NIKY-2155-NX

AI Panel PC with NVIDIA® Jetson Orin™ NX

User's Manual 2nd Ed

Last Updated: October 29, 2025

Copyright Notice

Acknowledgements

Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● NIKY-2155-NX	1
● Phoenix Power Connector	1
● Screw Package	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
3. Make sure the power source matches the power rating of the device.
4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
5. Always completely disconnect the power before working on the system's hardware.
6. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
7. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
8. Always disconnect this device from any power supply before cleaning.
9. While cleaning, use a damp cloth instead of liquid or spray detergents.
10. Make sure the device is installed near a power outlet and is easily accessible.
11. Keep this device away from humidity.
12. Place the device on a solid surface during installation to prevent falls
13. Do not cover the openings on the device to ensure optimal heat dissipation.
14. Watch out for high temperatures when the system is running.
15. Do not touch the heat sink or heat spreader when the system is running
16. Never pour any liquid into the openings. This could cause fire or electric shock.

17. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
18. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
19. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON System QO4-381 Rev.A2

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求，然而该部件仍符合欧盟指令 2011/65/EU 的规范。

环保使用期限(EFUP (Environmental Friendly Use Period)) : 10 年

备注：

一、此产品所标示之环保使用期限，系指在一般正常使用状况下。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Name and content of hazardous substances in product

AAEON System QO4-381 Rev.A2

Part Name	Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB Assemblies	×	○	○	○	○	○
Connector and Cable	×	○	○	○	○	○
Chassis	○	○	○	○	○	○
CPU and Memory	×	○	○	○	○	○
Hard Disk	×	○	○	○	○	○
LCD Modules	×	○	○	○	○	○
CD-ROM/DVD-ROM	×	○	○	○	○	○
Touch Modules	×	○	○	○	○	○
Power	×	○	○	○	○	○
Battery	×	○	○	○	○	○

The table is prepared in accordance with the provisions of SJ/T 11364.

○：Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

×：Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).

EFUP (Environment Friendly Use Period) value: 10 years.

Notes：

1. This product defined period of use is under normal condition.
2. In above part, CPU/Memory/ Hard Disk/CD-ROM/DVD-ROM/ Power are optional.
3. In above part, LCD Modules/ Touch Modules are for all-in-one product model.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System

Processor	NVIDIA® Jetson Orin™ NX
	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU
System Memory	8GB LPDDR5
LCD/CRT Controller	N/A
Ethernet	GbE LAN x 2
I/O	USB 3.2 Gen 2 (Type-A) x 4
	GbE LAN x 2
	Micro USB x 1 for OS Flash
	DB-9 x 1 for CANBus
	DB-9 x 1 for RS-232/422/485
	DB-15 x 1 for 8-Bit DIO
	Power On/Off Switch x 1
	Recovery Button x 1
	Antenna Hole x 6
Storage Disk Drive	M.2 2280 M-Key x 1 for Storage (Default: 128GB)
Expansion Slot	M.2 2230 E-Key x 1
	M.2 3042/3052 B-Key x 1
OS Support	Ubuntu 22.04

Mechanical

Front Panel	Aluminum Front Bezel + Metal Chassis
Mounting	VESA 100 / Panel Mount
Dimensions	15.2" x 9.3" x 2.6" (385.6mm x 235.0mm x 66.6mm)
Carton Dimensions	20.3" x 15.2" x 7.8" (515mm x 385mm x 198mm)

Mechanical

Gross Weight	9.39 lb. (4.26Kg)

Environmental

Operating Temperature	23°F ~ 131°F (-5°C ~ 55°C) with 0.7 m/s airflow
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Storage Humidity	90% @40°C; non-condensing
Vibration	1Grms/5~500Hz/ operation
Shock	15 G peak acceleration (11 m sec. duration)
EMC	CE/FCC Class A

