

ATC3xxx Series User Manual

Warning

***** DO NOT USE APT UPGRADE or DIST-UPGRADE on ATC series system. *****

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It may overwritten some files(bootloader,kernel,dtb...) by standard nvidia packages.

Histories:

Version	Description
v1.0.8	1. Updated GMSL2 camera support list. (2025.07.22)
v1.0.7	2. Removed “switch root from NVMe” chapter. (2025.06.18) 3. Added “ATC products tools” instruction. (2025.06.18)
v1.0.6	4. Modified recovery image of ATC series system. (2024.07.02)
v1.0.5	1. Added ATC3520 product. (2023.08.25)
v1.0.4	1. Added ATC3540 product. (2023.05.16) 2. Corrected the errors in this document.
v1.0.3	1. Added ATC3750 product. (2023.01.07) 2. Updated SDK and AI Demo Guide.
v1.0.2	1. Modified AI Demo. (2022.07.29)
v1.0.1	1. Modified Switch root and added install SDK component. (2022.07.28)
v1.0.0	1. First released. (2021.11.03)



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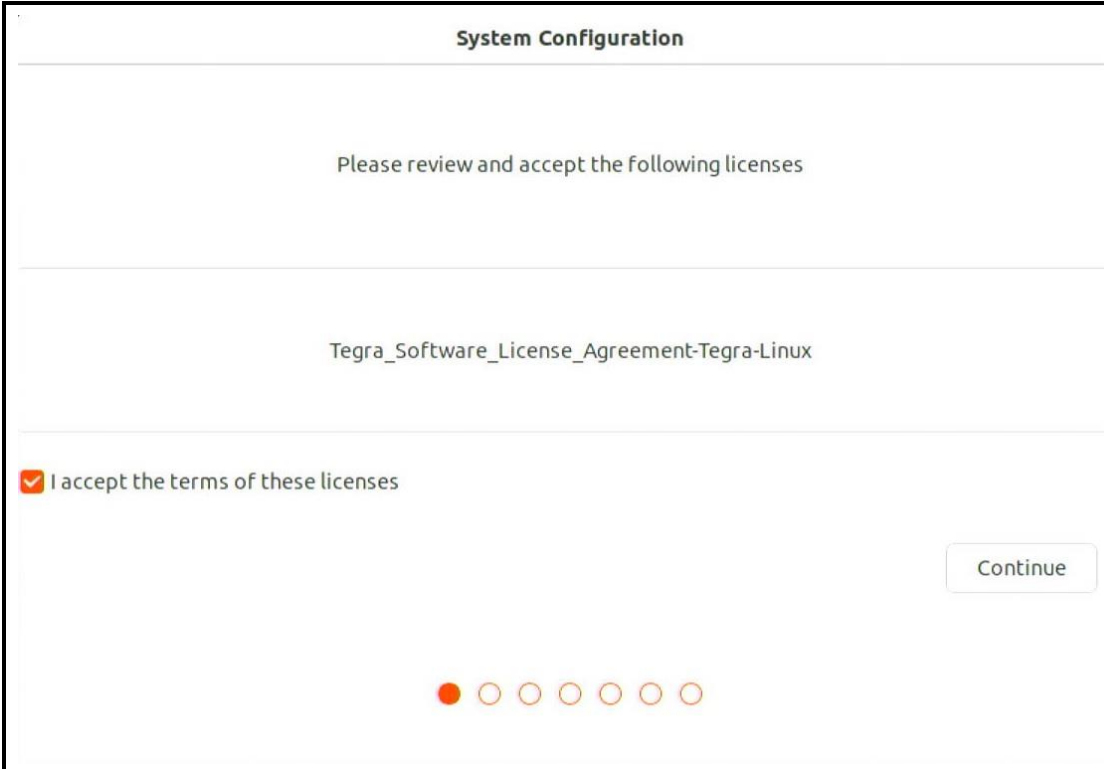
1. Introduction

Thank you for using the Nexcom ATC series Product. When you boot up the system first time, you need to do some settings, like selecting the time zone, setting a user account, etc. After finishing the setting, you have to install MUT package, then you can use all of the functions of ATC series Product.

