



NV200-2LGS16

Military Jetson Orin NX IP65 Rugged Computer



User's Manual

Revision Date: Aug. 30, 2024



Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

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- All product specifications are subject to change without prior notice



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Specifications

System

AI Performance	100 TOPS
GPU	NVIDIA® Ampere architecture with 1024 CUDA® cores and 32 Tensor Cores, max freq. 915MHz
CPU	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU, 2MB L2 + 4MB L3, max freq. 2.0GHz
Memory	16GB 128-bit LPDDR5, 3200MHz, 102 GB/s
Expansion Slot	1x M.2 2280 M key (PCIe x4) 1x M.2 2230 M key (PCIe x1) 1x M.2 2030 E Key Optional GMSL2 module with 4x FAKRA connector

Display

Display	1x HDMI 2.0(max resolution 3840x2160)
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Storage

M.2	1x PCIe x1 M.2 2230 M-Key up to 2TB
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Ethernet

Ethernet	2x GbE LAN (10/100/1000 Mbps supported)
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Front I/O

Grounding Screw	1x
Power In	18V~32V DC-IN with D38999 connector
X1	2x 1GbE LAN with D38999 connector
X2	1x CAN + 1x RS232/422/485 + 2x DI + 2x DO with D38999 connector
X3	1x HDMI with D38999 connector
Power Button	1x Power Button with Back light

Rear I/O

Access Panel	1x Reset Button
	1x Recover Button
	1x USB type-C for Recovery
	2x USB Type-C
	1x Reboot LED
3G-SDI	4x 3G-SDI in with BNC connector
GMSL	2x2 mini-FAKRA GMSL(2) connector

Power Requirement

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Power Input	18V~32V DC-in
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Applications, Operating System

Applications	Energy/Smart Grid/Power Plant Management, Intelligent Automation and manufacturing applications/ AI
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Operating System	Ubuntu 20.04 with JetPack 6.0
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Physical

Dimension	220 x 300 x 88 mm (W x D x H)
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Weight	3kg
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Chassis	Aluminum Alloy
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Heatsink	Aluminum Alloy, Corrosion Resistant
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Finish	Anodic aluminum oxide
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Environmental

Compliance	MIL-STD-810G, IEC-61850-3, IEEE-1613, CE and FCC, RoHS
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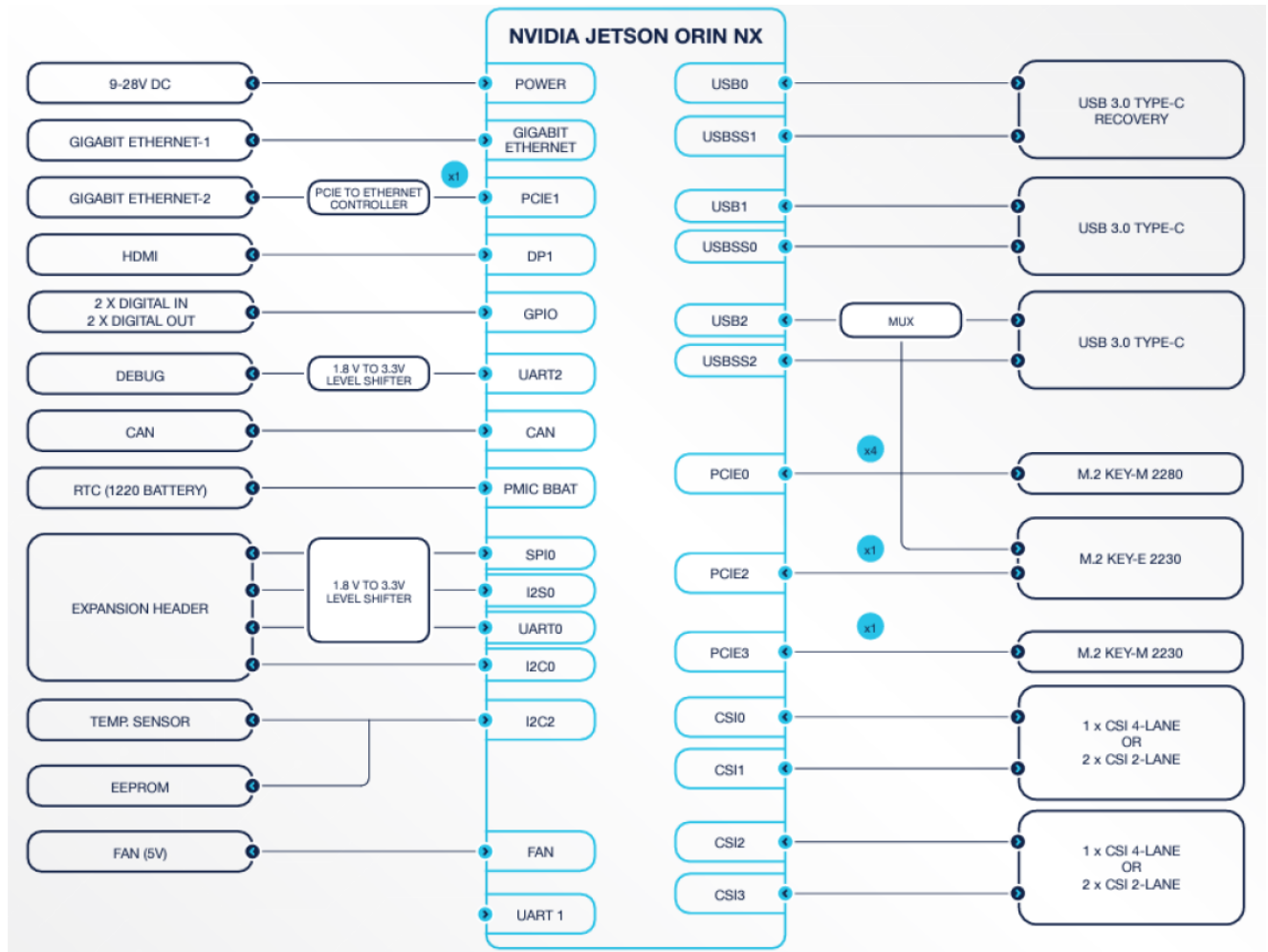
Operating Temp.	-20 to 50°C
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Storage Temp.	-40 to 85°C
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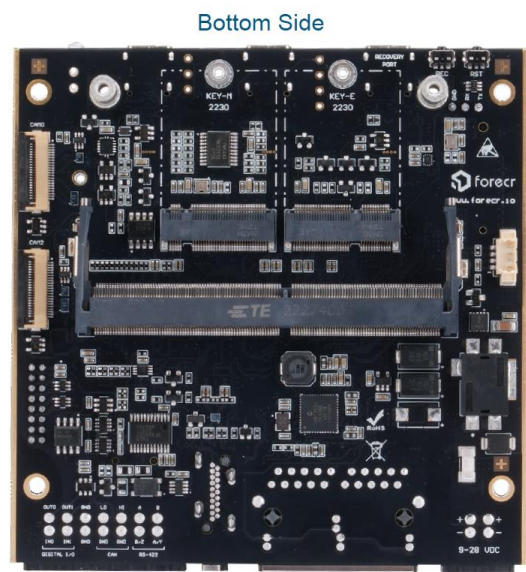
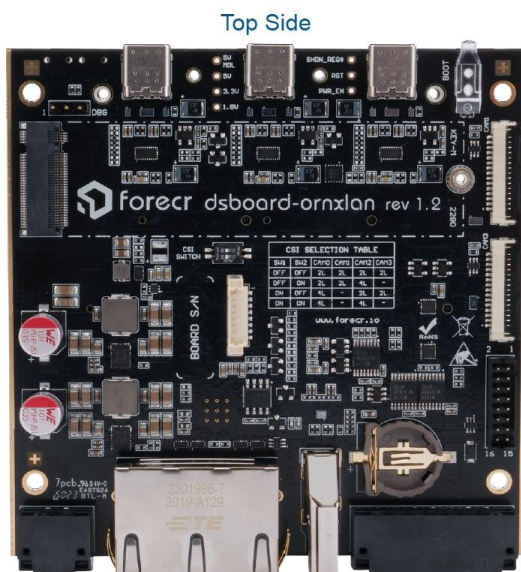
Relative Humidity	5% to 95%, non-condensing
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*All specifications and photos are subject to change without notice.