Power Supply

DC Input	DC 12~24V

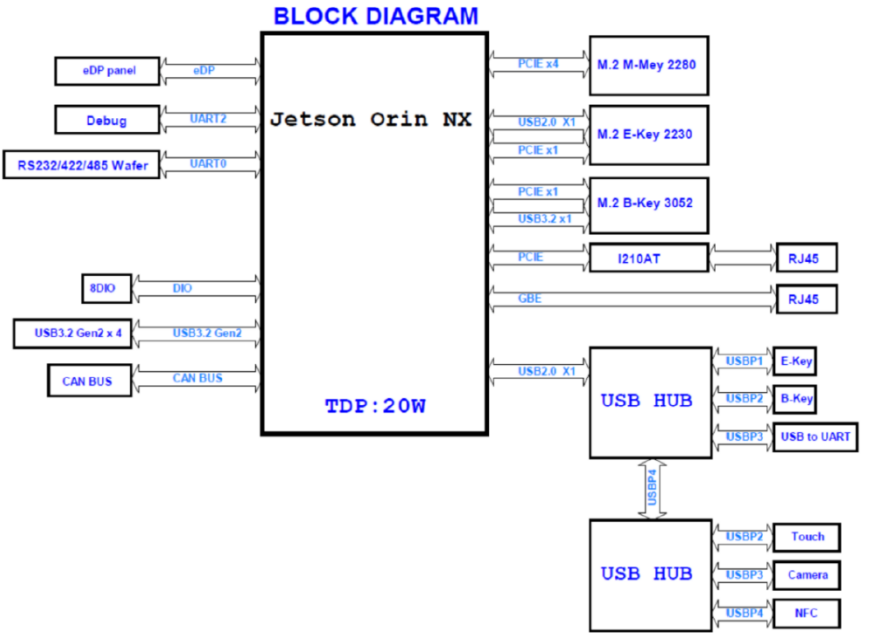
LCD

Display Type	15.6" TFT-LCD, LED
Max. Resolution	1920 (H) x 1080 (V)
Max. Colors	16.7M
Luminance	350 cd/m^2
Viewing Angle	160° (H) / 160° (V)
Backlight	LED
Backlight MTBF (Hours)	35,000