Initialization

1.1. System Configuration

When you boot up ATC product first time, you will see these screens as follows:



The image shows a 'System Configuration' window. At the top, it says 'System Configuration'. Below that, it says 'Please review and accept the following licenses'. Then, it lists 'Tegra_Software_License_Agreement-Tegra-Linux'. There is a checkbox with a checkmark and the text 'I accept the terms of these licenses'. To the right of this is a 'Continue' button. At the bottom, there is a progress indicator consisting of seven circles, with the first one filled in red and the others empty.

Figure 1. Check the terms.

System Configuration

Welcome

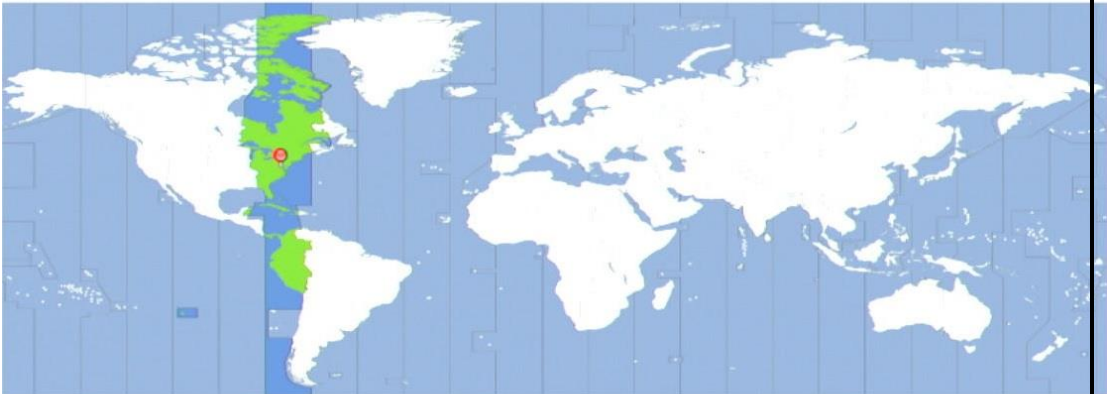
Asturianu	Bahasa Indonesia	Bosanski	Català
Čeština	Cymraeg	Dansk	Deutsch
Eesti	English	Español	Esperanto
Euskara	Français	Gaeilge	Galego
Hrvatski	Íslenska	Italiano	Kurdî
Latviski	Lietuviškai	Magyar	Nederlands
No localization (UTF-8)	Norsk bokmål	Norsk nynorsk	Occitan
Polski	Português	Português do Brasil	Română
Sámegillii	Shqip	Slovenčina	Slovenščina

Back
Continue

Figure 2. Select language

System Configuration

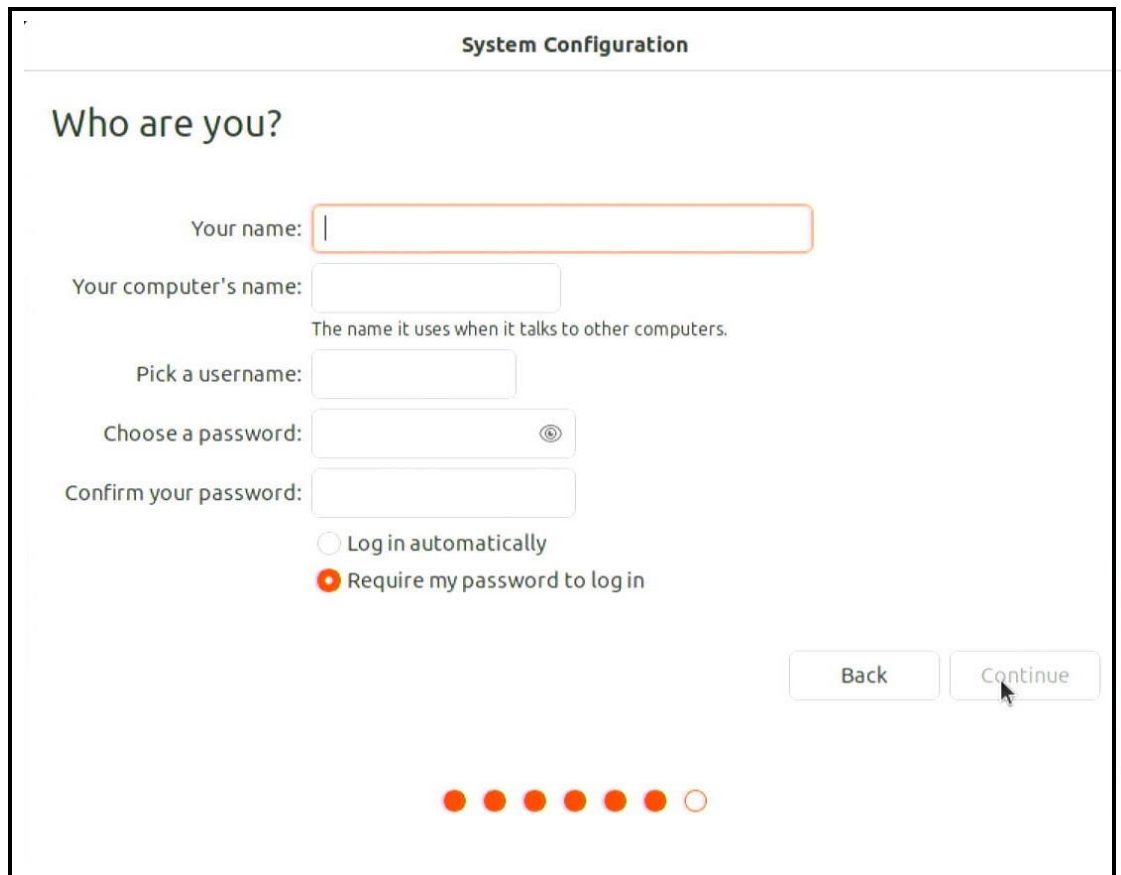
Where are you?



