BOXER-8655AI

AI@Edge Fanless Embedded AI System
with NVIDIA® Jetson Orin™ NX

User's Manual 2nd Ed

Last Updated: September 19, 2025

Copyright Notice

Acknowledgements

Packing List

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

Item	Quantity
● BOXER-8655AI	1
● Wall Mount Bracket	2
● Screw Package	1
● Power Connector	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	
AI Accelerator	NVIDIA® Jetson Orin™ NX
CPU	8GB Module: 6-core Arm® Cortex®-A78AE v8.2
	64-bit CPU, 1.5MB L2 + 4MB L3
	16GB Module: 8-core Arm® Cortex®-A78AE v8.2
	64-bit CPU, 2MB L2 + 4MB L3
System Memory	8GB LPDDR5
	16GB LPDDR5
Storage Device	M.2 2280 M-Key x 1 (NVMe)
Display Interface	HDMI 1.2 (Type-A) x 1, up to 1920 x 1080 @60Hz
Ethernet	RJ-45 for GbE LAN x 5
I/O	GMSL2 x 8 with FAKRA connectors
	DB-9 x 1 for CANBus FD
	DB-15 for RS-232 (Rx/Tx)/RS422/RS485 x 1
	Programmable DIO x 8
	External SMA Antenna x 7
	Power Button x 1
	Recovery Button x 1
	Micro USB x 1 for OS Flash
	Mic-in and Line-out x 1
	Reset Button x 1
	USB 3.2 Gen 2 (Type-A) x 4
Expansion	M.2 2230 E-Key x 1 (Wi-Fi/BT)
	M.2 3042/3052 B-Key x 1 (LTE/5G, USB 2.0, USB 3.0)
	M.2 2280 M-Key x 1 (NVMe)
	2.5" SATA x 1

System

Indicator	Power LED
OS Support	Linux (NVIDIA JetPack™ 6 and later)

Power Supply

Power Requirement	3-pin Terminal Block x 1 for 9V-36V ACC Ignition Delay On/Off

Mechanical

Mounting	Wall Mount
Dimensions (W x D x H)	9.68" x 6.46" x 3.49" (246mm x 164.2mm x 88.8mm)
Gross Weight	8.3 lb. (3.76 kg)
Net Weight	6.4 lb. (2.9 kg)

Environmental

Operating Temperature	5°F - 158°F (-15°C - 70°C with 0.7 m/s airflow)
Storage Temperature	-40˚F - 185˚F (-40˚C - 85˚C)
Storage Humidity	5 - 95% @ 40˚C, non-condensing
Anti-Vibration	MIL-STD-810G, 514.6C Procedure 1, Category 4 Trucker/Semitrailer on US highway (Figure 514.6C-1-Category 4-Common carrier)
Anti-Shock	MIL-STD-810G, Method 516.6, Procedure I, flight vehicle equipment
Certification	E-Mark, CE/FCC Class A

Boot Configuration Notice:

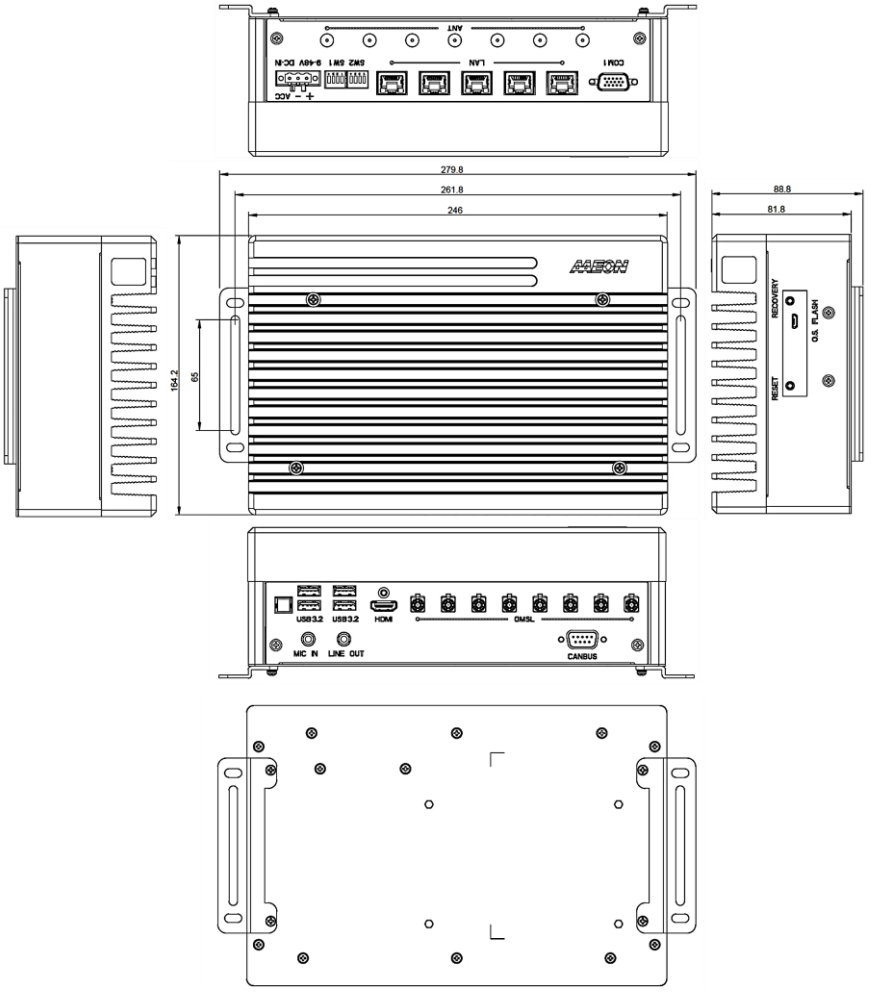
When the system is configured to boot from SATA, ensure that no USB devices are connected during power-on.