Touchscreen

Type	Projected Capacitive Multi-Touch
Light Transmission	>= 85%

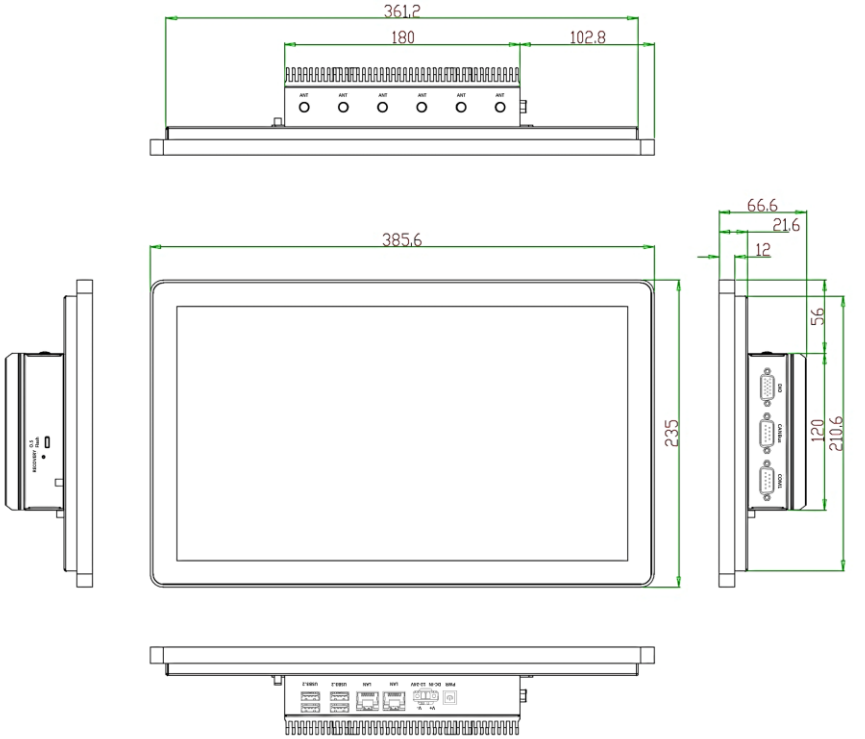
1.2 Block Diagram



Chapter 2

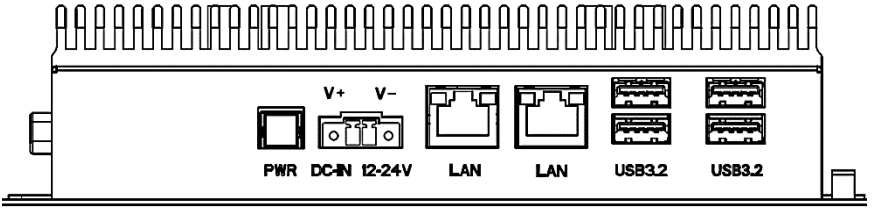
Hardware Information

2.1 Dimensions



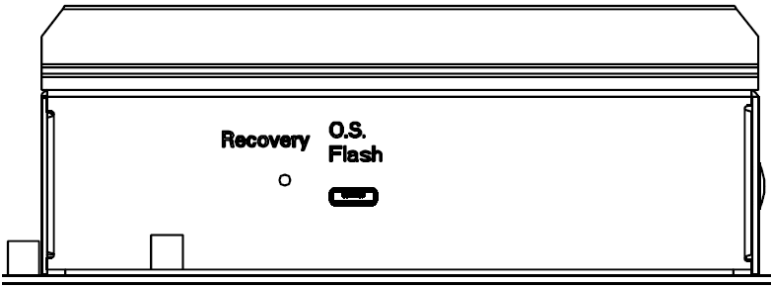
2.2 I/O Ports

2.2.1 Bottom Side I/O



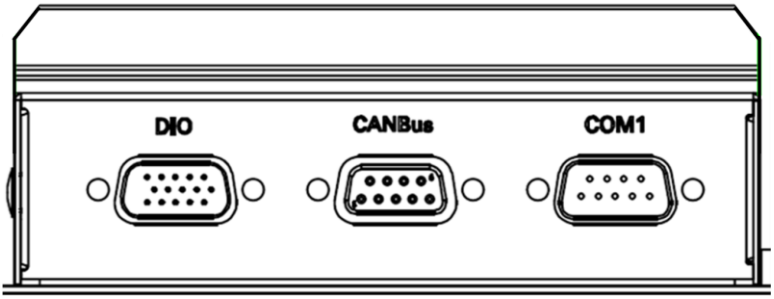
Port	I/O Description
PWR	Power On/Off
DC-IN	2-pin Terminal Block for DC-in 12V-24V
LAN	RJ-45 x 2 for 10/100/1000 Base-T
USB 3.2	USB 3.2 Gen 2 (Type-A) x 4

2.2.2 Left Side Panel I/O



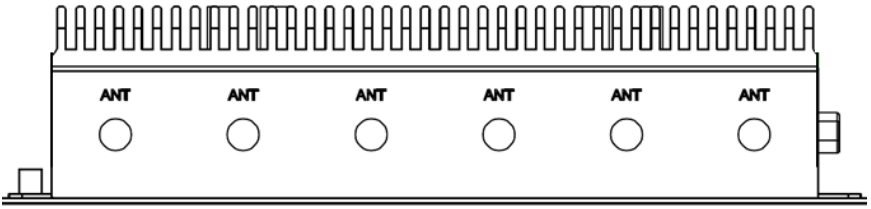
Port	I/O Description
Recovery	Recovery Button
O.S. Flash	Micro USB x 1 for OS Flash

2.2.3 Right Side Panel I/O



Port	I/O Description
DIO	DB-15 x 1 for 8-bit DIO
CANBus	DB-9 x 1 for CANBus
COM1	DB-9 x 1 for RS-232/422/485