New York

Back
Continue

Figure 3. Select location



The image shows a 'System Configuration' window titled 'Who are you?'. It contains several input fields: 'Your name:' with a text box, 'Your computer's name:' with a text box and a subtext 'The name it uses when it talks to other computers.', 'Pick a username:' with a text box, 'Choose a password:' with a text box and a password icon, and 'Confirm your password:' with a text box. Below these are two radio buttons: 'Log in automatically' (unselected) and 'Require my password to log in' (selected). At the bottom right are 'Back' and 'Continue' buttons. At the bottom center is a progress bar with seven circles, the last one being empty.

Figure 4. Enter name and password



The image shows a 'System Configuration' window with a progress bar. The progress bar is labeled '> Configuring time zone...' and has a circular icon next to it. A 'Skip' button is located at the top right. The progress bar itself is a long horizontal bar with a red segment on the left and a grey segment on the right.

Figure 5. Download and update

After system configuration, you need install another necessary packages.

2. Recovery image of ATC series system

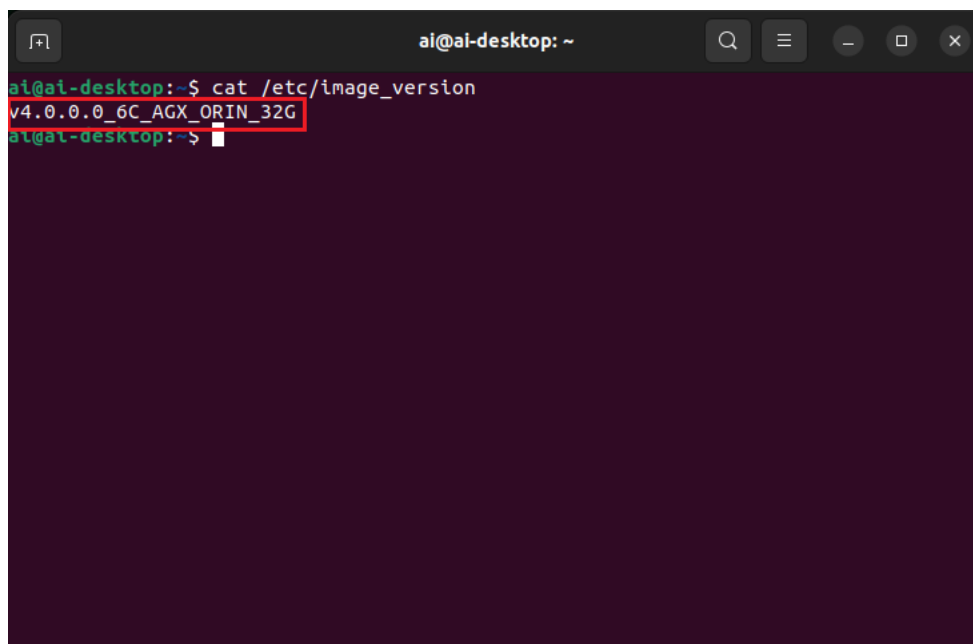
2.1. Prepare materials

1. A computer (Host) and install the Ubuntu 18.04 or 20.04 system.
2. USB flash driver*1 (For images, the capacity depends on the size of the created image, and a minimum capacity of 3GB is required).
3. Micro USB cable.