Chapter 2

Hardware Information

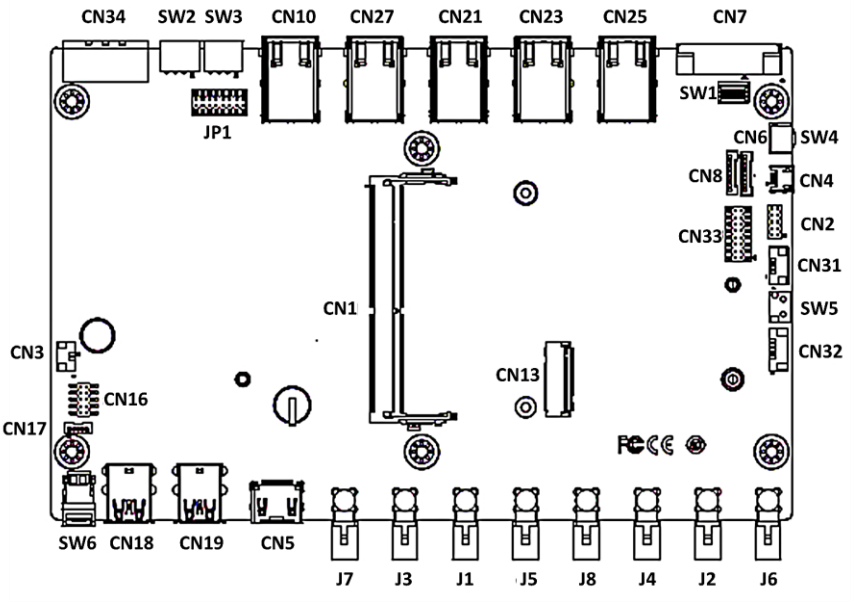
2.1 Dimensions

System

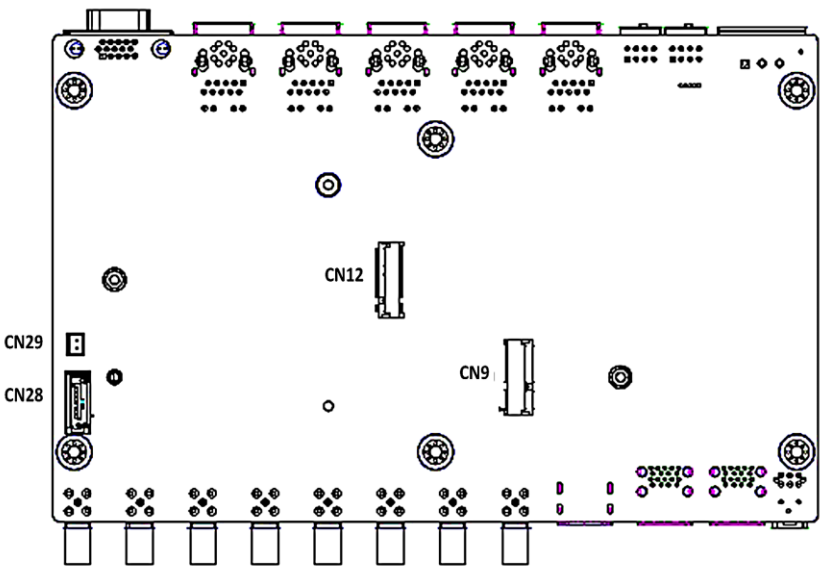


2.2 Jumpers and Connectors

Component Side



Solder Side



2.3 List of Jumpers & Connectors

The board has a number of connectors that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers and connectors.

Label	Function
CN1	Jetson Orin NX Connector
CN2	Front Panel Connector
CN3	RTC Battery Connector
CN4	Micro USB 2.0 for Flash Connector
CN5	HDMI Port
CN6	CANBus Connector
CN7	RS-232/485 & DIO Connector
CN8	9-axis Sensor Connector
CN9	M.2 2230 E-Key
CN10	RJ-45 LAN Port
CN12	M.2 2280 M-Key
CN13	M.2 3042/3052 B-Key
CN14	Nano SIM Connector (1)
CN15	Nano SIM Connector (2)
CN16	Audio Panel Connector
CN17	USB 2.0 Connector (Internal)
CN18	USB 3.2 Gen 2 Type-A Port
CN19	USB 3.2 Gen 2 Type-A Port
CN21	RJ-45 LAN Port
CN23	RJ-45 LAN Port
CN25	RJ-45 LAN Port
CN27	RJ-45 LAN Port
CN28	SATA Connector
CN29	SATA 5V Connector (2.0mm)
CN31	Fan Connector (12V)
CN32	Debug UART Connector
CN33	OOB Connector
CN34	Power Connector
SW1	RS-232/422/485 Select
SW2	Power Delay ON Time Select
SW3	Power Delay OFF Time Select

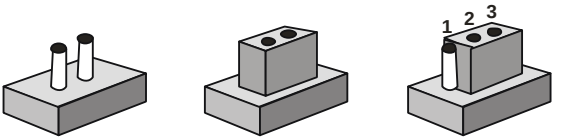
Label	Function
SW4	Recovery Button
SW5	Reset Button
SW6	Power Button
JP1	Power On/Off Delay Select (Internal)
J1~J8	GMSL2 Connector

2.4 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them.