2.2.4 Top Side Panel I/O



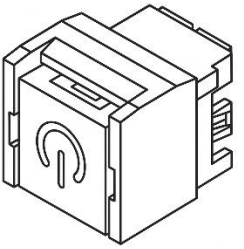
Port	I/O Description
ANT	Antenna Hole x 6

2.3 List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application.

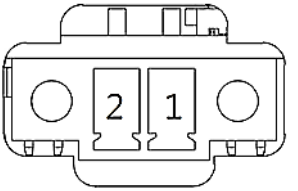
Label	Function
PWR	Power On/Off
DC-IN	2-pin Terminal Block for DC-in 12-24V
LAN	RJ-45 x 2 for 10/100/1000 Base-T
USB 3.2	USB 3.2 Gen 2 (Type-A) x 4
Recovery	Recovery Button
O.S. Flash	Micro USB x 1 for OS Flash
DIO	DB-15 x 1 for 8-bit DIO
CANBus	DB-9 x 1 for CANBus
COM 1	DB-9 x 1 for RS-232/422/485
ANT	Antenna Hole x 6

2.3.1 Power On/Off (PWR)



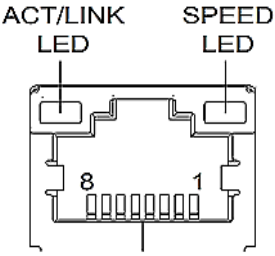
Pin	Signal	Pin	Signal
1	NA	2	GND
3	PWR_BTN	4	NA GND
5	GND	6	PWR_BTN
L1	VDD_5V	L2	PWR_LED

2.3.2 DC Power Input (DC-IN)



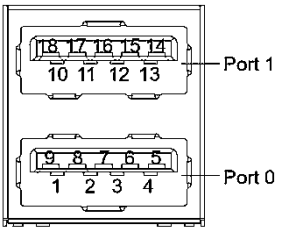
Pin	Signal	Pin	Signal
1	PWR_IN	2	GND

2.3.3 RJ-45 x 2 (LAN)



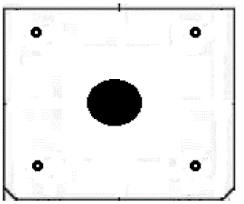
Pin	Signal	Pin	Signal
1	MDI0+	2	MDI0-
3	MDI1+	4	MDI1-
5	MDI2+	6	MDI2-
7	MDI3+	8	MDI3-

2.3.4 USB 3.2 Gen 2 (Type-A) (USB 3.2)



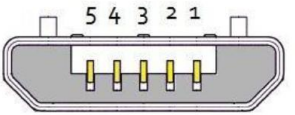
Pin	Signal	Pin	Signal
U1	VBUS_1	U10	VBUS_2
U2	(A)D-	U11	(B)D-
U3	(A)D+	U12	(B)D+
U4	GND	U13	GND
U5	(A)SSRX-	U14	(B)SSRX-
U6	(A)SSRX+	U15	(B)SSRX+
U7	GND	U16	GND
U8	(A)SSTX-	U17	(B)SSTX-
U9	(A)SSTX+	U18	(B)SSTX+

2.3.5 Recovery Button (Recovery)



Pin	Signal	Pin	Signal
1	GND	2	GND
3	FORCE_RECOVERY*	4	GND

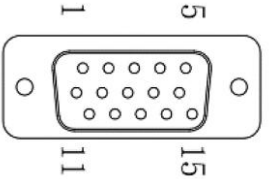
2.3.6 Micro USB for OS Flash (O.S. Flash)



USB Micro-B

Pin	Signal	Pin	Signal
1	+5V	2	USB1-
3	USB1+	4	NA
5	GND		

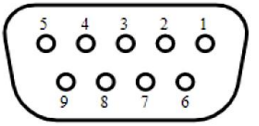
2.3.7 DB-15 x 1 for 8-bit DIO (DIO)