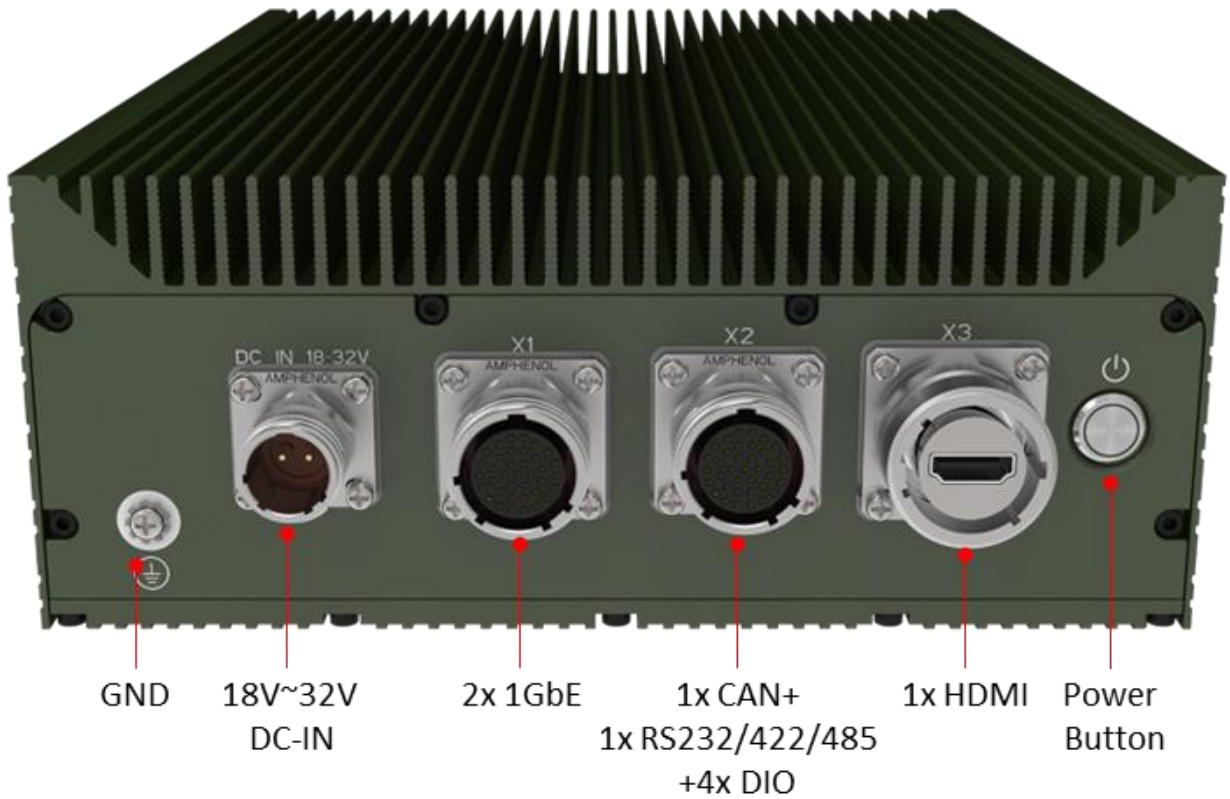
Block Diagram



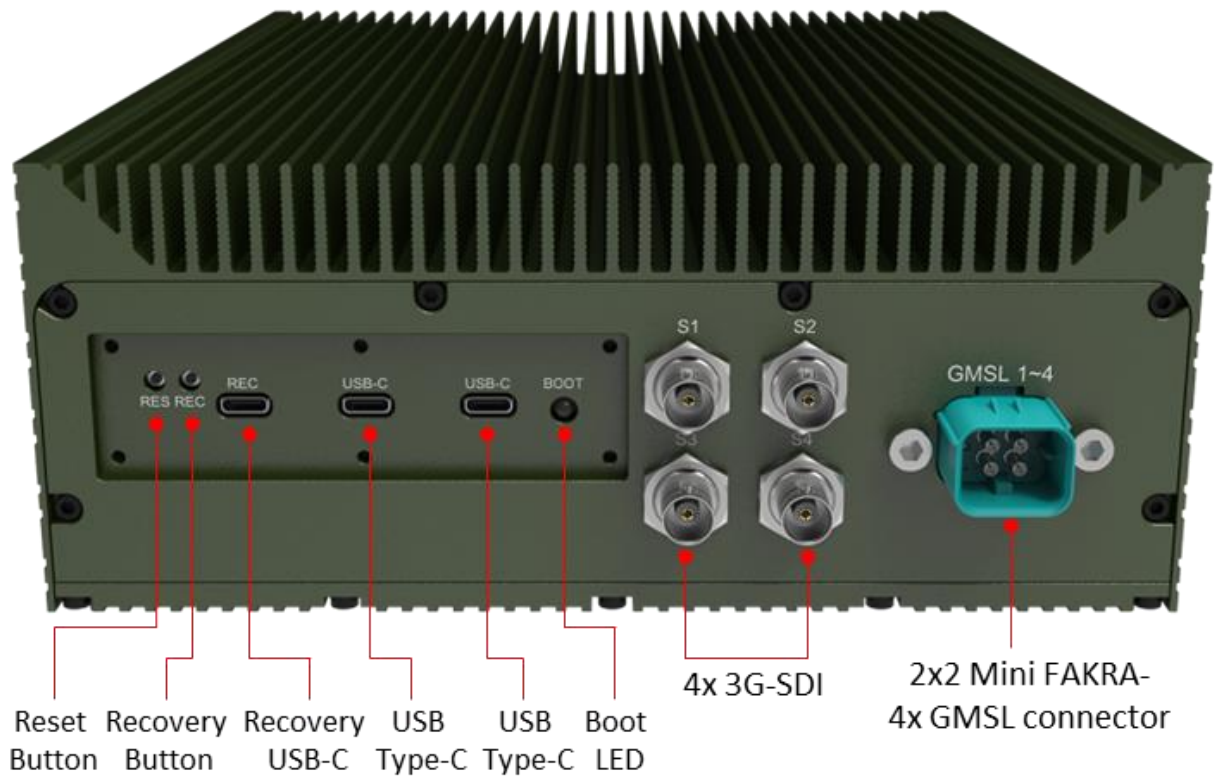
Board Visuals



Front/Rear IO Visuals

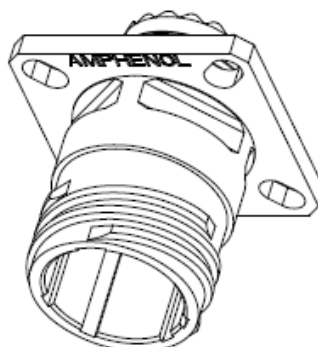
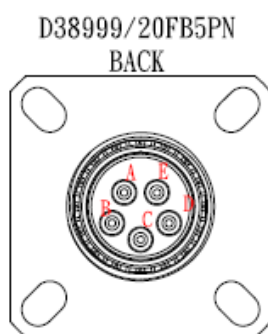
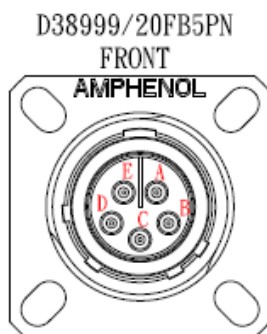


List of Connectors & Buttons



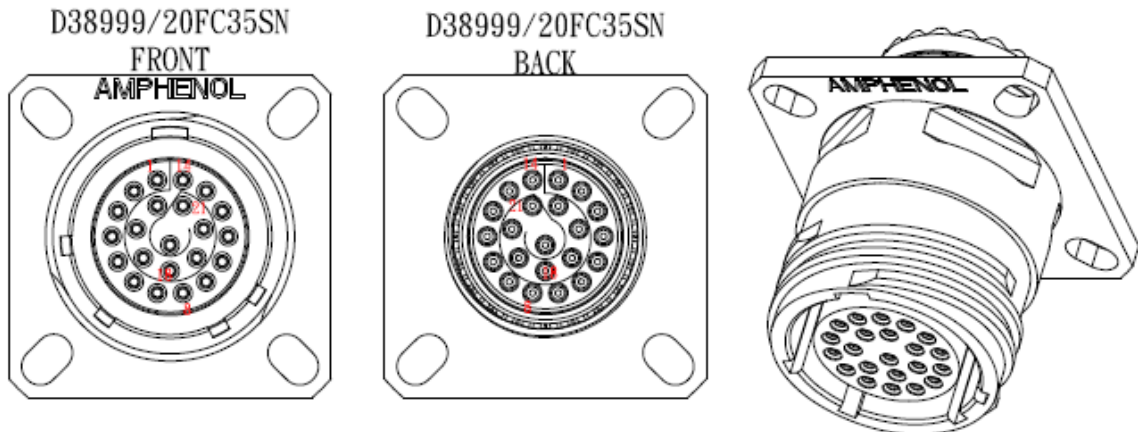
Definition of each I/O

DC Power IN:



D38999/20FB5PN	
A	Vin+
B	Vin+
C	N. C.
D	Vin-
E	Vin-

X1: 2x 1GbE LAN



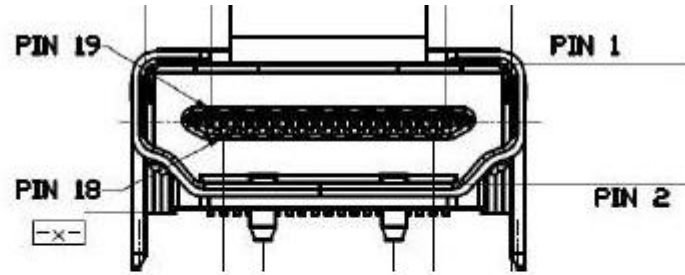
D38999		RJ45-1	WIRE COLOR
1	XX	1	WHITE/ORANGE
2		2	ORANGE
3	XX	3	WHITE/GREEN
4		6	GREEN
5	XX	4	BLUE
6		5	WHITE/BLUE
15	XX	7	WHITE/BROWN
16		8	BROWN
7		SHELL	BLACK
17		SHELL	BLACK
18		SHELL	BLACK

D38999		RJ45-2	WIRE COLOR
8	XX	1	WHITE/ORANGE
9		2	ORANGE
10	XX	3	WHITE/GREEN
11		6	GREEN
12	XX	4	BLUE
13		5	WHITE/BLUE
19	XX	7	WHITE/BROWN
20		8	BROWN
14		SHELL	BLACK
21		SHELL	BLACK
22		SHELL	BLACK

X2: 1x CAN+1x RS232/422/485 + 4x DIO

D38999/20FC35SB		
1	RS422 B	RS232/422/485
2	RS232 RX/RS422 A	
3	RS422 Y/RS485 A	
4	RS232 TX/RS422 Z /RS485 B	
5	GND	
6	CAN_H	CAN_BUS
7	CAN_L	
8	GND	
9	DIO_OUT_1	DIO
10	DIO_OUT_0	
11	DIO_IN_1	
12	DIO_IN_0	
13	GND	
14	GND	

X3: HDMI 2.0



Pin #	Signal	Pin #	Signal
1	HDMI_TX2_P	2	GND
3	HDMI_TX2_N	4	HDMI_TX1_P
5	GND	6	HDMI_TX1_N
7	HDMI_TX0_P	8	GND
9	HDMI_TX0_N	10	HDMI_CLK_P
11	GND	12	HDMI_CLK_N
13	CEC	14	NC
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5 V Power
19	Hot Plug Detect	20	GND
21	GND	22	GND
23	GND		



Ordering Information

Model	NV200-2L8	NV200-2L16	NV200-2LG16	NV200-2LGS16
GPU	1024 NVIDIA® CUDA® cores with 32 Tensor cores, 765 MHz	1024 NVIDIA® CUDA® cores with 32 Tensor cores, 915 MHz	1024 NVIDIA® CUDA® cores with 32 Tensor cores, 915 MHz	1024 NVIDIA® CUDA® cores with 32 Tensor cores, 915 MHz
Memory	8GB	16GB	16GB	16GB
AI Performance	70 TOPs	100TOPs	100TOPs	100TOPs
CPU	six-core Arm® Cortex® A78AE v8.2 (64-bit) (4x 256KB L2 +2MB L3) + 4MB LLC	Eight-core Arm® Cortex® A78AE v8.2 (64-bit) (4x 256KB L2 +2MB L3) + 4MB LLC	Eight-core Arm® Cortex® A78AE v8.2 (64-bit) (4x 256KB L2 +2MB L3) + 4MB LLC	Eight-core Arm® Cortex® A78AE v8.2 (64-bit) (4x 256KB L2 +2MB L3) + 4MB LLC
Module total module power	10W 15W 20W	10W 15W 25W	10W 15W 25W	10W 15W 25W
Storage	1x M.2 2280 (up to 8TB)	1x M.2 2280 (up to 8TB)	1x M.2 2280 (up to 8TB)	N/A
	1x M.2 2230 (up to 2TB)	1x M.2 2230 (up to 2TB)	1x M.2 2230 (up to 2TB)	1x M.2 2230 (up to 2TB)
Front I/O				
Power In	18V-32VDC with D38999	18V-32VDC with D38999	18V-32VDC with D38999	18V-32VDC with D38999
X1	2x GbE LAN	2x GbE LAN	2x GbE LAN	2x GbE LAN
X2	1x RS232/422/485 +1x CAN+ 2x DI+2x DO	1x RS232/422/485 +1x CAN+ 2x DI+2x DO	1x RS232/422/485 +1x CAN+ 2x DI+2x DO	1x RS232/422/485 +1x CAN+ 2x DI+2x DO
X3	1x HDMI	1x HDMI	1x HDMI	1x HDMI
Rear I/O				
GMSL	N/A	N/A	4x	4x
3G-SDI	N/A	N/A	N/A	4x
Access Panel	1x Boot LED	1x Boot LED	1x Boot LED	1x Boot LED
	1x Reset Button	1x Reset Button	1x Reset Button	1x Reset Button
	1x Recovery Button	1x Recovery Button	1x Recovery Button	1x Recovery Button
	2x USB3.1 Type-C	2x USB3.1 Type-C	2x USB3.1 Type-C	2x USB3.1 Type-C
	1x USB3.1 Type-C for Recovery	1x USB3.1 Type-C for Recovery	1x USB3.1 Type-C for Recovery	1x USB3.1 Type-C for Recovery
Dimensions				
	220 x 300 x 88mm(WxDxH)	220 x 300 x 88mm(WxDxH)	220 x 300 x 88mm(WxDxH)	220 x 300 x 88mm(WxDxH)

Software Information

Software Configuration

JetPack-5.x Installation can be found here:

<https://www.forecr.io/blogs/installation/jetpack-5-x-installation-for-dsboard-ornx-lan>

System Recovery

You will need a host PC in order to flash your client device with a new system image.

Host PC

Before flashing the image, you should prepare an OTG cable (USB Type-C) for connecting to NV200-2LGS16 (recovery port), and a host PC with USB Type-A running Ubuntu 20.04.

JetPack-6 Installation for NV200-2LGS16.