To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



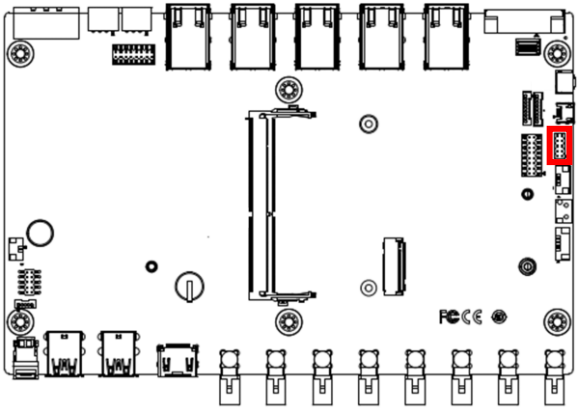
Open **Closed** **Closed 2-3**

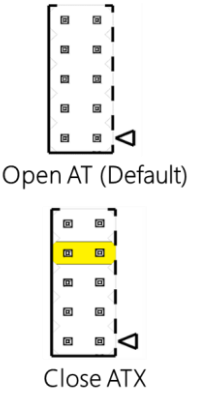
A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

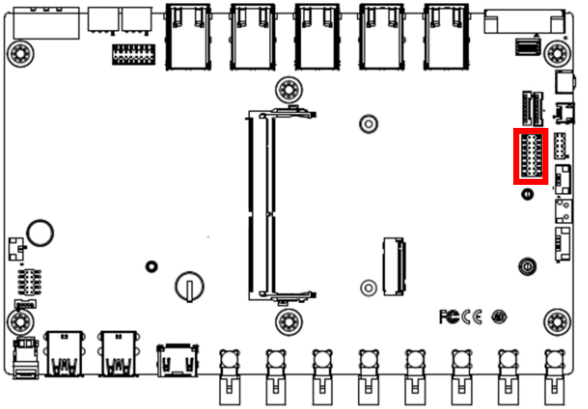
2.4.1 AT/ATX Mode Selection (CN2)

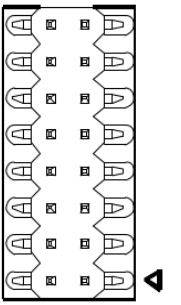




CN2 Pin	Function
7-8	Open AT (Default)
7-8	Close ATX

2.4.2 NC-SI Connector (CN33)

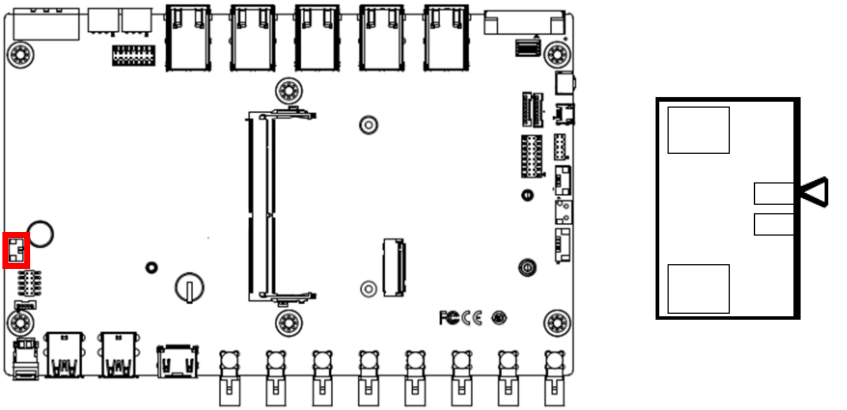




Pin	Signal	Pin	Signal
1	3V3_SYS	2	3V3_AO
3	Debug UART TX	4	NC_SI_TXD0
5	Debug UART RX	6	NC_SI_TXD1
7	I2C1 SCL	8	NC_SI_RXD0

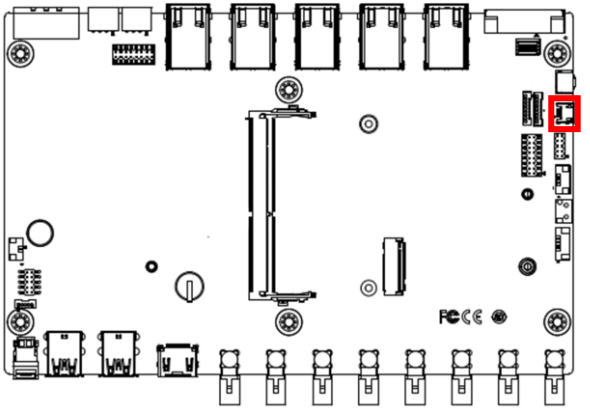
Pin	Signal	Pin	Signal
9	I2C1 SDA	10	NC_SI_RXD1
11	System Reset	12	NC_SI_CLK_IN
13	GND	14	NC_SI_CRB
15	Button power	16	NC_SI_TX_EN
17	GND	18	OOB_UART_TXD
19	5V_SYS	20	OOB_UART_RXD