Pin	Function	Voltage Level	GPIO ID
2	SPI1_MOSI_LS	3.3V-	PY.02
3	SPI1_MISO_LS	3.3V-	PY.01
4	SPI1_SCK_LS	3.3V-	PY.00
5	SPI1_CS0_LS	3.3V-	PY.03

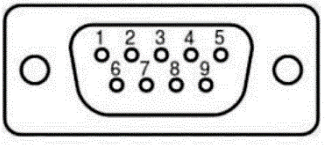
Pin	Function	Voltage Level	GPIO ID
11	I2S0_LRCK_LS	3.3V-	PI.02
12	I2S0_SDIN_LS	3.3V-	PI.01
13	I2S0_SDOUT_LS	3.3V-	PI.00
14	I2S0_SCLK_LS	3.3V-	PH.07
15	GND	GND	NA

2.3.8 DB-9 for CANBus (CANBus)



Pin	Function	Voltage Level
1	NA	
2	CAN0_L	
3	GND	
4	NA	
5	GND	
6	NA	
7	CAN0_H	
8	NA	
9	VDD_5V_IN	

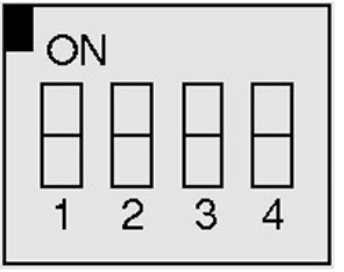
2.3.9 DB-9 for RS-232/422/485 (COM 1)



Pin	RS-232	RS-422	RS-485
1		TX-	D-
2	RXD	TX+	D+
3	TXD	RX+	
4		RX-	
5	GND		

Pin	RS-232	RS-422	RS-485
6			
7			
8			
9			

2.3.10 RS-232/422/485 Switch



Mode	S-1	S-2	S-3	S-4
1T/1R RS-232	On	On		
1T/1R RS-422	On	Off		
1T/1R RS-485	Off	On		
Low Power Shutdown	Off	Off		
250kbps for RS-232 and RS-485/ 422				On
RS-232 to 3Mbps and RS-485/ 422 to 20Mbps				Off

Chapter 3

BSP Flash Guide

3.1 Before Installation

Before starting the process make sure your **NIKY-2155-NX** system is turned off and the power is disconnected. You will need a Host PC running Ubuntu 18.04/20.04, and make sure the NVIDIA Jetson Orin NX module is installed onto the **NIKY-2155-NX** carrier board system.

Note: Do not use a virtual machine as a host PC, as some virtual machines may have unstable USB connections which can cause the flash procedure to fail.

Download the compressed BSP image file "NIKY-2155-NX-_J6.0_A34_1.0.1_20241007.tar.gz" into the Host Ubuntu 18.04/20.04 PC directory.

Note: No spaces, special characters, or non-English characters can be used for the name of the folder where the file is stored, or its parent folder.

Note: Ensure the language settings of Ubuntu 18.04/20.04 are set to English, and the format setting is the United States, to prevent flash failure.

Note: Ensure you have more than 160GB storage available on the HD

3.2 Connecting to PC/Force Recovery Mode

Step 1:

On the Host computer, open Linux terminal and enter the following command to extract the compressed BSP image files (BSP file name may vary):

```
$ sudo tar -zxvf NIKY-2155-NX-_J6.0_A34_1.0.1_20241007.tar.gz
```

Note: Do not decompress the file (i.e. FAT NTFS exFAT) using a Windows OS, BSP should only be decompressed in a Linux EXT3/4 file system.