2.2. Recovery

1. Boot up the ATC series system and check current image version.

\$ cat /etc/image_version



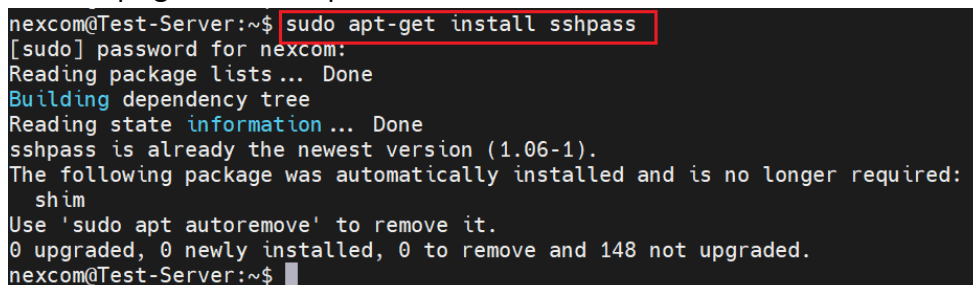
```
ai@ai-desktop: ~  
ai@ai-desktop:~$ cat /etc/image_version  
v4.0.0.0_6C_AGX_ORIN_32G  
ai@ai-desktop:~$
```

2. Find out the corresponding new version, e.g.

ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz

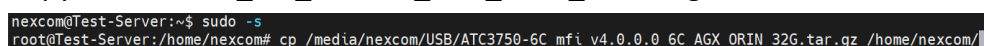
3. In host PC, install sshpass package.

\$ sudo apt-get install sshpass



```
nexcom@Test-Server:~$ sudo apt-get install sshpass  
[sudo] password for nexcom:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
sshpass is already the newest version (1.06-1).  
The following package was automatically installed and is no longer required:  
  shim  
Use 'sudo apt autoremove' to remove it.  
0 upgraded, 0 newly installed, 0 to remove and 148 not upgraded.  
nexcom@Test-Server:~$
```

4. Copy ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz to host.



```
nexcom@Test-Server:~$ sudo -s  
root@Test-Server:/home/nexcom# cp /media/nexcom/USB/ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz /home/nexcom/
```

5. Untar the ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz file.

\$ sudo tar xpfv ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz

Note. The commands need to be modified according to different file names.

```
nexcom@Test-Server:~$ sudo tar xpfv ./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G.tar.gz
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/p3701-atc3750-6C.conf.common
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/atc3540.conf.common
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/dev/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/dev/null
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/tmp/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/.gitkeep
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/snap/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/srv/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/sys/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/bin/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/lock
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/crash/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/tmp/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/snap/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/mail/
./ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G/rootfs/var/log/
```

6. Using Micro USB cable connects host to ATC series system otg usb port.



7. Power on ATC series system and press the reset button immediately, wait for the LED on then release the reset button, after release reset button, the system into recovery mode.



8. Open the terminal in the host PC and type "lsusb" to check, if system has into recovery mode, you will see the information about nvidia.
If not, please do the step 7 again.

```
nexcom@Test-Server:~$ lsusb
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 002: ID 0451:8440 Texas Instruments, Inc.
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 003: ID 0451:82ff Texas Instruments, Inc.
Bus 001 Device 010: ID 0955:7223 NVIDIA Corp.
Bus 001 Device 002: ID 0451:8442 Texas Instruments, Inc.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

2.3. Start Flashing

1. Open the terminal and enter the unzipped folder of ATC3750-

6C_mfi_v4.0.0.0_AGX_ORIN_32G.tar.gz in host.

\$ cd ATC3750-6C_mfi_v4.0.0.0_AGX_ORIN_32G

Note. The commands need to be modified according to different file names.