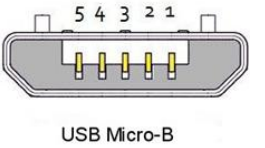
2.4.3 RTC Battery Connector (CN3)



Pin	Signal	Pin	Signal
1	Positive	2	Negative

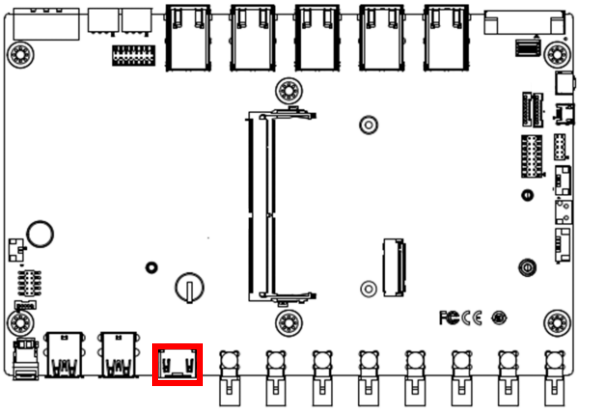
2.4.4 Micro USB 2.0 for Flash Connector (CN4)

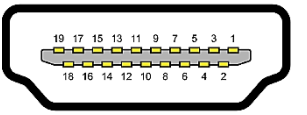




Pin	Signal	Pin	Signal
1	+5V	2	USB1-
3	USB1+	4	
5	GND		

2.4.5 HDMI Port (CN5)

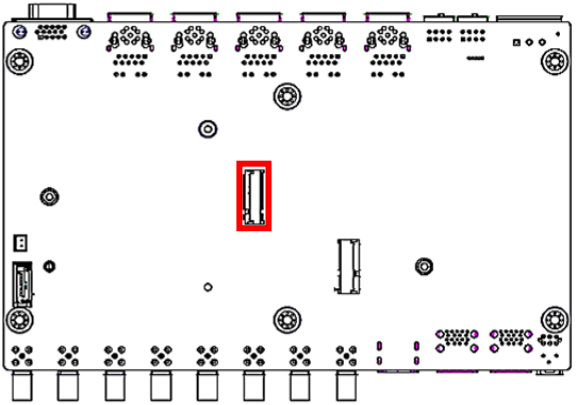


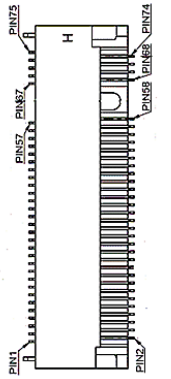


Pin	Signal	Pin	Signal
1	HDMI_DATA2_P	2	GND
3	HDMI_DATA2_N	4	HDMI_DATA1_P
5	GND	6	HDMI_DATA1_N

Pin	Signal	Pin	Signal
7	HDMI_DATA0_P	8	GND
9	HDMI_DATA0_N	10	HDMI_CLK_P
11	GND	12	HDMI_CLK_N
13	NC	14	NC
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	HDMI_PWR
19	HDMI_HDP		

2.4.6 M.2 2280 M-Key (CN12)

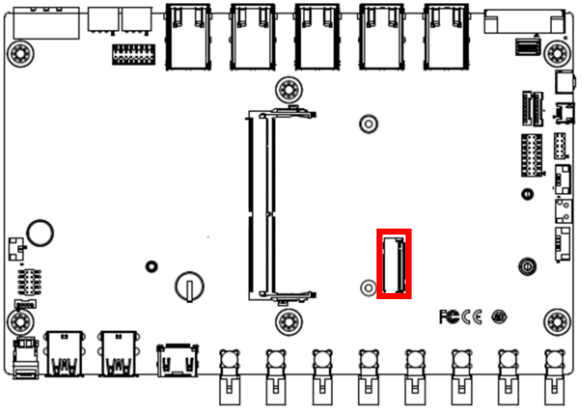


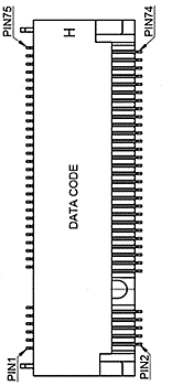


Pin	Signal	Signal	Pin
74	3.3 V	GND	75
72	3.3 V	GND	73
70	3.3 V	GND	71
68	SUSCLK	PEDET	69
		NC	67
	Key M	Key M	
	Key M	Key M	
	Key M	Key M	
	Key M	Key M	
58	NC	GND	57
56	NC	REFCLKp	55
54	PEWAKE#	REFCLKn	53
52	CLKREQ#	GND	51
50	PERST#	PETp0	49