Step 2:

Perform the following actions to force the system to start in USB Recovery Mode:

1. Connect the Micro-USB plug on the USB cable to the Recovery Port on the NIKY-2155-NX, and the other end to an available USB port on the Host PC.
2. Connect the NIKY-2155-NX to a power supply.
3. Press and hold the recovery key button. While holding the recovery key button, power on the system, and continue to hold the recovery key button for two seconds, then release. The NIKY-2155-NX should then enter recovery mode.
4. To check if device is in recovery mode, enter the command lsusb in terminal on Host.

```
$ lsusb | grep "0955:7323"
```

If successful, the command will return "0955:7323 Nvidia Corp"

```
Bus 001 Device 038: ID 0955:7323 NVidia Corp.
```

Note: Recovery mode cannot be initiated if the NVIDIA Jetson Orin NX module is disassembled. Ensure the NVIDIA Jetson Orin NX module is installed and refer to the image below to perform the force recovery mode steps:

3.3 Flash Image to Board

Use the following steps to flash the OS to the NIKY-2155-NX.

1. Open terminal on the Ubuntu Host PC, then access the folder you extracted in the previous section.
2. Enter the following command in terminal to flash the image:

```
$ ./flashboxer -s 62333952 -o nvme
```

3. Wait as the image is installed. Once complete you should see the following:

```
writing item=16, 9:0:secondary_gpt, 32008902144, 16896, gpt_secondary_9_0.bin, 16896, fixed-<reserved>-0, 59012273e727e6a457684ff7805a26ed6cf1c4fa
[ 389]: l4t_flash_from_kernel: Successfully flash the external device
[ 389]: l4t_flash_from_kernel: Flashing success
[ 389]: 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...
```

4. After Steps 2 and 3, mass-flash image is built up internally, so you can flash up to 3 targets at once by using the following command:

```
$ ./flashboxer -m -o nvme
```

3.4 Check BSP Version

Once the flash image is successfully installed, the NIKY-2155-NX will reboot automatically, then check the BSP version to see if the system is flashing the correct version of BSP

Open a Terminal, and type command "cat/proc/product"

You will see the product name with version and date

NIKY-2155-NX-_J6.0_A34_1.0.1_20241007

The version name will follow the format of:

{PJ_IF}_{JPV_IF}_A34_{IMGV_IF}_{BD_IF}

For example: NIKY-2155-NX_J6.0_A34_1.0.1_20241007

Note: Filename may differ from this example.

{PJ_IF} is Project Information; e.g. NIKY-2155-NX

{JPV_IF} is NVIDIA Jetpack Version; e.g. J6.0

{IMGV_IF} is AAEON BSP Version; e.g. 1.0.1

{BD_IF} is BSP Build Date; e.g. 20241007

Chapter 4

OS User Guide

4.1 Introduction

The NIKY-2155-NX's OS, Ubuntu/Linux version, and preinstalled SDK components are as follows:

For Jetpack 6.0 (l4t 36.3.0)

1. Ubuntu/Linux version
   a. Ubuntu version: 20.04.4
   b. Kernel version: 5.15.136-tegra
2. Built-in all Jetson SDK Components
   a. CUDA Toolkit for L4T 12.2.140
   b. cuDNN 8.9.4.25
   c. TensorRT 8.6.2.3
   d. OpenCV 4.8.0
   e. VPI 3.1.5
   f. NVIDIA Container Runtime 1.14.2
3. Built-in Allxon DMS
   a. Please refer to vendor website at https://www.allxon.com/solutions

Default login user/password is:

Account: aaeon
Password: aaeon

4.2 GPIO

DIO Connector (CN30) (8 pins)

- GPIO_PH_07: GPIO#50
- GPIO_PI_00: GPIO#51
- GPIO_PI_01: GPIO#52
- GPIO_PI_02: GPIO#53
- GPIO_PY_00: GPIO#122
- GPIO_PY_01: GPIO#123
- GPIO_PY_02: GPIO#124
- GPIO_PY_03: GPIO#125