In this tutorial, we will install JetPack-6 for NV200-2LGS16. First, we will include our BSP files in Jetson OS image. Then, we will install the Jetson OS into the NV200-2LGS16. Finally, we will install the Jetson SDK

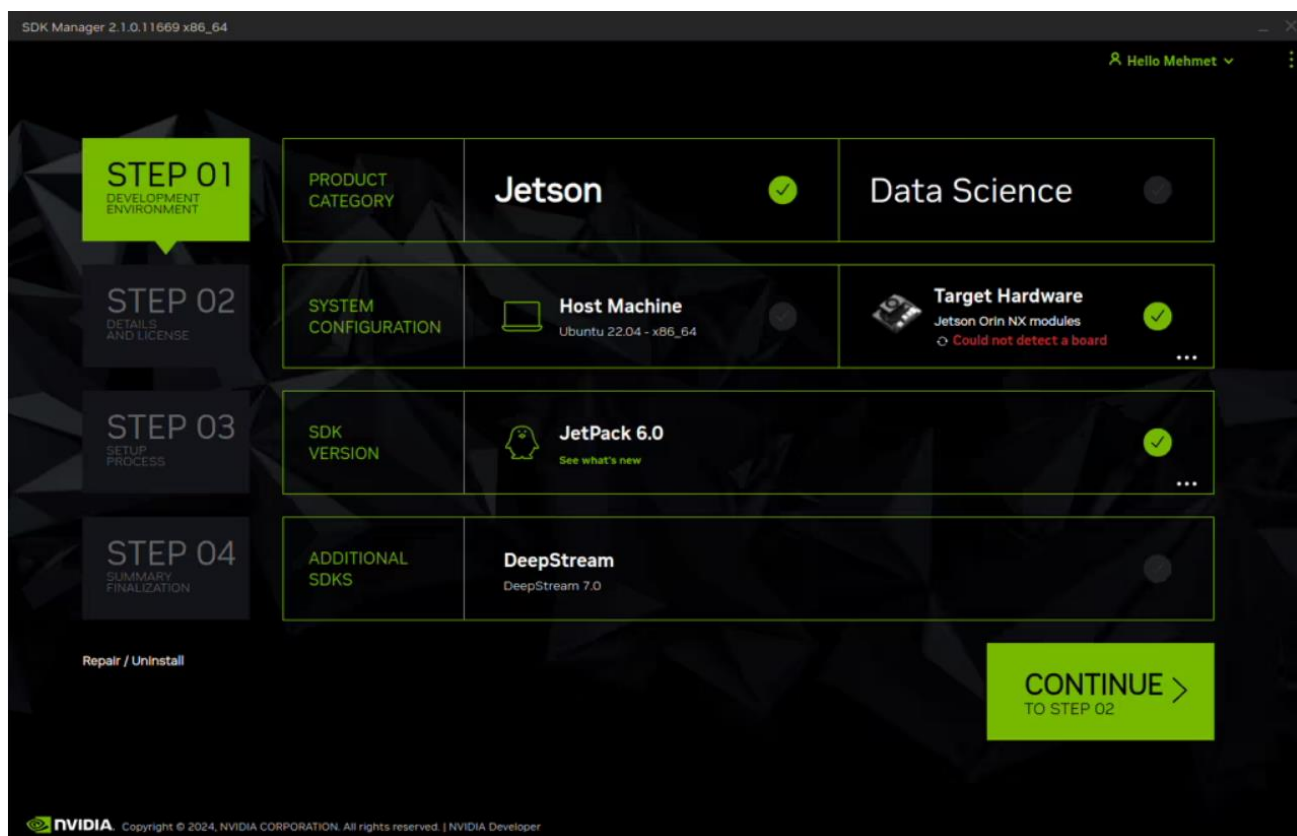
components into it.

Attention: This tutorial is compatible for all types of Jetson Orin NX and Orin Nano modules. Only the BSP archive differs.

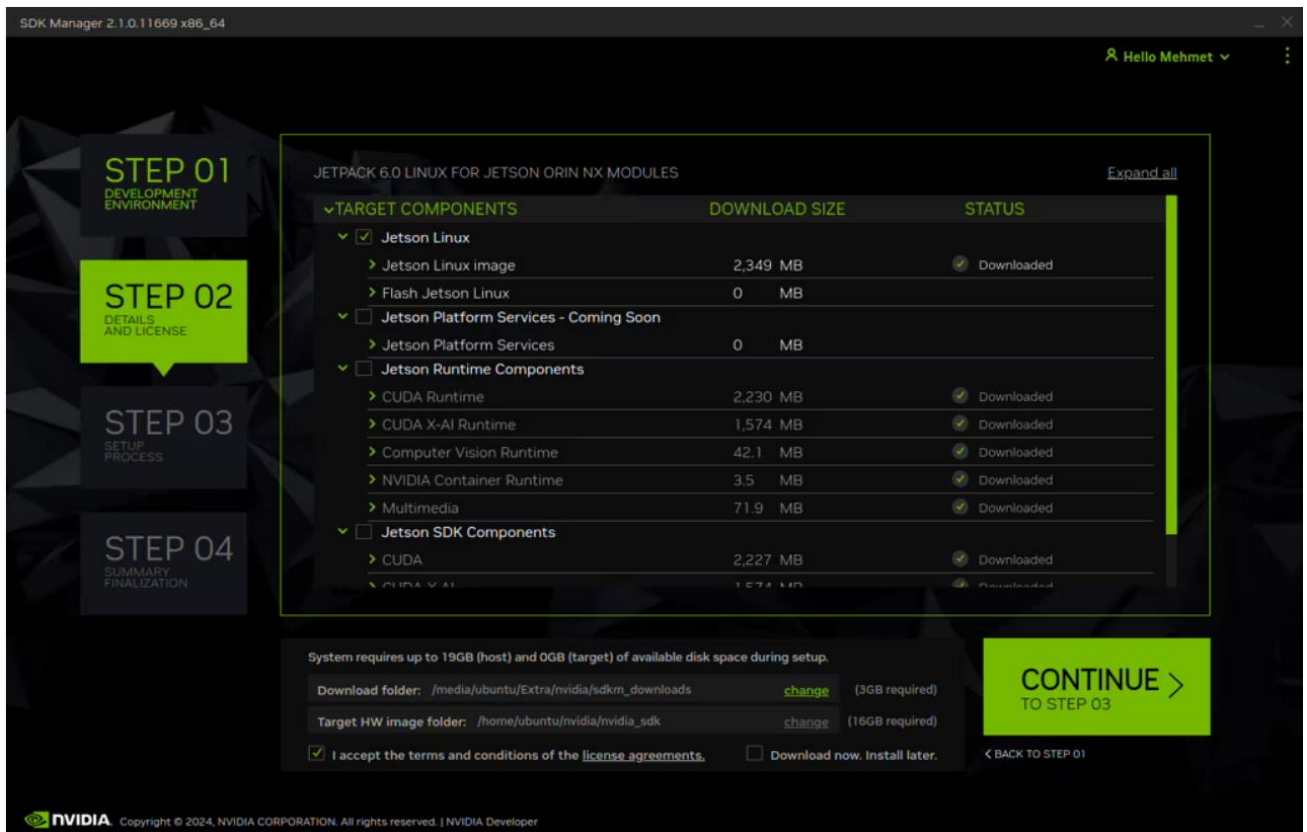
Including the Kernel Files in Jetson OS Image

Open the NVIDIA SDK Manager (<https://developer.nvidia.com/sdk-manager>). Select the correct JetPack version for Target Operating System and select the correct module for your installation (“Jetson Orin Nano modules” or “Jetson Orin NX modules”). The “Host Machine” components are not required.

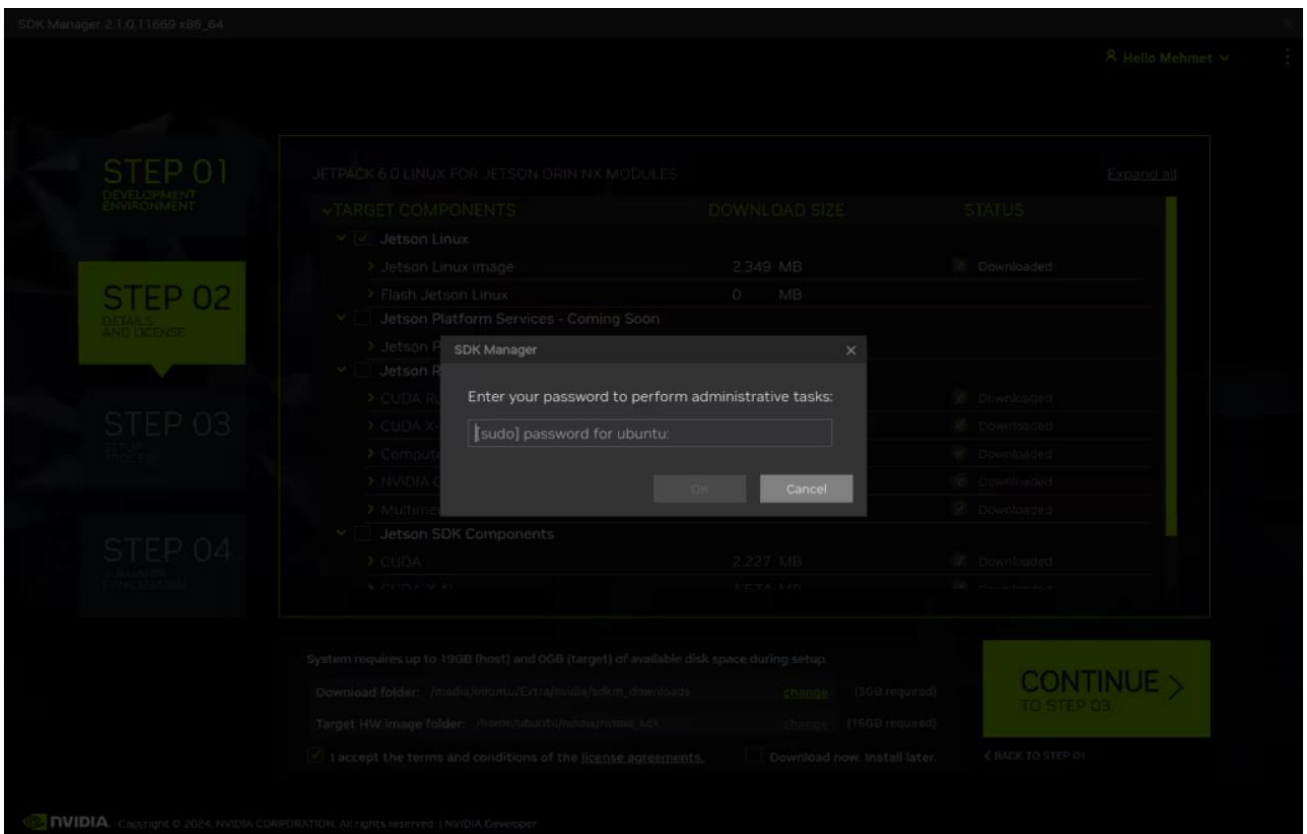
Then, continue to Step 2. (6.0v2)