Pin	Signal	Signal	Pin
48	NC	PETn0	47
46	NC	GND	45
44	ALERT#	PERp0	43
42	SMB_DATA	PERn0	41
40	SMB_CLK	GND	39
38	DEVSLP	PETp1	37
36	NC	PETn1	35
34	NC	GND	33
32	NC	PERp1	31
30	NC	PERn1	29
28	NC	GND	27
26	NC	PETp2	25
24	NC	PETn2	23
22	NC	GND	21
20	NC	PERp2	19
18	3.3 V	PERn2	17
16	3.3 V	GND	15
14	3.3 V	PETp3	13
12	3.3 V	PETn3	11
10	DAS/DSS	GND	9
8	NC	PERp3	7
6	NC	PERn3	5
4	3.3 V	GND	3
2	3.3 V	GND	1

2.4.7 M.2 3042/3052 B-Key (CN13)

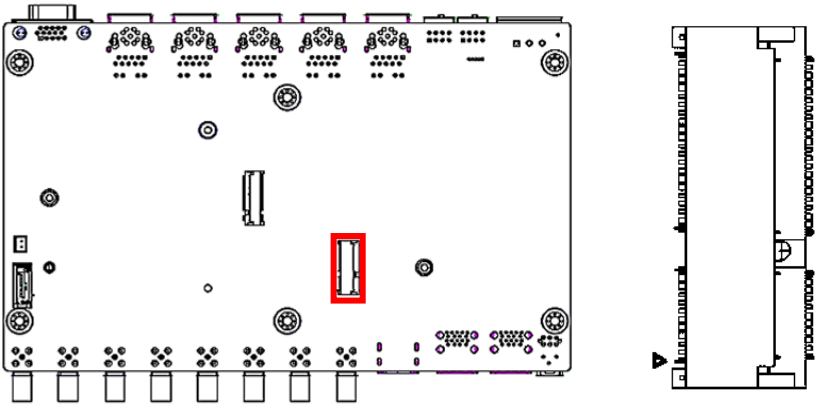




Pin	Signal	Signal	Pin
74	3.3 V	CONFIG_2	75
72	3.3 V	GND	73
70	3.3 V	GND	71
68	SUSCLK(32kHz)	CONFIG_1	69
66	SIM DETECT	RESET#	67
64	COEX_RXD	ANTCTL3	65
62	COEX_TXD	ANTCTL2	63
60	COEX3	ANTCTL1	61
58	NC	ANTCTL0	59
56	NC	GND	57
54	PEWAKE#	NC	55
52	CLKREQ#	NC	53
50	PERST#	GND	51
48	UIM2-PWR	NC	49
46	UIM2-RESET	NC	47
44	UIM2-CLK	GND	45
42	UIM2-DATA	NC	43
40	GPIO_0/SMB_CLK	NC	41
38	DEVSLP	GND	39
36	UIM1-PWR	USB3.1-Tx+	37
34	UIM1-DATA	USB3.1-Tx-	35
32	UIM1-CLK	GND	33
30	UIM1-RESET	USB3.1-Rx+	31
28	GPIO_8	USB3.1-Rx-	29

Pin	Signal	Signal	Pin
26	GPIO_10	GND	27
24	GPIO_7	DPR	25
22	GPIO_6	GPIO_11	23
20	GPIO_5	CONFIG_0	21
		Key B	
		Key B	
		Key B	
		Key B	
		GND	11
10	GPIO_9/DAS/DSS/LED_1#	USB_D-	9
8	W_DISABLE1#	USB_D+	7
6	FULL_CARD_POWER_OFF#	GND	5
4	3.3 V	GND	3
2	3.3 V	CONFIG_3	1

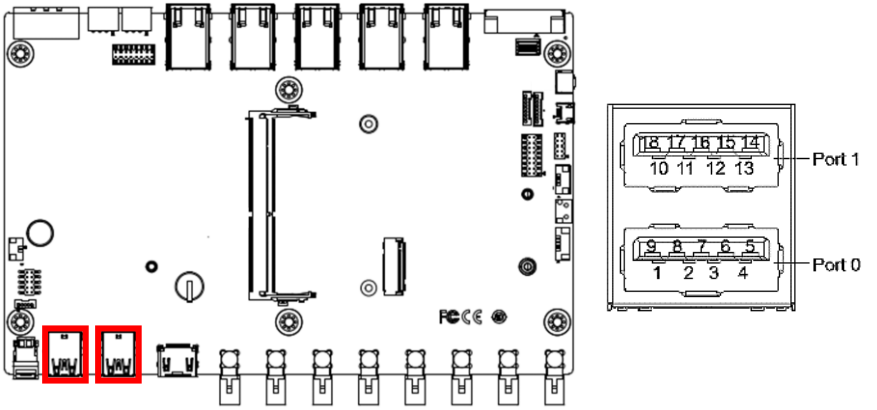
2.4.8 M.2 2230 E-Key (CN9)



Pin	Signal	Signal	Pin
74	3.3V	GND	75
72	3.3V	RESERVED/REFCLKn1	73
70	NC	RESERVED/REFCLKp1	71
68	NC	GND	69
66	NC	RESERVED/PERn1	67
64	RESERVED	RESERVED/PERp1	65
62	ALERT#	GND	63
60	I2C_CLK	RESERVED/PETn1	61