Demonstration: Take "GPIO ID：PY.02" as an example

1. Check GPIO information.

```
$ sudo gpioinfo
```

```
gpiochip0 - 164 lines:
        line   0:      "PA.00" "regulator-vdd-3v3-sd" output active-high [used]
        line   1:      "PA.01"       unused   input  active-high
        line   2:      "PA.02"       unused   input  active-high
        line   3:      "PA.03"       unused   input  active-high
        line   4:      "PA.04"       unused   input  active-high
        line   5:      "PA.05"       unused   input  active-high
        line   6:      "PA.06"       unused   input  active-high
        line   7:      "PA.07"       unused   input  active-high
        line   8:      "PB.00"       unused   input  active-high
        line   9:      "PC.00"       unused   input  active-high
        line  10:      "PC.01"       unused   input  active-high
        line  11:      "PC.02"       unused   input  active-high
        line  12:      "PC.03"       unused   input  active-high
        line  13:      "PC.04"       unused   input  active-high
        line  14:      "PC.05"       unused   input  active-high
        line  15:      "PC.06"       unused   input  active-high
        line  16:      "PC.07"       unused   input  active-high
```

2. Set output value and check

```
$ sudo gpioset gpiochip0 124=1
$ sudo gpioget gpiochip0 124
1
```

We also can use command "gpioinfo" to check PY.02's level

```
$ sudo gpioinfo
```

```
        line 122:      "PY.00"       unused   input  active-high
        line 123:      "PY.01"       unused   input  active-high
        line 124:      "PY.02"       unused  output  active-high
        line 125:      "PY.03"       unused   input  active-high
        line 126:      "PY.04"       unused   input  active-high
```

4.3 RS-232 Loopback

COM Port 1 (CN7)

- DB9 pin 2 connect to DB-9 pin 3

```
$ sudo stty -F /dev/ttyTHS1 -echo -onlcr 115200 raw
$ sudo chmod 777 /dev/ttyTHS1
$ cat /dev/ttyTHS1 &
$ echo "Serial Port Test" > /dev/ttyTHS1
Serial Port Test
```

4.4 Ethernet

Check Ethernet status

```
$ ifconfig
```

```
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.16.17.102  netmask 255.255.255.0  broadcast 172.16.17.255
        inet6 fe80::f335:a472:4493:7470  prefixlen 64  scopeid 0x20<link>
        ether 00:07:32:81:fc:17  txqueuelen 1000  (Ethernet)
        RX packets 347718  bytes 261222342 (261.2 MB)
        RX errors 0  dropped 65590  overruns 0  frame 0
        TX packets 53587  bytes 12282870 (12.2 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
        device memory 0x20a8000000-20a80fffff

eth1: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 3c:6d:66:01:67:34  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
        device interrupt 30  base 0x1000

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 6519  bytes 553863 (553.8 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 6519  bytes 553863 (553.8 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Ping Test

To check the connectivity and latency between two devices on a network

```
$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=115 time=2.72 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=115 time=2.86 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=115 time=2.35 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=115 time=4.66 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=115 time=2.99 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=115 time=2.84 ms
```

Ethernet LED Lights Test

- Link LED Light

  10M - orange and green light: always off

  100M - green light: always on

  1000M - orange light: always on

- Active LED Light

  10M - orange light: flashing on

  100M - orange light: flashing on

  1000M - orange light: flashing on

4.5 CANBus

CANBus Connector (CN9)

- Connect to another CAN monitor device

Send data using "cansend"

Example:

```
$ cansend can0 123#ABCDEFGH
```

This sends a CAN frame on can0 with ID 0x123 and data ABCDEFGH (4 bytes: AB, CD, EF, GH).

Received frames, use "candump"

```
$ candump can0
can0 123 [4] AB CD EF GH
```

4.6 Update Note

Running $ sudo apt upgrade command in terminal will overwrite the Aaeon kernel device tree(.dtb)/kernel image(Image)/bootloader in the OS, which can lead to unexpected results, including the loss of I/O ports.

So AAEON default disable NVIDIA apt Repo for updating Nvidia apt package.

AAEON maintains updated versions of BSP on the product page, which follow updates to the NVIDIA Jetpack software. Contact your AAEON representative or visit the product page to download the latest version of AAEON BSP for your system:

https://www.aaeon.com/en/