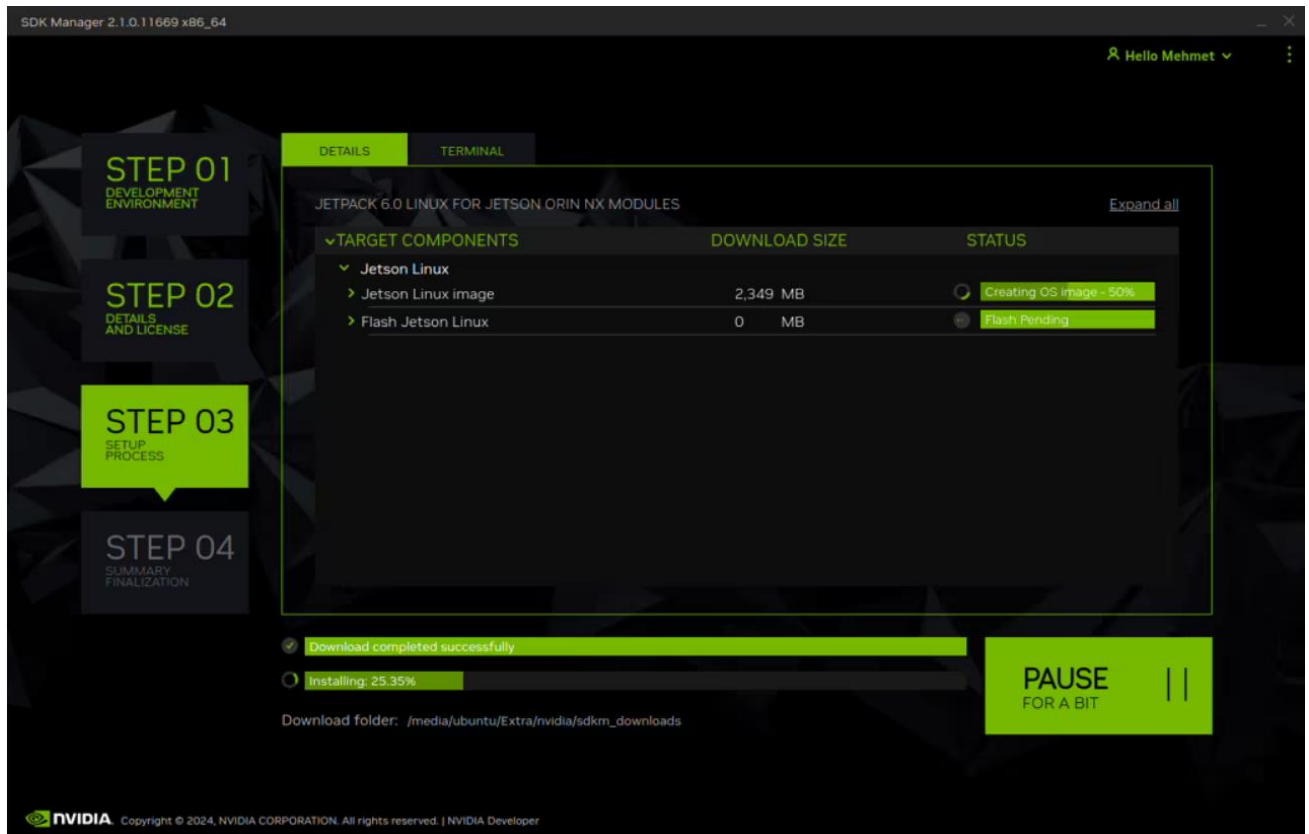


Choose only “Jetson Linux”, accept the terms & conditions and continue to Step 3.

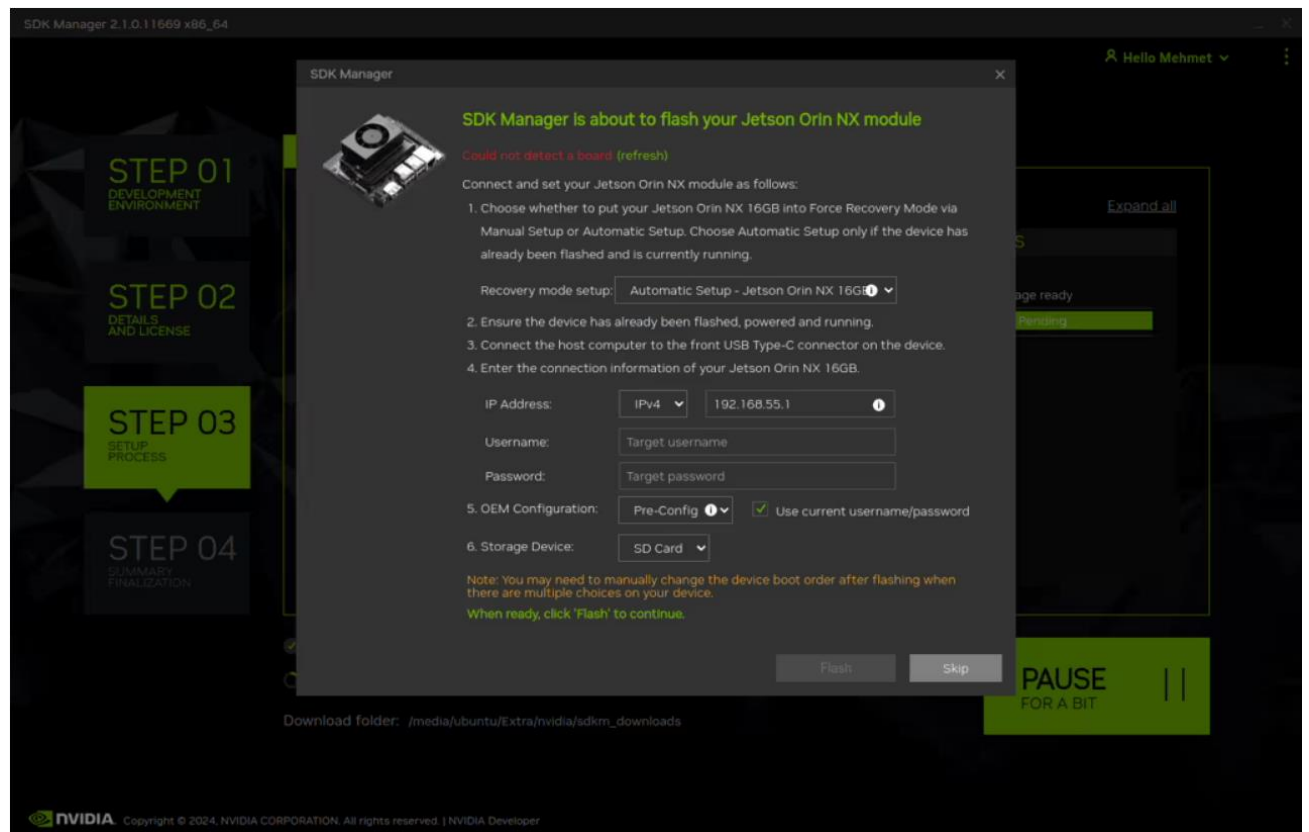


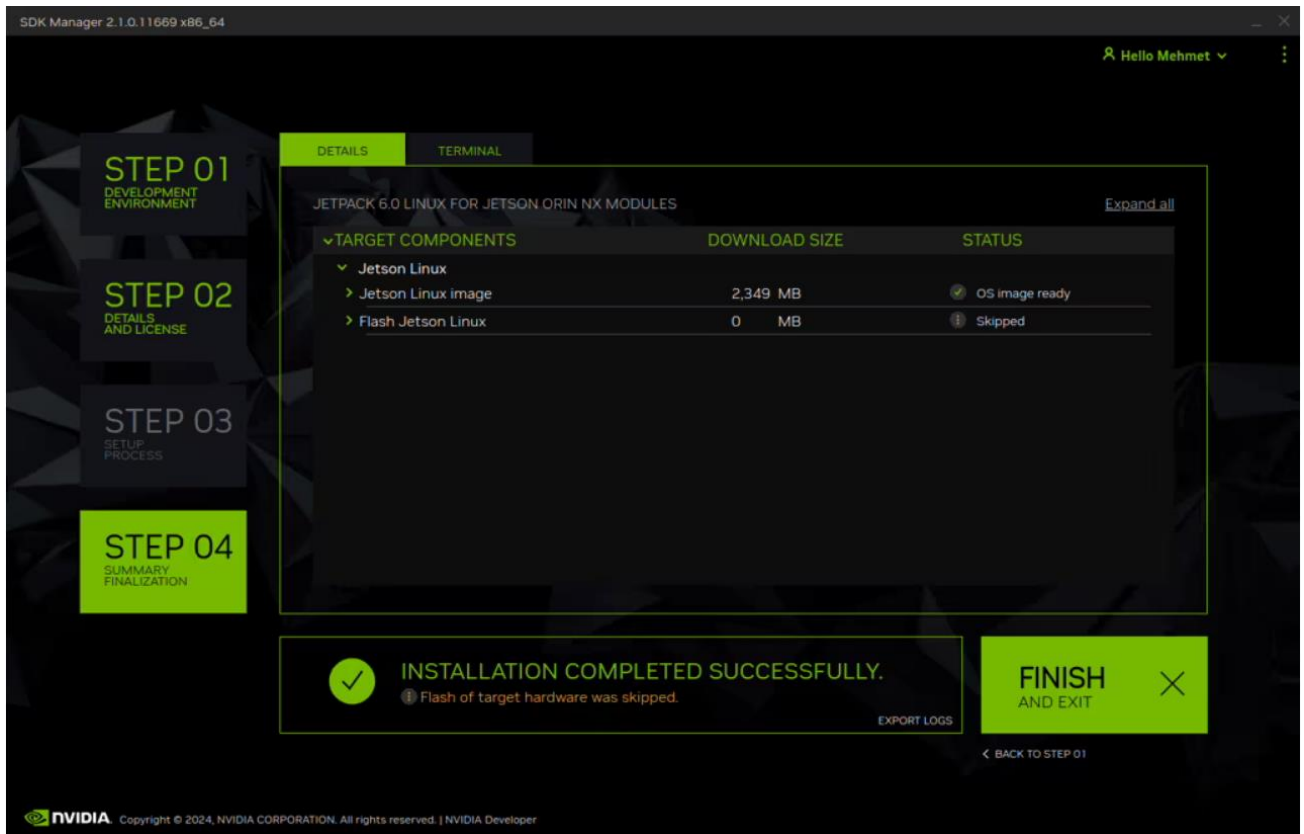
The SDK Manager will ask the username's password. Fill it and continue.





After the Jetson OS has created, the SDK Manager asks the Jetson module's flashing style. Just skip it and exit from the SDK Manager.





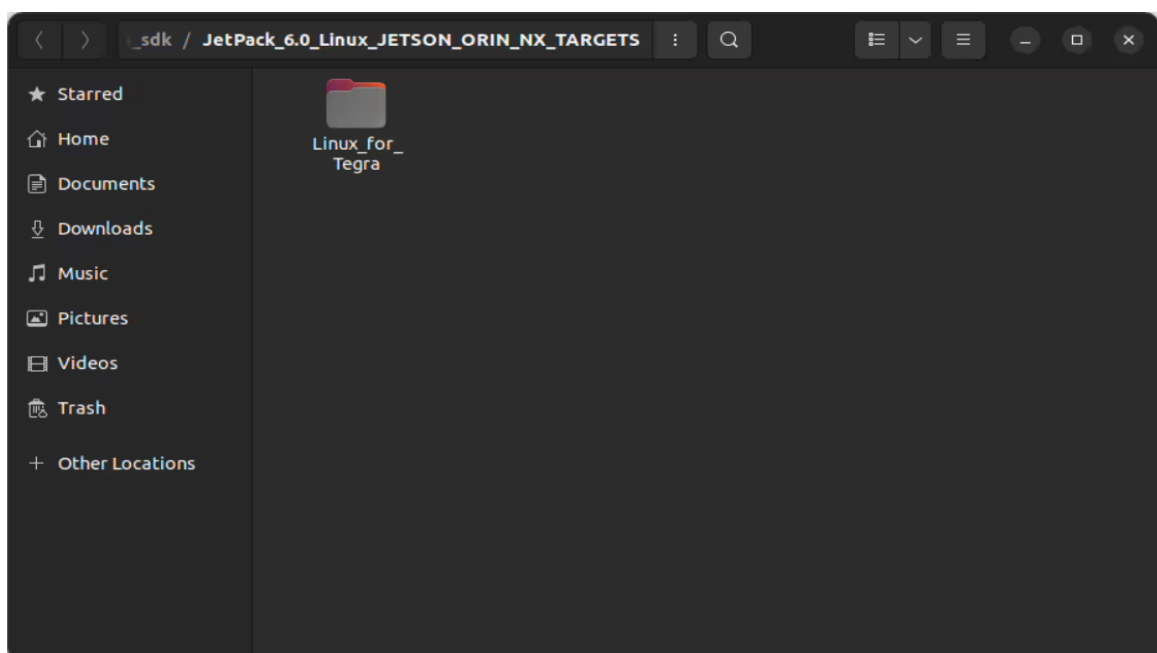
Open the target HW image folder.