```
nexcom@Test-Server:~$ cd ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G
```

2. Type commands to start flash.

\$ sudo ./tools/kernel_flash/l4t_initrd_flash.sh --flash-only --massflash <x>

Note. Where <x> is the highest possible number of devices to be flashed concurrently. (minimum = 1, maximum = 5)

```
nexcom@Test-Server:~/ATC3750-6C_mfi_v4.0.0.0_6C_AGX_ORIN_32G$ sudo ./tools/kernel_flash/l4t_initrd_flash.sh --flash-only --massflash 1
```

3. In host pc, it will keep flashing until log show success.

```
Writing qspi_bootblob_ver.txt (partition: 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 (partition: 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/mtd0:67091968
Copied 16896 bytes from /mnt/internal/gpt_secondary_3_0.bin to address 0x03ffbe00 in flash
[ 271]: l4t_flash_from_kernel: Successfully flash the qspi
[ 271]: l4t_flash_from_kernel: Flashing success
[ 271]: 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_1-5_0_20240702-161215.log
```

4. Configure finished, the system will reboot into OS and [start system configuration](#).

✂ The AGX Orin SoM(ATC3750-6C/8M) also provides a firmware package for flashing to NVMe.

e.g. ATC3750-8M_mfi_v4.1.5.0_NVMe_AGX_ORIN_32G_NVMe.tar.gz

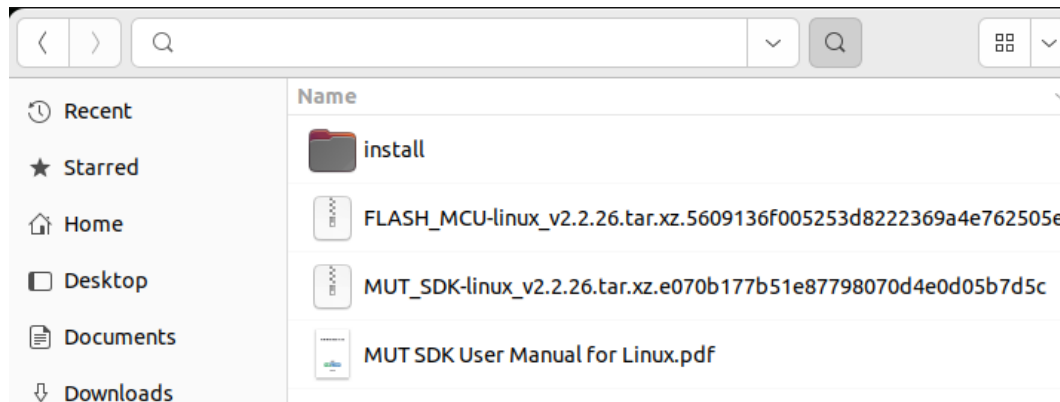
ATC3750-8M_mfi_v4.1.5.0_NVMe_AGX_ORIN_64G_NVMe.tar.gz

3. ATC products tools

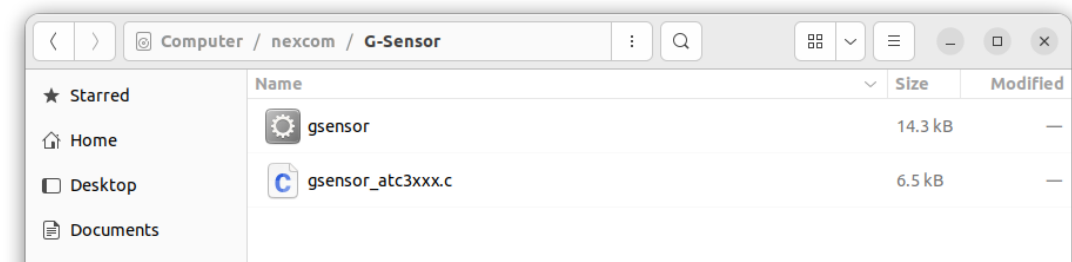
Open the terminal, there are installation packages and documents in the path as following: `/nexcom/`

3.1. MUT SDK

MUT SDK is a service to control the MCU of ATC series products, you can refer to the MUT SDK User Manual document “MUT_SDK_User_Manual_for_Linux.pdf” in the MUT folder.



3.2. G-Sensor



The ATC series use ST LSM6DSL, which supports a 3D digital accelerometer and a 3D digital gyroscope. “gsensor_atc3xxx.c” is a sample code that can read accelerometer and gyroscope data.

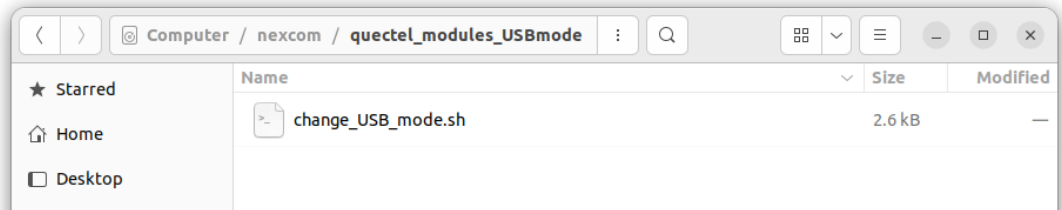
Product	I2C-BUS	Addr
ATC35xx	i2c-7	0x6b
ATC37xx	i2c-0	0x6b

Usage : `$ sudo -s`
`$./gsensor <save_output_as_file> <i2c-bus(only bus number)>`
`$./gsensor output.log 0`