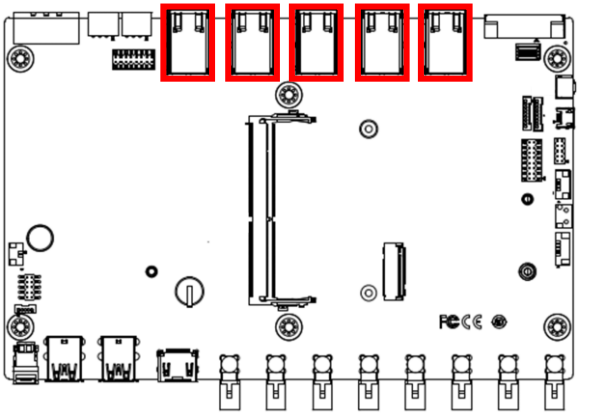
Pin	Signal	Signal	Pin
58	I2C_DATA	RESERVED/PETp1	59
56	W_DISABLE1#	GND	57
54	W_DISABLE2#	PEWAKE0#	55
52	PERST0#	CLKREQ0#	53
50	SUSCLK(32kHz)	GND	51
48	NC	REFCLKn0	49
46	NC	REFCLKp0	47
44	NC	GND	45
42	NC	PERn0	43
40	NC	PERp0	41
38	NC	GND	39
36	NC	PETn0	37
34	NC	PETp0	35
32	NC	GND	33
		Key E	
		Key E	
		Key E	
		Key E	
		NC	23
22	NC	NC	21
20	UART WAKE#	NC	19
18	GND	NC	17
16	NC	NC	15
14	I2S SD_OUT	NC	13
12	I2S SD_IN	NC	11
10	I2S WS	NC	9
8	I2S SCK	GND	7
6	NC	USB_D-	5
4	3.3V	USB_D+	3
2	3.3V	GND	1

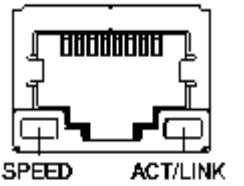
2.4.9 USB 3.2 Gen 2 Type-A Ports (CN18/CN19)



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+

2.4.10 RJ-45 LAN Ports (CN10/CN21/CN23/CN25/CN27)

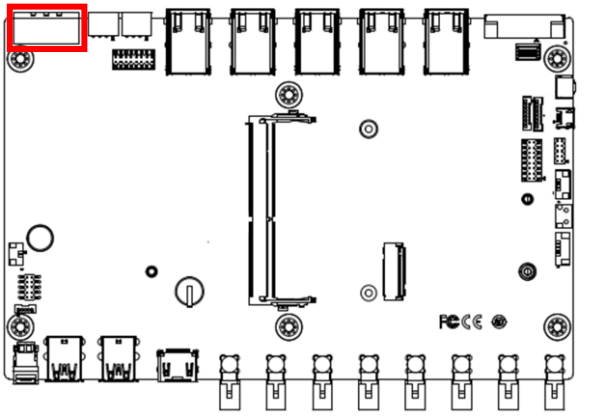


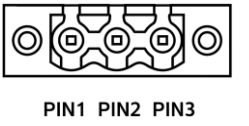


Pin	Signal	Pin	Signal
1	MDI0+	2	MDI0-
3	MDI1+	4	MDI1-
5	MDI2+	6	MDI2-
7	MDI3+	8	MDI3-

Note: CN21 for OOB.

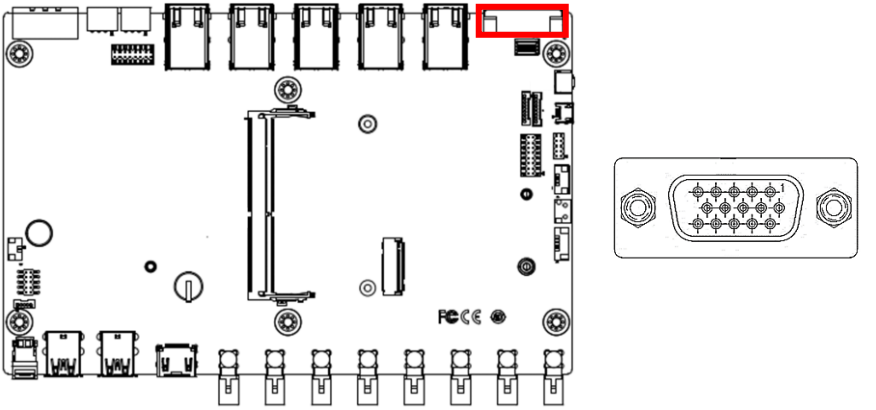
2.4.11 Power Connector (CN34)





Pin	Signal	Pin	Signal
1	DC Positive	2	DC Negative
3	Igniter	4	

2.4.12 RS-232/485 & DIO Connector (CN7/SW1)

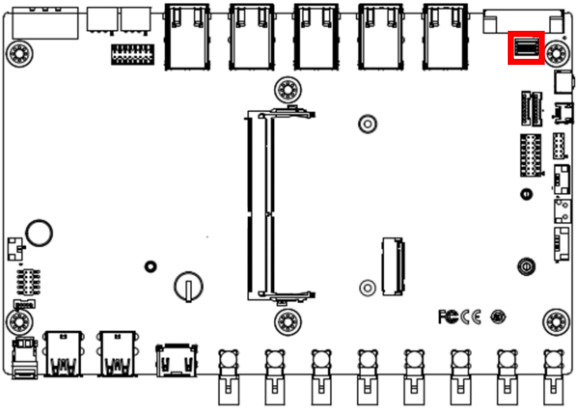


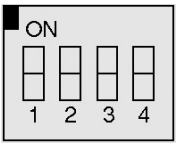
Pin	RS-232	RS-422	RS-485
1		TX-	D-
2	RXD	TX+	D+
3	TXD	RX+	
4		RX-	
5	GND		

Pin	Function	GPIO No.
6	SYSFS_P00_LS	
7	SYSFS_P01_LS	
8	SYSFS_P02_LS	
9	SYSFS_P03_LS	
10	GND	
11	SYSFS_P04_LS	
12	SYSFS_P05_LS	
13	SYSFS_P06_LS	
14	SYSFS_P07_LS	
15	GND	

GPIO controlled via I2C using the TCA9539PWR controller through software.