For JetPack-6.0

Orin NX: `~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/`

For JetPack-6.1

Orin NX: `~/nvidia/nvidia_sdk/JetPack_6.1_Linux_JETSON_ORIN_NX_TARGETS/`



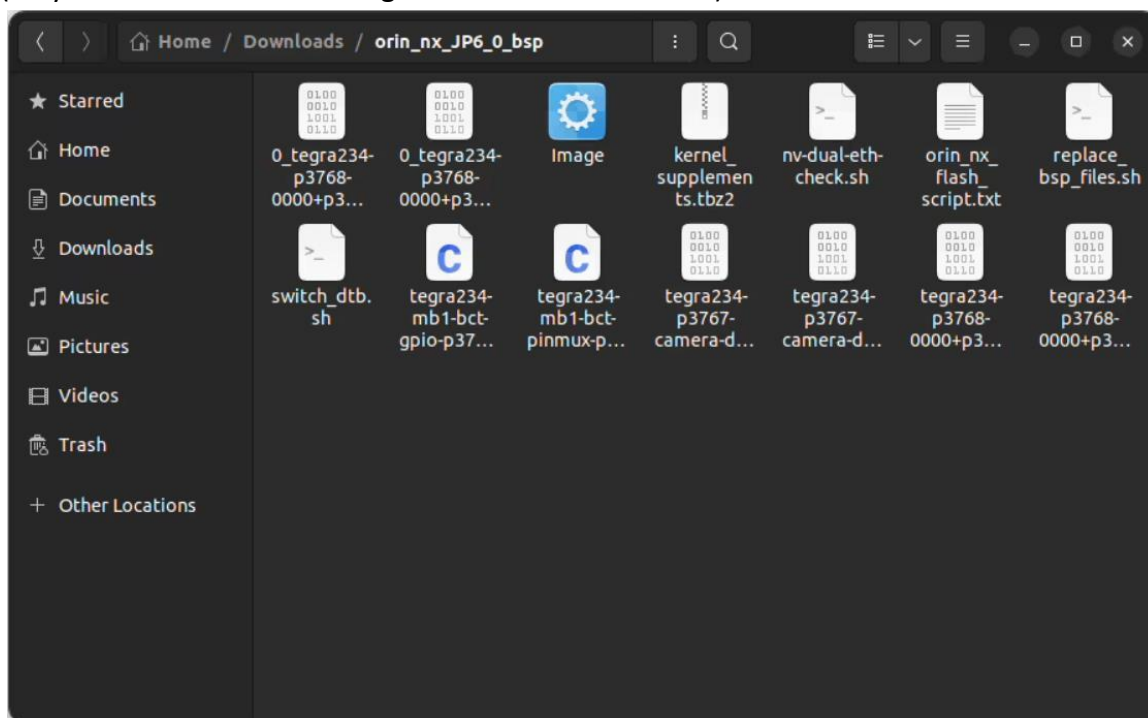
For JetPack-6.0

Download the BSP files from GitHub link and extract it (Orin NX, Orin Nano).

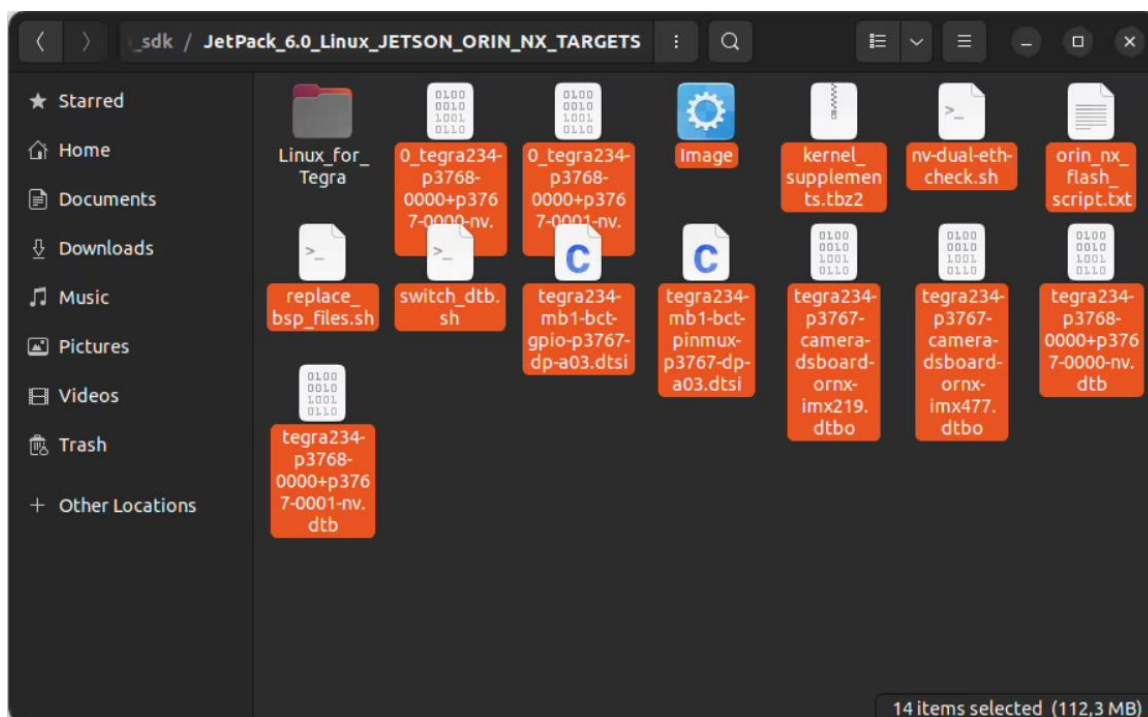
For JetPack-6.1

Download the BSP files from GitHub link and extract it (Orin NX, Orin Nano).

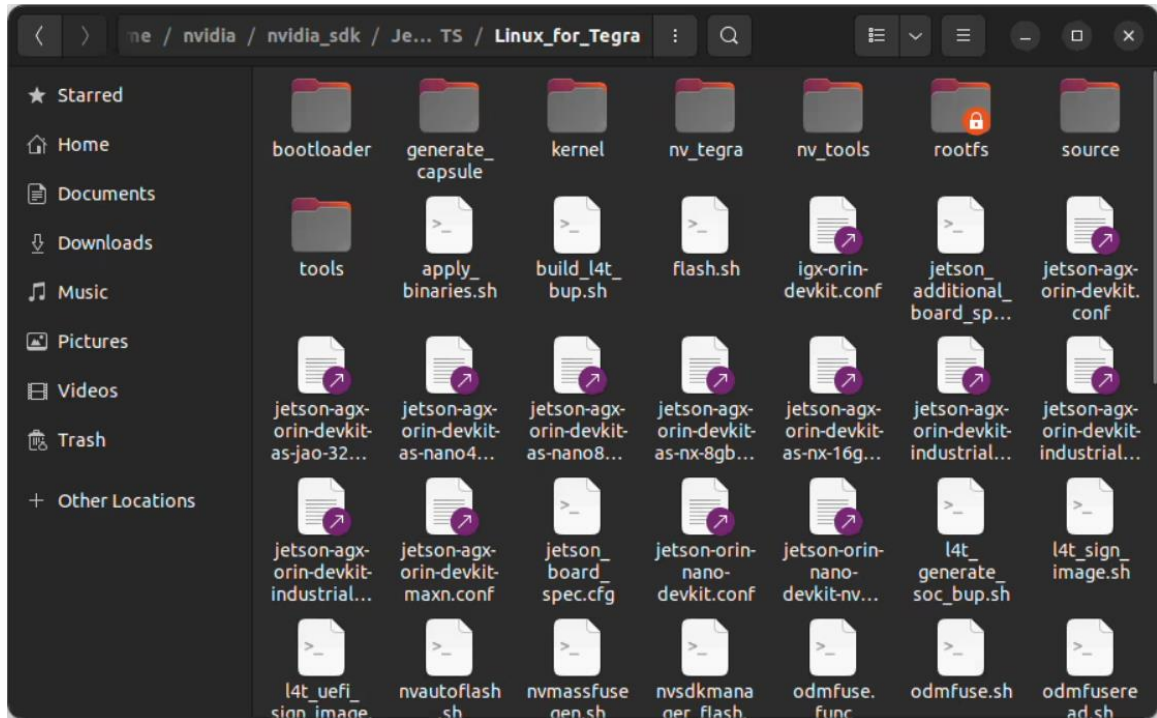
Hint: The following steps have done for Orin NX, but they are the same for the other Jetson module types (only the BSP files and flashing commands are different).



Copy all files to the target HW image folder.



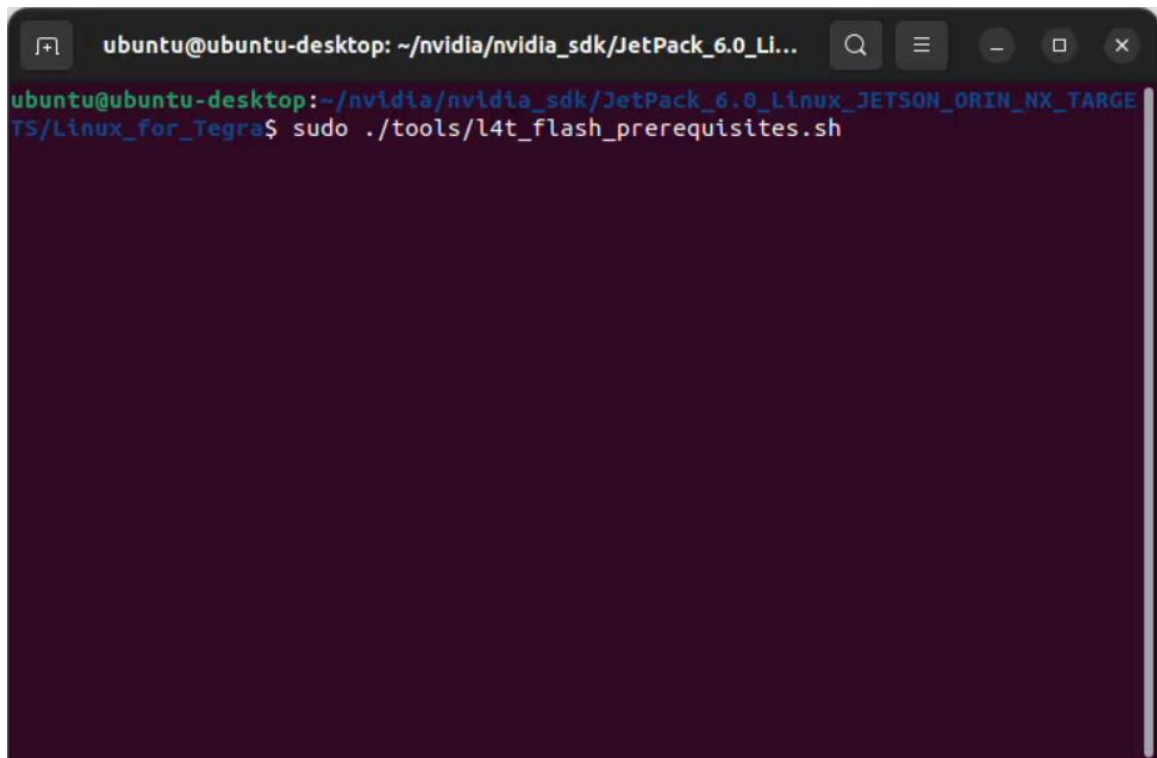
Open a Terminal in the “Linux_for_Tegra” folder.