```
root@ai-desktop:/nexcom/G-Sensor# ./gsensor ./output.log 0
/dev/i2c-0
Inititalize LSM6DSL successfully
ACC X:-0.01G Y:-0.01G Z:1.02G
GYRO X:94 Y:FE99 Z:FFEF
Left the machine for 3 seconds ...
ACC X:-0.02G Y:-0.01G Z:1.03G
GYRO X:95 Y:FE96 Z:FFED
Shut down LSM6DSL successfully
```

3.3. quectel_modules_USBmode

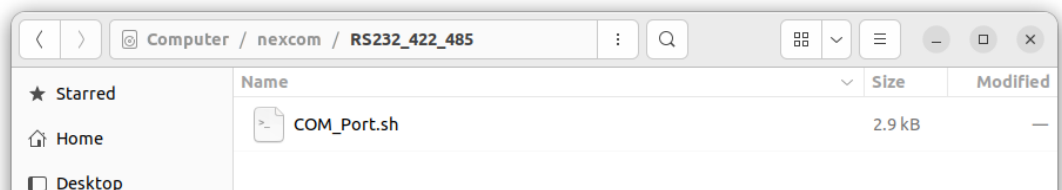
The ATC series supports several LTE/5G modules. This script is intended for Quectel modules(e.g. RM520N-GL, EM05-G) that require USB mode switching when running on linux OS.



Usage : `$ sudo -s`
`$ bash ./change_USB_mode.sh 0`

3.4. RS232_422_485

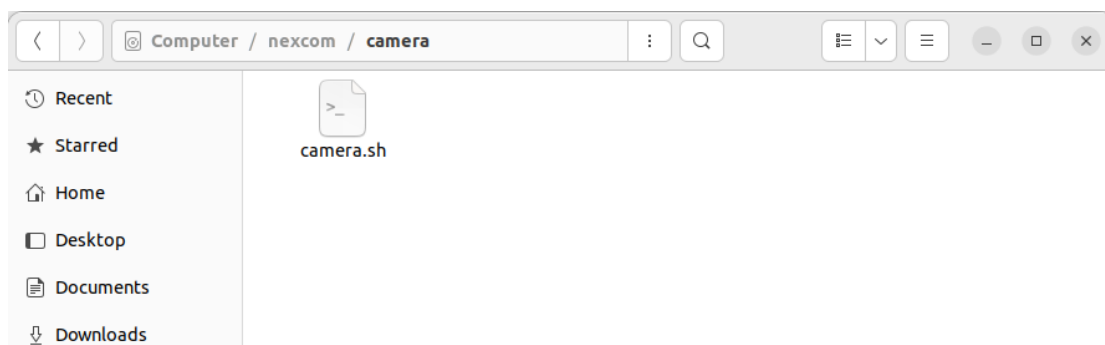
This script only can run on the **ATC3750-8M**. COM1 supports RS232/422/485 conversion.



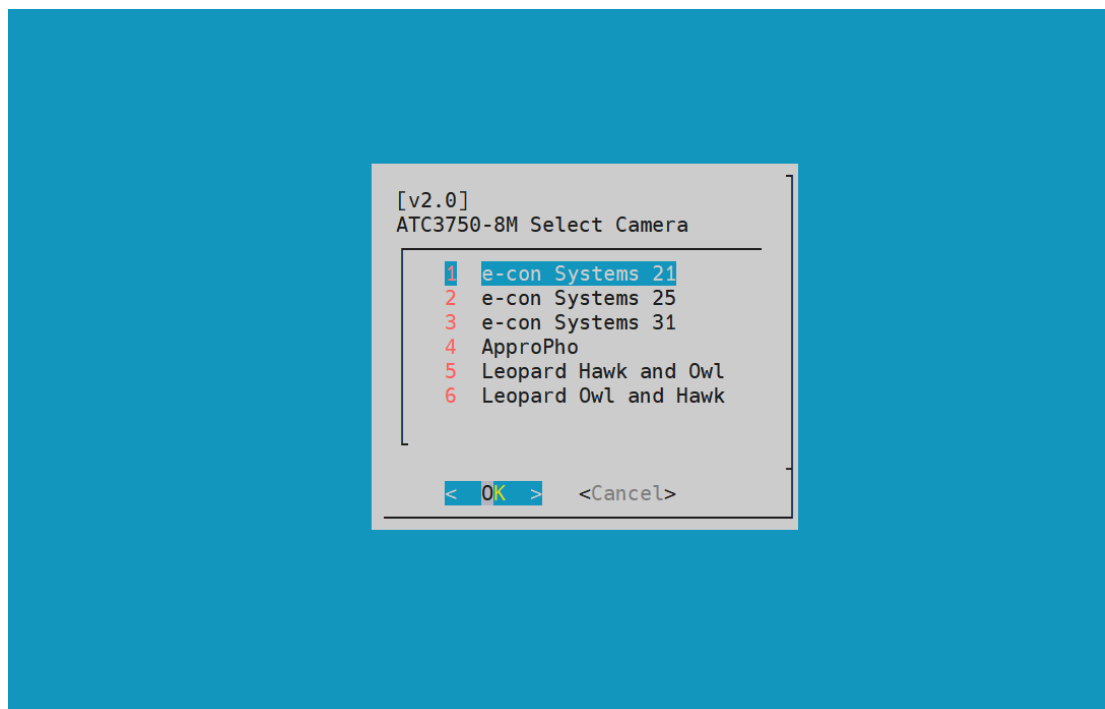
Usage : `$ sudo -s`
RS232 : `$ bash ./COM_Port.sh RS232`
RS422 : `$ bash ./COM_Port.sh RS422`
RS485 – receive : `$ bash ./COM_Port.sh RS485-R`
RS485 – transmit : `$ bash ./COM_Port.sh RS485-W`

3.5. GMSL2_camera

GMSL2 Script Version	GMSL2 Camera Support List		
v1.0	<u>e-con Systems</u> STURDeCAM21 STURDeCAM25 STURDeCAM31		
v1.1			
v2.0		<u>ApproPho</u> AP-AR0234 AP-IMX335 AP-IMX415	<u>Leopard Imaging</u> LI-AR0234-OWL LI-AR0234-HAWK



Usage : `$ sudo -s`
`$ bash ./camera.sh`



After the driver and dts have been successfully updated, you need to power off the system and install the GMSL2 camera on CAM1~CAM8.

4. Install SDK component

Location: `/nexascom/nvidia_SDK_components/install_sdk.sh` Free disk space required: 10.6 GB (SDK 9924MB, Deepstream 733MB). The script will install SDK automatically following:

1. TensorRT
2. cuDNN
3. CUDA
4. Multimedia API
5. Computer Vision
6. Developer Tools (Nvidia Nsight System and Graphics)
7. Deepstream

