is free from material or manufacturing defects to the best of its knowledge and complies fully with the original factory specifications at the time of shipment.

The warranty scope of Twowin covers all original factory products. For issues with dealer-configured accessories, contact the dealer for resolution. All products carry a one-year warranty (starting from the factory shipment date). Lifetime repair services are provided for products beyond the warranty period. Repaired components receive an extended warranty of 12 months. Unless otherwise notified by Twowin, the factory shipment date on the original delivery note shall be deemed the product's shipment date.

How to Obtain Warranty Services

If your product malfunctions during the warranty period, contact Twowin or an authorized dealer to initiate warranty services. When requesting warranty services, present a purchase invoice as proof of entitlement to warranty services (this serves as your legal documentation for claiming warranty services).

Warranty Resolution Measures

When requesting warranty services, you must follow the procedures established by Twowin for issue identification and resolution. You will need to undergo an initial diagnosis via phone or email with Twowin's technical staff. During this process, you must fully complete all details in the provided repair request form to ensure accurate diagnosis of the fault cause and damage location (for out-of-warranty products, a service quotation will be provided for your confirmation).

Twowin reserves the right to either repair or replace the reported product. If the product is replaced or repaired, the replaced "defective" product or repaired components will be returned to Twowin.

Since some repaired products require shipment to the original factory, Twowin strongly advises purchasing transportation insurance to avoid accidental loss/damage. If you decline insurance, Twowin shall not be held liable for any loss or damage during transit.

For warranty-covered products:
The user bears return shipping fees for products sent to Twowin for repair.
Twowin bears return shipping fees for repaired/replaced products delivered to users.

Exclusions from Warranty:
1.Damage due to improper installation, misuse, abuse (e.g., overload), or accidental mishandling.
2.Failures caused by improper maintenance, neglect (e.g., fire, explosion), or natural disasters (e.g., lightning, earthquakes, typhoons).
3.Unauthorized modifications to the product (e.g., circuitry, mechanical components, software, three-proof treatment).
4.Faults arising from:
Voltage irregularities (overvoltage, undervoltage, floating ground voltage).
Bent/pinched pins, incorrect bus connections, component detachment.
Electrostatic discharge, excessive temperature/humidity, poor transportation.
5.Tampering, removal, or alteration of product labels or part numbers.
6.Claims submitted after the warranty period expires.

Special Provisions:

If the same fault recurs in multiple products or the same device, our company reserves the right to require users to provide peripheral devices or technical documentation (e.g., monitors, I/O devices, cables, power supplies, connection diagrams, system architecture) to diagnose root causes.

Failure to comply will result in denial of warranty claims. Repairs will incur market-rate fees and a repair deposit.