Create the system binaries with these commands below:

```
sudo ./tools/l4t_flash_prerequisites.sh
```

```
sudo ./apply_binaries.sh
```



```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_6.0_Li...
device-tree-compiler is already the newest version (1.6.1-1).
dosfstools is already the newest version (4.2-1build3).
lz4 is already the newest version (1.9.3-2build2).
python3-yaml is already the newest version (5.4.1-1ubuntu1).
whois is already the newest version (5.5.13).
zstd is already the newest version (1.4.8+dfsg-3build1).
abootimg is already the newest version (0.6-1build1).
lbzip2 is already the newest version (2.5-2.3).
sshpas is already the newest version (1.09-1).
binutils is already the newest version (2.38-4ubuntu2.6).
cpio is already the newest version (2.13+dfsg-7ubuntu0.1).
libxml2-utils is already the newest version (2.9.13+dfsg-1ubuntu0.4).
nfs-kernel-server is already the newest version (1:2.6.1-1ubuntu1.2).
openssl is already the newest version (3.0.2-0ubuntu1.15).
rsync is already the newest version (3.2.7-0ubuntu0.22.04.2).
udev is already the newest version (249.11-0ubuntu3.12).
uid-runtime is already the newest version (2.37.2-4ubuntu3.4).
qemu-user-static is already the newest version (1:6.2+dfsg-2ubuntu6.19).
The following packages were automatically installed and are no longer required:
  libwpe-1.0-1 libwpebackend-fdo-1.0-1
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 3 not upgraded.
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$ sudo ./apply_binaries.sh
```

Apply the new BSP files and interface configurations with the following commands below:

```
cd ..
sudo ./replace_bsp_files.sh
cd Linux_for_Tegra/
```

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_6.0_Li...
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$ cd ..
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS$ sudo ./replace_bsp_files.sh
Done.
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS$ cd Linux_for_Tegra/
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$
```



Hint: If you want to configure your username-password & hostname with default settings, you can create user without the Ubuntu installation wizard. To do this, the user generation command structure should be:

```
sudo tools/l4t_create_default_user.sh -u {USERNAME} -p {PASSWORD} -a -n {HOSTNAME} --accept-license
```

For example (username:"nvidia", password:"nvidia", device-name:"nvidia-desktop"):

```
sudo tools/l4t_create_default_user.sh -u nvidia -p nvidia -a -n nvidia-desktop --accept-license
```

Jetson OS Installation

Connect the recovery USB (between installer PC & NV200-2LGS16's recovery USB) and power connection of your NV200-2LGS16.

While the NV200-2LGS16's power connector plugged in,

- press reset & recovery buttons together
- release reset button
- release the recovery button after 3 seconds later. This will set it to Recovery mode.

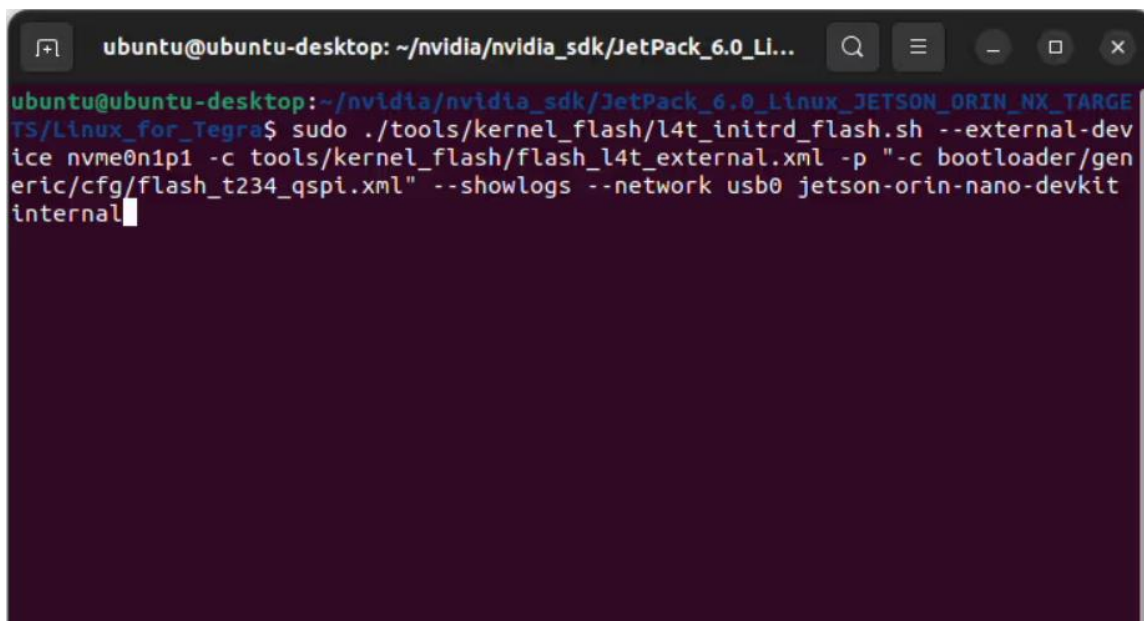
Then, type "lsusb" and check the device connected in Recovery mode.

- **"0955:7323 NVidia Corp."** for Orin NX 16GB
- "0955:7423 NVidia Corp." for Orin NX 8GB

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_6.0_Li...
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$ lsusb
Bus 008 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 007 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 002: ID 0b05:18f3 ASUSTek Computer, Inc. AURA LED Controller
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 005: ID 8087:0029 Intel Corp. AX200 Bluetooth
Bus 001 Device 003: ID 05e3:0610 Genesys Logic, Inc. Hub
Bus 001 Device 030: ID 413c:301a Dell Computer Corp. Dell MS116 Optical Mouse
Bus 001 Device 029: ID 1c4f:0026 SiGma Micro Keyboard
Bus 001 Device 028: ID 0409:005a NEC Corp. HighSpeed Hub
Bus 001 Device 027: ID 1a40:0101 Terminus Technology Inc. Hub
Bus 001 Device 032: ID 0955:7323 NVIDIA Corp. APX
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$
```

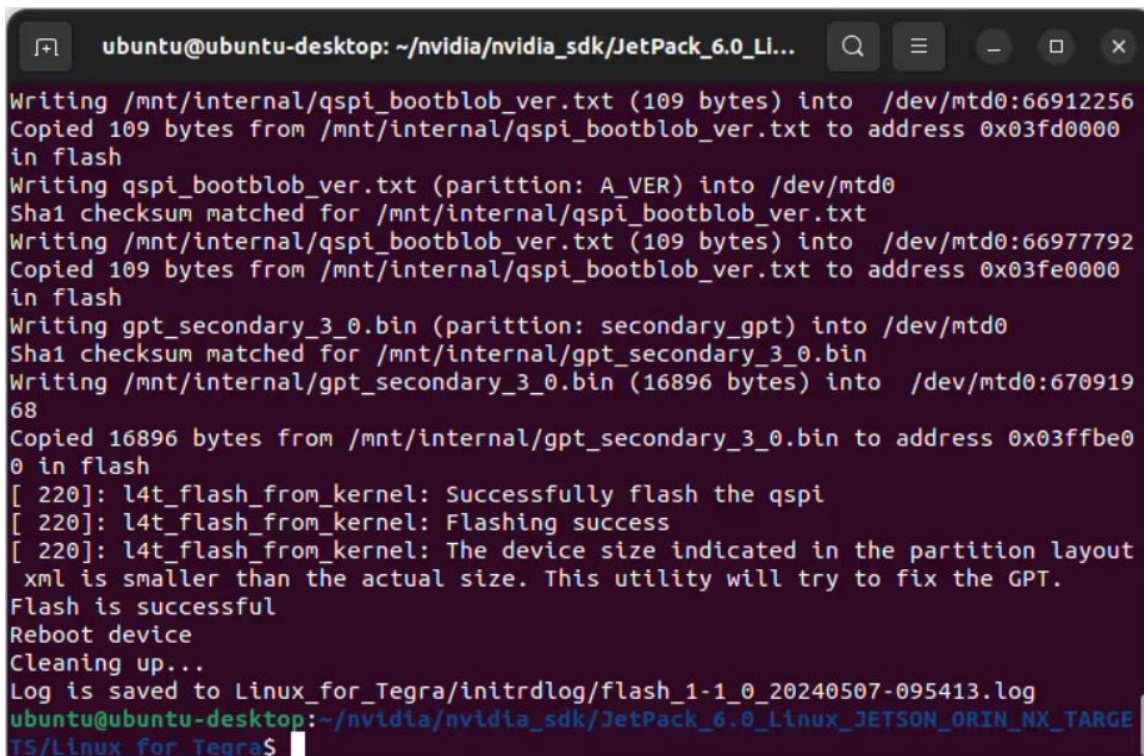
Flash the Jetson OS with this command below:

```
sudo ./tools/kernel_flash/l4t_initrd_flash.sh --external-device nvme0n1p1 -c
tools/kernel_flash/flash_l4t_external.xml -p "-c bootloader/generic/cfg/flash_t234_qs
pi.xml" --showlogs --network
usb0 jetson-orin-nano-devkit internal
```



```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_6.0_Li...
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$ sudo ./tools/kernel_flash/l4t_initrd_flash.sh --external-device nvme0n1p1 -c tools/kernel_flash/flash_l4t_external.xml -p "-c bootloader/generic/cfg/flash_t234_qspi.xml" --showlogs --network usb0 jetson-orin-nano-devkit internal
```

At the end of the script, the device will reboot. Complete your Ubuntu installation wizard (if you have not created a user with tools/l4t_create_default_user.sh script file) from the DASHBOARD-ORNX-LAN (language, keyboard type, location, username & password etc.).



```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_6.0_Li...
Writing /mnt/internal/qspi_bootblob_ver.txt (109 bytes) into /dev/mtd0:66912256
Copied 109 bytes from /mnt/internal/qspi_bootblob_ver.txt to address 0x03fd0000
in flash
Writing qspi_bootblob_ver.txt (parittion: A_VER) into /dev/mtd0
Sha1 checksum matched for /mnt/internal/qspi_bootblob_ver.txt
Writing /mnt/internal/qspi_bootblob_ver.txt (109 bytes) into /dev/mtd0:66977792
Copied 109 bytes from /mnt/internal/qspi_bootblob_ver.txt to address 0x03fe0000
in flash
Writing gpt_secondary_3_0.bin (parittion: secondary_gpt) into /dev/mtd0
Sha1 checksum matched for /mnt/internal/gpt_secondary_3_0.bin
Writing /mnt/internal/gpt_secondary_3_0.bin (16896 bytes) into /dev/mtd0:670919
68
Copied 16896 bytes from /mnt/internal/gpt_secondary_3_0.bin to address 0x03ffbe0
0 in flash
[ 220]: l4t_flash_from_kernel: Successfully flash the qspi
[ 220]: l4t_flash_from_kernel: Flashing success
[ 220]: l4t_flash_from_kernel: The device size indicated in the partition layout
xml is smaller than the actual size. This utility will try to fix the GPT.
Flash is successful
Reboot device
Cleaning up...
Log is saved to Linux_for_Tegra/initrdlog/flash_1-1_0_20240507-095413.log
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_6.0_Linux_JETSON_ORIN_NX_TARGETS/Linux_for_Tegra$
```

[Optional] If you will use the recovery USB port as host (to be able to connect USB-2 & USB-3 devices),

please verify that the FDT parameter has been applied in the extlinux.conf file. In JetPack-6 installation, this parameter may not included in it. If this parameter is missing in it, please open it with a text editor and write "FDT" with the DTB file (located in the /boot/dtb/ folder).

```
nvidia@nvidia-desktop: ~  
nvidia@nvidia-desktop:~$ cat /boot/extlinux/extlinux.conf  
TIMEOUT 30  
DEFAULT primary  
  
MENU TITLE L4T boot options  
  
LABEL primary  
  MENU LABEL primary kernel  
  LINUX /boot/Image  
  INITRD /boot/initrd  
  FDT /boot/dtb/kernel tegra234-p3768-0000+p3767-0000-nv.dtb  
  APPEND ${cbootargs} root=PARTUUID=46585302-0ee0-48a2-948b-844089362d19 rw  
rootwait rootfstype=ext4 mminit_loglevel=4 console=ttyTCU0,115200 firmware_class  
.path=/etc/firmware fbcon=map:0 net.ifnames=0 nospectre_bhb video=efifb:off cons  
ole=tty0  
  
# When testing a custom kernel, it is recommended that you create a backup of  
# the original kernel and add a new entry to this file so that the device can  
# fallback to the original kernel. To do this:  
#  
# 1, Make a backup of the original kernel  
#   sudo cp /boot/Image /boot/Image.backup  
#  
# 2, Copy your custom kernel into /boot/Image
```

Then, please open a terminal from the Jetson Orin and type the following command below. This will update its current device-tree and reboot it.