```
$ sudo ./install_sdk.sh
```

4.1. How to check the SDK version:

```
$ sudo apt install python3-pip
```

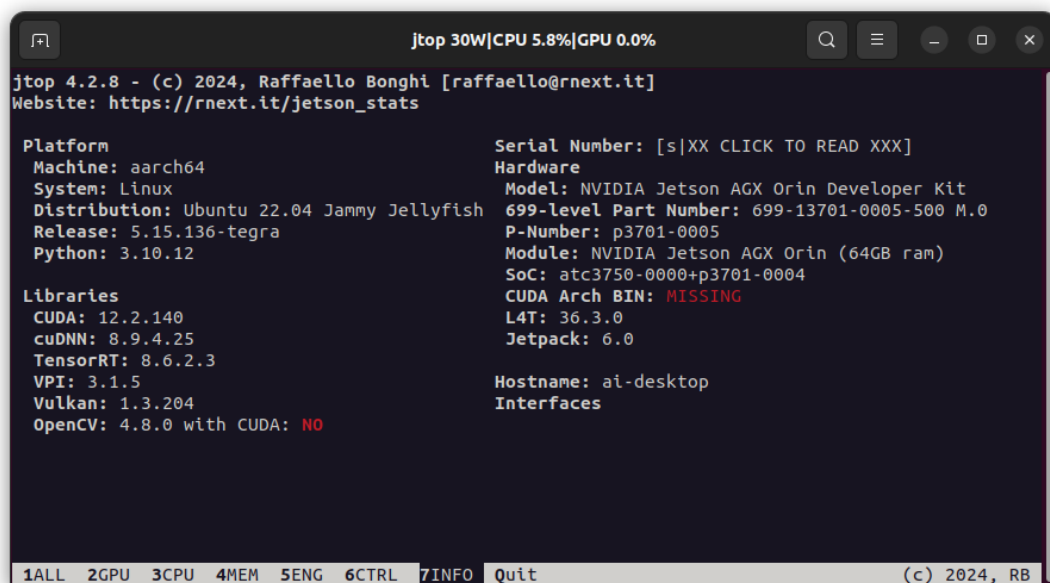
```
$ sudo pip3 install jetson-stats
```

```
$ sudo jtop (Figure 8)
```

Move the cursor to “6INFO” and you can see the library version.

You can also use another command: (Figure 9)

```
$ jetson_release
```



```
jtop 30W|CPU 5.8%|GPU 0.0%
jtop 4.2.8 - (c) 2024, Raffaello Bonghi [raffaello@rnext.it]
Website: https://rnext.it/jetson_stats

Platform
Machine: aarch64
System: Linux
Distribution: Ubuntu 22.04 Jammy Jellyfish
Release: 5.15.136-tegra
Python: 3.10.12

Libraries
CUDA: 12.2.140
cuDNN: 8.9.4.25
TensorRT: 8.6.2.3
VPI: 3.1.5
Vulkan: 1.3.204
OpenCV: 4.8.0 with CUDA: NO

Serial Number: [s|XX CLICK TO READ XXX]
Hardware
Model: NVIDIA Jetson AGX Orin Developer Kit
699-level Part Number: 699-13701-0005-500 M.0
P-Number: p3701-0005
Module: NVIDIA Jetson AGX Orin (64GB ram)
SoC: atc3750-0000+p3701-0004
CUDA Arch BIN: MISSING
L4T: 36.3.0
Jetpack: 6.0

Hostname: ai-desktop
Interfaces

1ALL 2GPU 3CPU 4MEM 5ENG 6CTRL 7INFO Quit (c) 2024, RB
```

Figure 8. Info tab on jtop

```
root@ai-desktop:/home/ai# jetson_release
Software part of jetson-stats 4.2.8 - (c) 2024, Raffaello Bonghi
Model: NVIDIA Jetson AGX Orin Developer Kit - Jetpack 6.0 [L4T 36.3.0]
NV Power Mode[2]: MODE_30W
Serial Number: [XXX Show with: jetson_release -s XXX]
Hardware:
- P-Number: p3701-0005
- Module: NVIDIA Jetson AGX Orin (64GB ram)
Platform:
- Distribution: Ubuntu 22.04 Jammy Jellyfish
- Release: 5.15.136-tegra
jtop:
- Version: 4.2.8
- Service: Active
Libraries:
- CUDA: 12.2.140
- cuDNN: 8.9.4.25
- TensorRT: 8.6.2.3
- VPI: 3.1.5
- Vulkan: 1.3.204
- OpenCV: 4.8.0 - with CUDA: NO
root@ai-desktop:/home/ai#
```

Figure 9. Info of jetson_release

5. AI Demo

5.1. Installation

Use the `install_sdk.sh` (Chapter 5) to install deepstream and other SDK.

5.2. Run the deepstream demo

Run the demo as following command:

```
$ cd /opt/nvidia/deepstream/deepstream/samples/configs/deepstream-app
```

```
$ deepstream-app -c
```

`source4_1080p_dec_inferresnet_tracker_sg1e_tiled_display_int8.txt` The result



Figure 10. deepstream-app demo