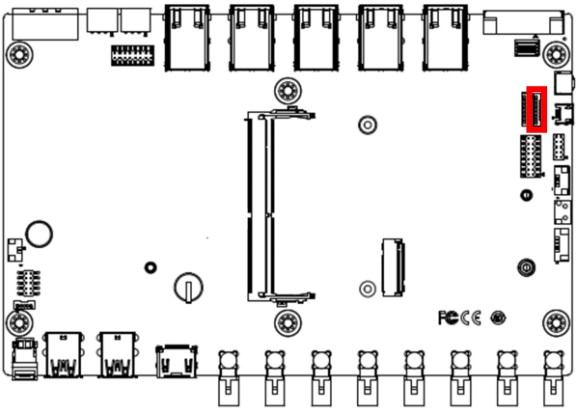
2.4.13 RS-232/422/485 Select (SW1)

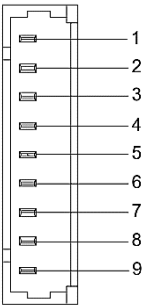




Mode	S-1	S-2	S-3	S-4
1T/1R RS-232	On	On		
1T/1R RS-422	On	Off		
1T/1R RS-485	Off	On		
Low Power Shutdown	Off	Off		
250kbps for RS-232 and RS-485				On
RS-232 to 3Mbps and RS-485 to 20Mbps				Off
Enable RS-485 Bias and Termination Resistors.			On	
Disable RS-485 Bias and Termination Resistors.			Off	

2.4.14 CANBus Connector (CN6)



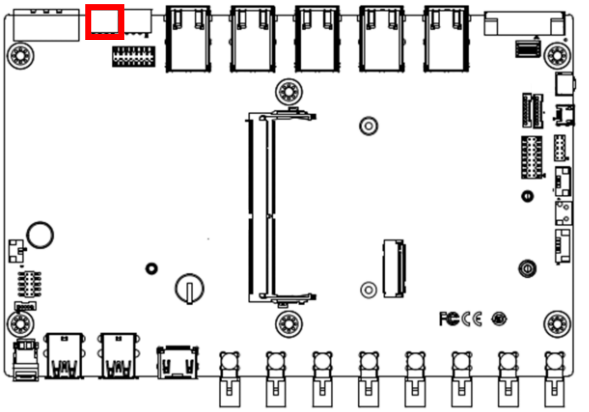


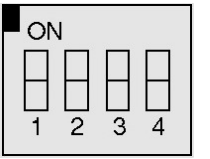
Pin	Signal
1	
2	
3	CAN L
4	CAN H
5	
6	
7	
8	
9	GND

2.4.15 ACC ON Delay Minutes Setting Table (SW2)

JP1 PIN NUMBER			
5, 6	3, 4	1, 2	Delay Time
OFF OPEN	OFF OPEN	OFF OPEN	1 sec.
OFF OPEN	OFF OPEN	ON SHORT	3 sec.
OFF OPEN	ON SHORT	OFF OPEN	5 sec.
OFF OPEN	ON SHORT	ON SHORT	10 sec.
ON SHORT	OFF OPEN	OFF OPEN	15 sec.
ON SHORT	OFF OPEN	ON SHORT	20 sec.
ON SHORT	ON SHORT	OFF OPEN	25 sec.
ON SHORT	ON SHORT	ON SHORT	30 sec.
3	2	1	
SW2 SETING			

2.4.16 ACC AT/ATX Mode Selection (SW2)





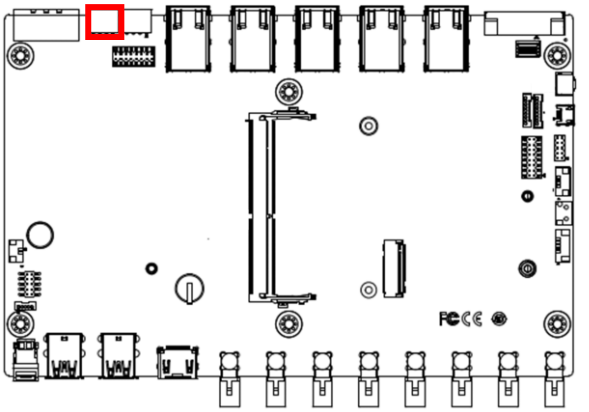
JP1 PIN NUMBER 13, 14	MODE SEL
ON SHORT	AT System
OFF OPEN	ATX System