Otherwise, you can use this port for virtual network communication (file transfer etc. between host PC with 192.168.55.1 IP address) in default.

```
sudo switch_dtb.sh
```

```
nvidia@nvidia-desktop: ~  
nvidia@nvidia-desktop:~$ sudo switch_dtb.sh  
[sudo] password for nvidia:  
Base DTB: kernel_tegra234-p3768-0000+p3767-0000-nv.dtb  
New DTB: tegra234-p3768-0000+p3767-0000-nv.dtb  
Done.  
Rebooting...  
█
```

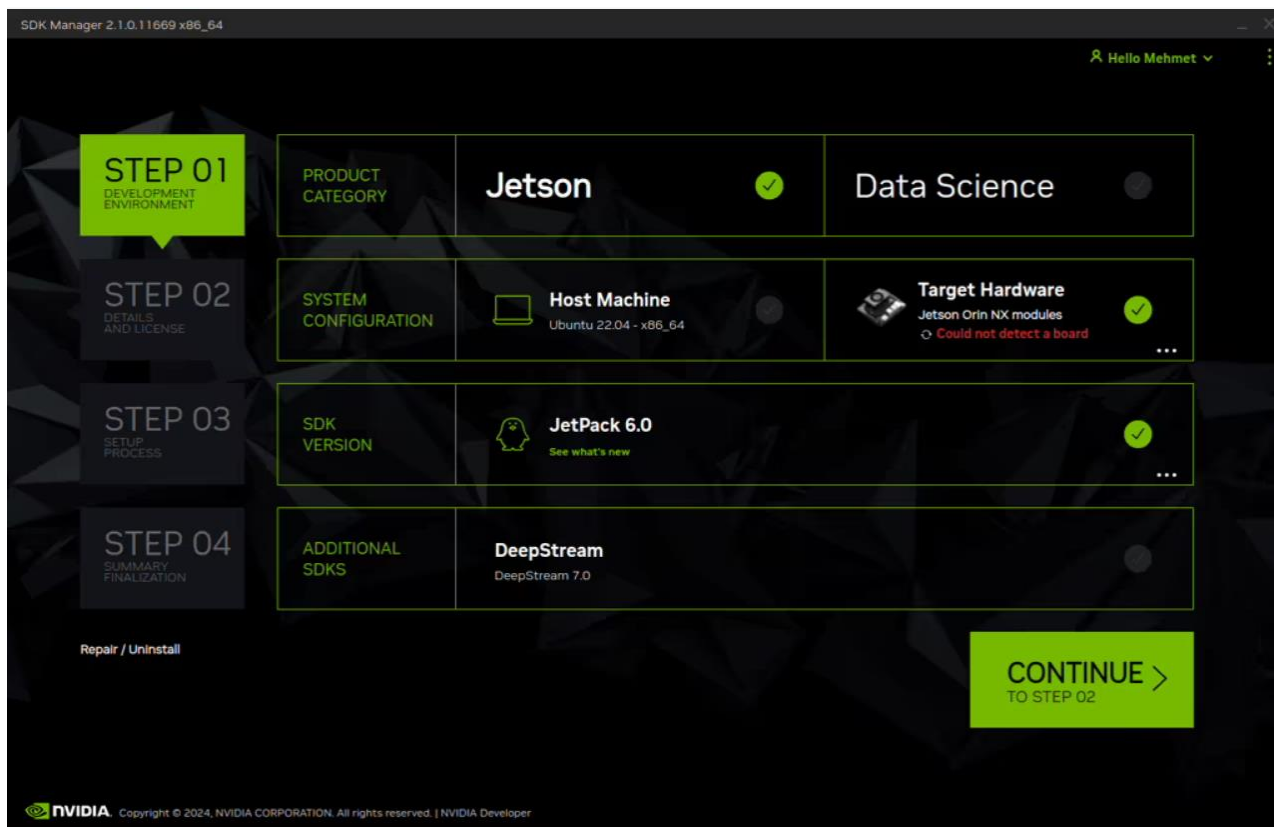
Jetson SDK Components Installation

[Optional] Delete LibreOffice & ThunderBird packages (if you don't need) and remove the unnecessary packages to increase the free space. To do this, type these commands to the NV200-2LGS16 side:

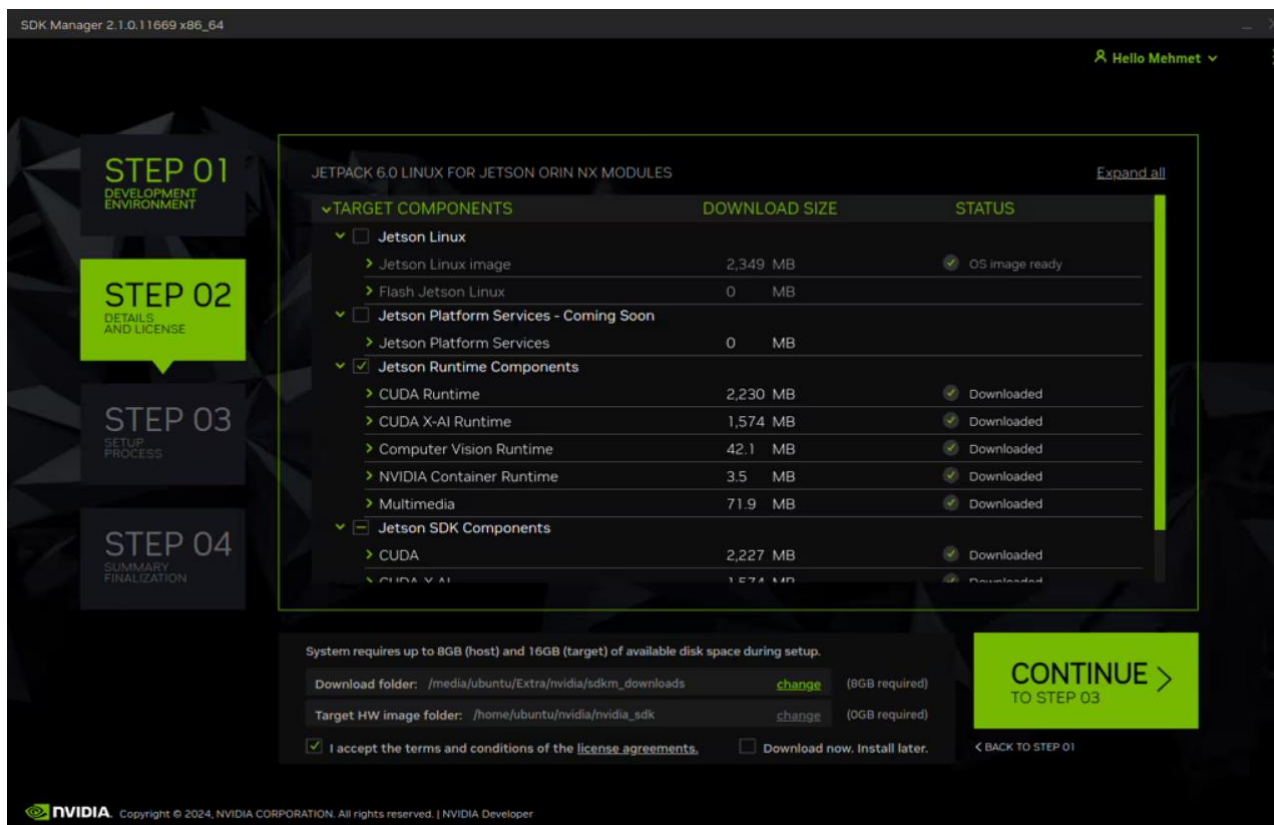
```
sudo apt remove -y libreoffice* thunderbird*  
sudo apt autoremove -y  
sudo apt clean
```

Connect the NV200-2LGS16 to the Ethernet. Then, Open the NVIDIA SDK Manager. Select the correct JetPack version for Target Operating System and select the correct module for your installation ("Jetson Orin NX modules"). The "Host Machine" components are not required. (Additional SDKs (DeepStream) are optional).

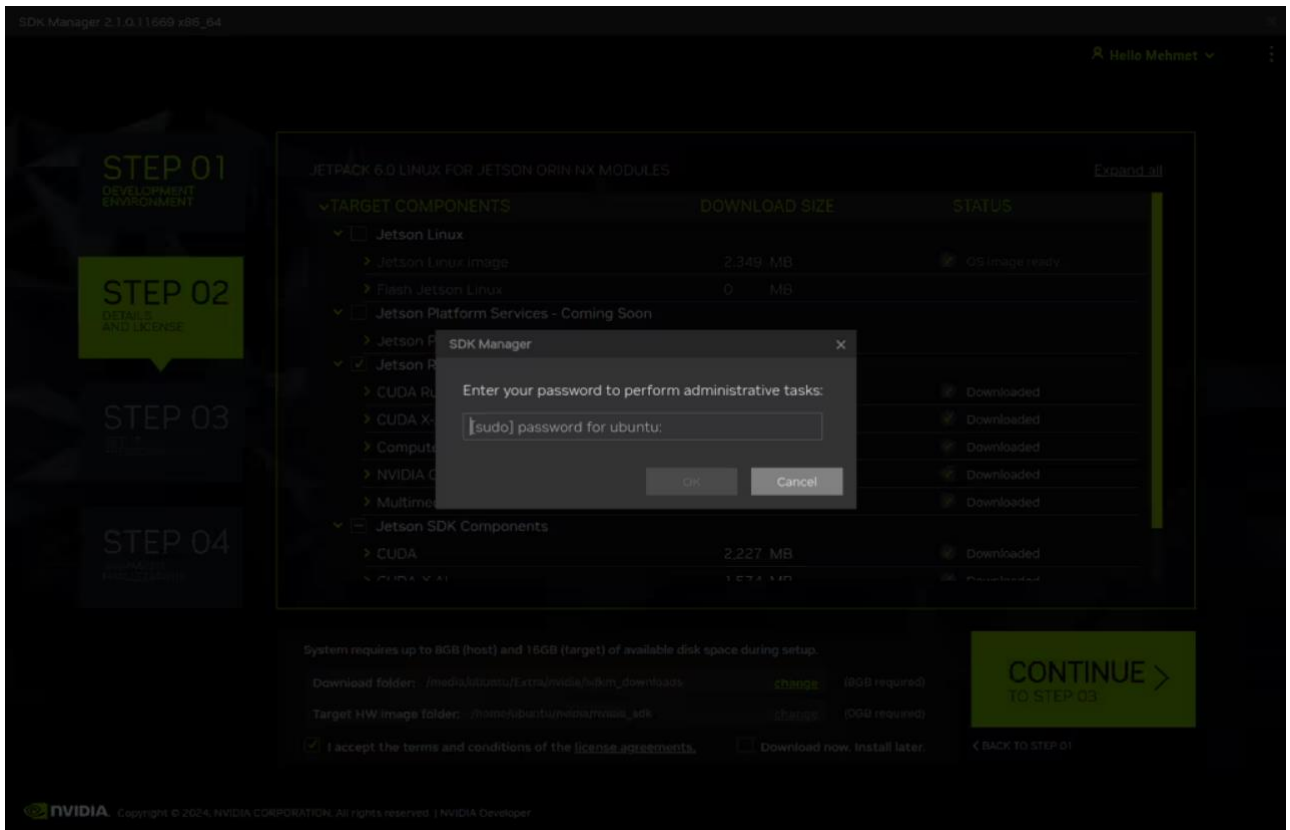
Then, continue to Step 2.



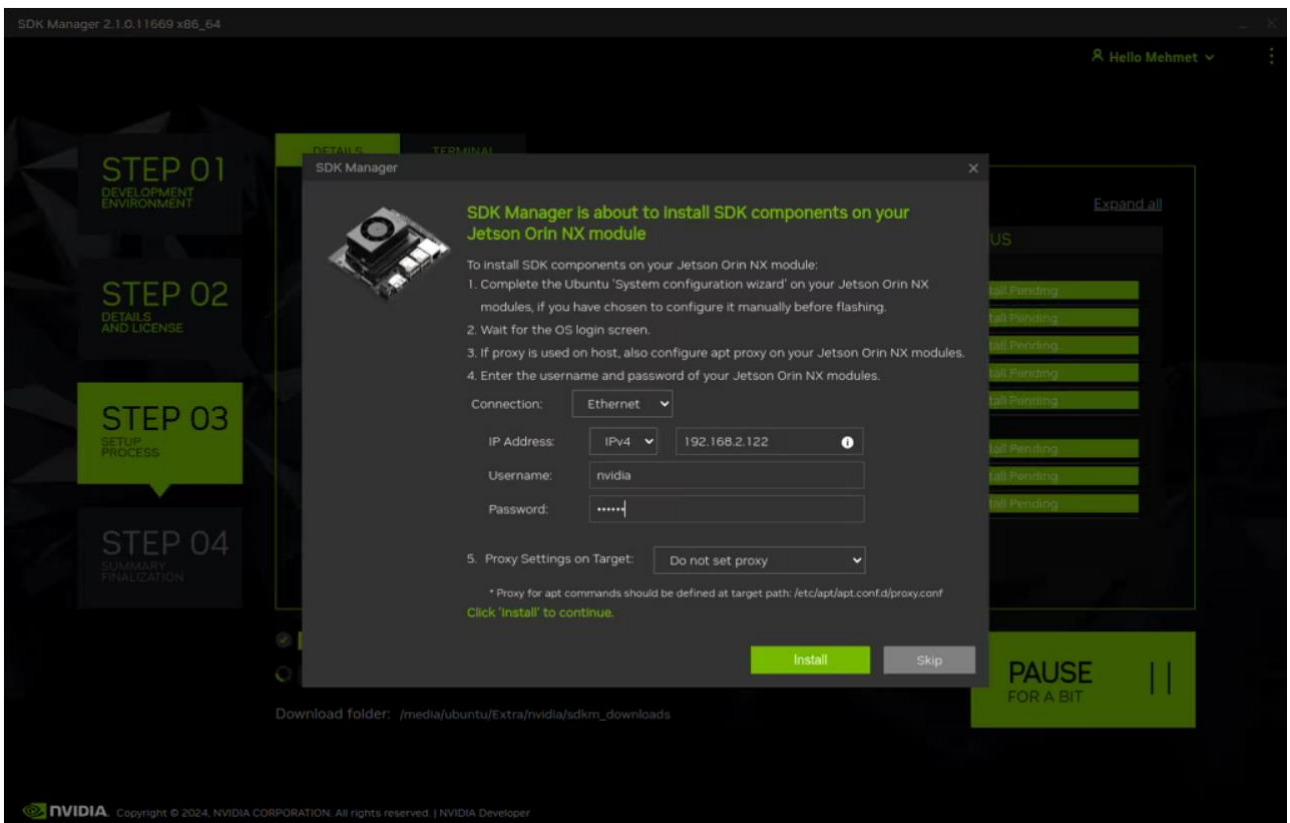
Choose at least “Jetson Runtime Components” (“Jetson SDK Components” are optional. It depends on your use case), accept the terms & conditions and continue to Step 3..



The SDK Manager will ask the username's password. Fill it and continue.



Type the IP address, username and password of Jetson Orin module and install the SDK Components.



At the end of the installation, the NV200-2LGS16 becomes ready.

To avoid kernel update with "apt upgrade" or "apt-get upgrade" commands, please follow this guide on the Jetson module.

Install the driver for GMSL Camera

```
unzip fg12-4ch-onxa-r36.3.0.zip
```

```
sudo apt-get install qt5-qmake qtbase5-dev
```

(The default is less QT library "libqt5widgets.so.5", which is required for setting)

```
cd fg12-4ch-onxa-r36.3.0
```

```
chmod 777 fg12.4ch.onx.upgrade.sh
```

```
sudo ./fg12.4ch.onx.upgrade.sh
```

Once the installation is complete, you will be prompted with reboot

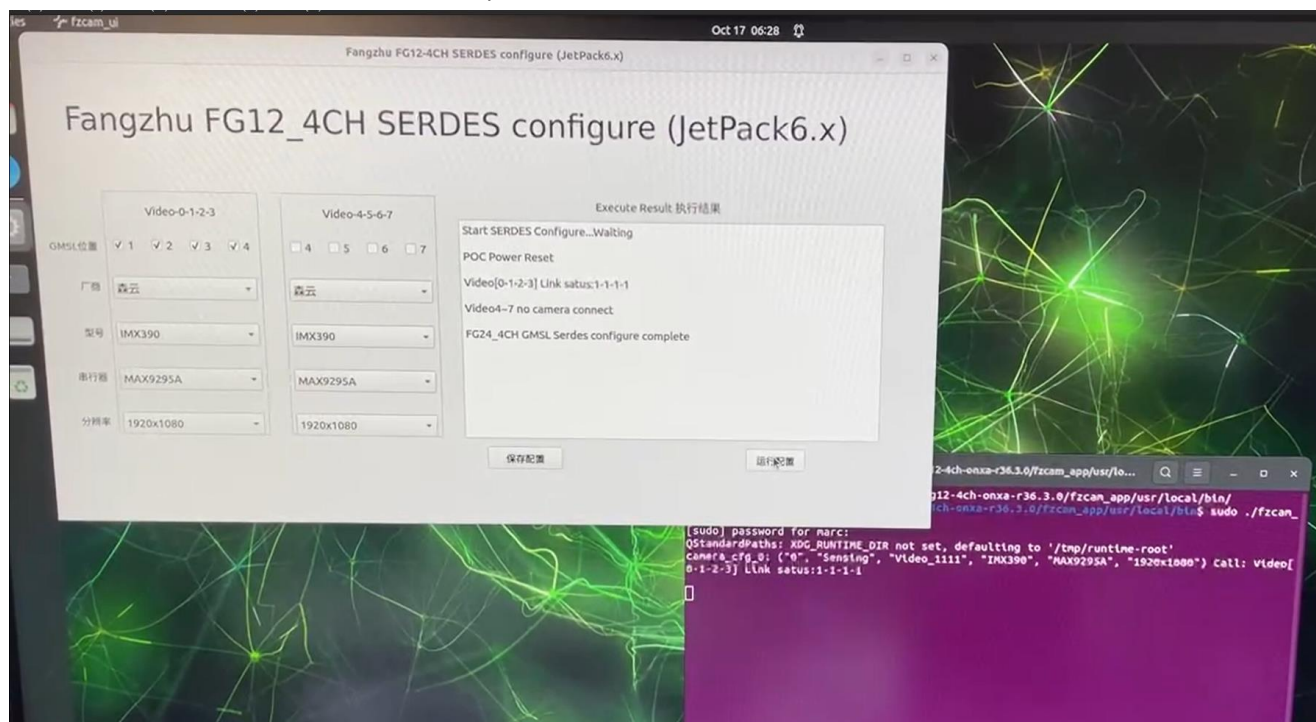
```
cd fg12-4ch-onxa-r36.3.0/fzcam_app/usr/local/bin/
```

```
chmod 777 fzcam_ui
```

```
sudo ./fzcam_ui
```

Set the parameters as follows:

1. GMSL position 1/2/3/4
2. Model IMX390
3. Serializer MAX9295A
4. Resolution 1920x1080
5. Press "Save Configuration" (“保存配置”)
6. Press "Run Configuration" (“运行配置”) -> With four cameras installed, the Link status should be 1-1-1-1





Install the driver for 3G-SDI Camera

```
unzip 20240925_V1350_orin_5.15.136-tegra_r36.3_arm64.zip
cd 20240925_V1350_orin_5.15.136-tegra_r36.3_arm64/release
chmod +x *.sh
sudo ./setup.sh
reboot
```

Check device -Camera is connected

```
sudo apt-get install v4l-utils
(install the v4L2 utility, if you haven't already)
```

```
v4l2-ctl --list-devices
```

It will show as below.

PS: "SC0710" is SDI camera; And you can check device ID after reboot.

```
release$ v4l2-ctl --list-devices
SC0710:RAW 00.00 0004f71a (PCI Bus 0004:01 12ab0710):
/dev/video0
/dev/video9
/dev/video10
/dev/video11
```

Capture Camera stream

GMSL Camera:

```
gst-launch-1.0 v4l2src device=/dev/video X(device ID) ! 'video/x-raw,format=UYVY,width=1920,height=1080' !
videoconvert ! fpsdisplaysink video-sink=xvimagesink sync=false\
```

3G-SDI Camera:

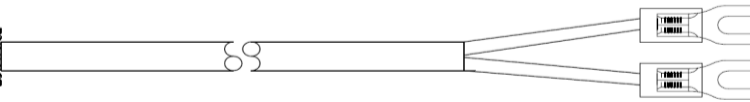
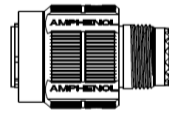
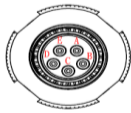
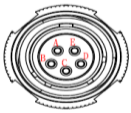
```
gst-launch-1.0 v4l2src device=/dev/video X(device ID) ! video/x-raw,width=1920,height=1080,format=YV12 !
videoconvert ! xvimagesink
```

Appendex-A : Cable Pin Define

X0: DC-in Power cable:

D38999/26FB5SN
FRONT

D38999/26FB5SN
BACK



TN1
Y terminal

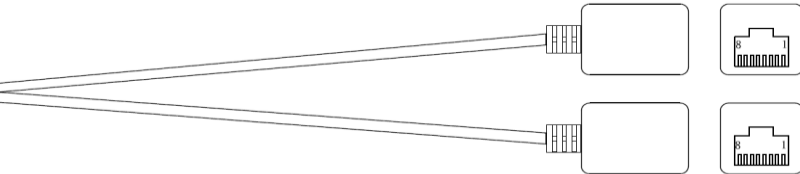
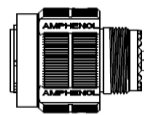
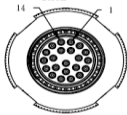
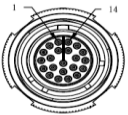
TN2
Y terminal

COLOR	CON1		
YELLOW	A	TN1	Vin+
YELLOW	B	TN1	Vin+
N. C.	C		
BLCAK	D	TN2	Vin-
BLACK	E	TN2	Vin-

X1: 2x 1GbE LAN cable:

D38999/26FC35PN
FRONT

D38999/26FC35PN
BACK



RJ45-A

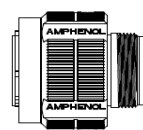
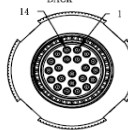
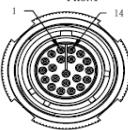
RJ45-B

CON1	RJ45-A	WIRE COLOR	CON1	RJ45-B	WIRE COLOR
1	1	WHITE-ORANGE	8	1	WHITE-ORANGE
2	2	ORANGE	9	2	ORANGE
3	3	WHITE-GREEN	10	3	WHITE-GREEN
4	6	GREEN	11	6	GREEN
5	4	BLUE	12	4	BLUE
6	5	WHITE-BLUE	13	5	WHITE-BLUE
15	7	WHITE-BROWN	19	7	WHITE-BROWN
16	8	BROWN	20	8	BROWN
7		SHELL: BLACK	14		SHELL: BLACK
17		SHELL: BLACK	21		SHELL: BLACK
18		SHELL: BLACK	22		SHELL: BLACK

X2: 1x CAN+1x RS232/422/485 + 4x DIO cable:

D38999/26FC35PB
FRONT

D38999/26FC35PB
BACK



CON1	WIRE WITH YOUR C/W	WIRE WITH OUR C/W	CON1	WIRE WITH OUR C/W
1	4	SHIELD B	9	DIO_OUT_1
2	3	SHIELD B	10	DIO_OUT_0
3	1	SHIELD B	11	DIO_IN_1
4	2	SHIELD B	12	DIO_IN_0
5	5	SHIELD B	13	GND
			14	shell GND
6	7	CAN_H		
7	2	CAN_L		
8	3	GND		