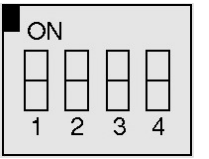
4
SW2 SETING

2.4.17 ACC OFF Delay Minutes Setting Table (SW3)

JP1 PIN NUMBER			
11, 12	9, 10	7, 8	Delay Time
OFF OPEN	OFF OPEN	OFF OPEN	1 min.
OFF OPEN	OFF OPEN	ON SHORT	3 min.
OFF OPEN	ON SHORT	OFF OPEN	5 min.
OFF OPEN	ON SHORT	ON SHORT	10 min.
ON SHORT	OFF OPEN	OFF OPEN	30 min.
ON SHORT	OFF OPEN	ON SHORT	60 min.
ON SHORT	ON SHORT	OFF OPEN	120 min.
ON SHORT	ON SHORT	ON SHORT	0min.
3	2	1	
SW3 SETING			

2.4.18 ACC MCU Control Setting (SW3)

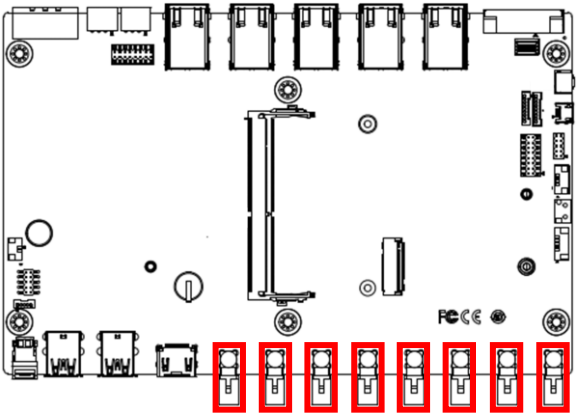




JP1 PIN NUMBER 15, 16	
ON SHORT	MCU control
OFF OPEN	Non MCU control

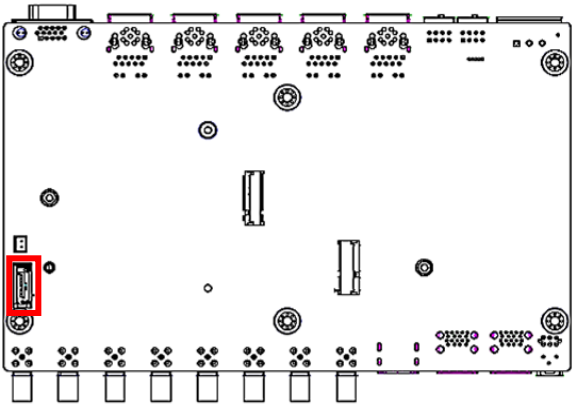
4 SW3 SETING

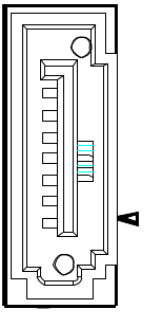
2.4.19 GMSL2 Connector (J1~J8)



Note: Power over Coax (12V).

2.4.20 SATA Connector (CN28)



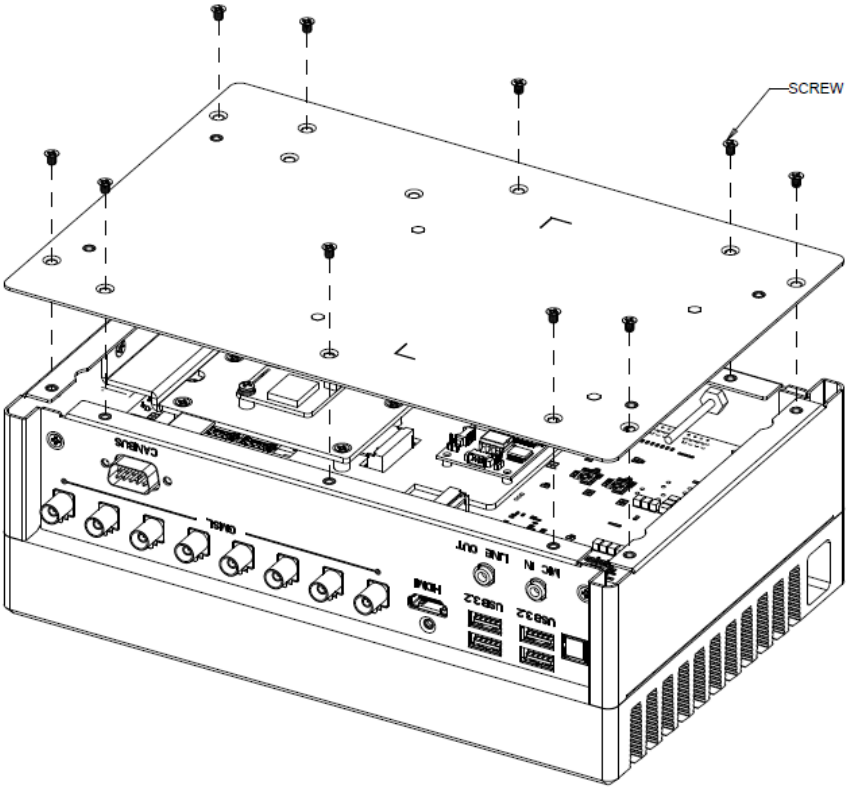


Pin	Signal
1	GND
2	SATA_TXP
3	SATA_TXN
4	GND
5	SATA_RXN
6	SATA_RXP
7	GND

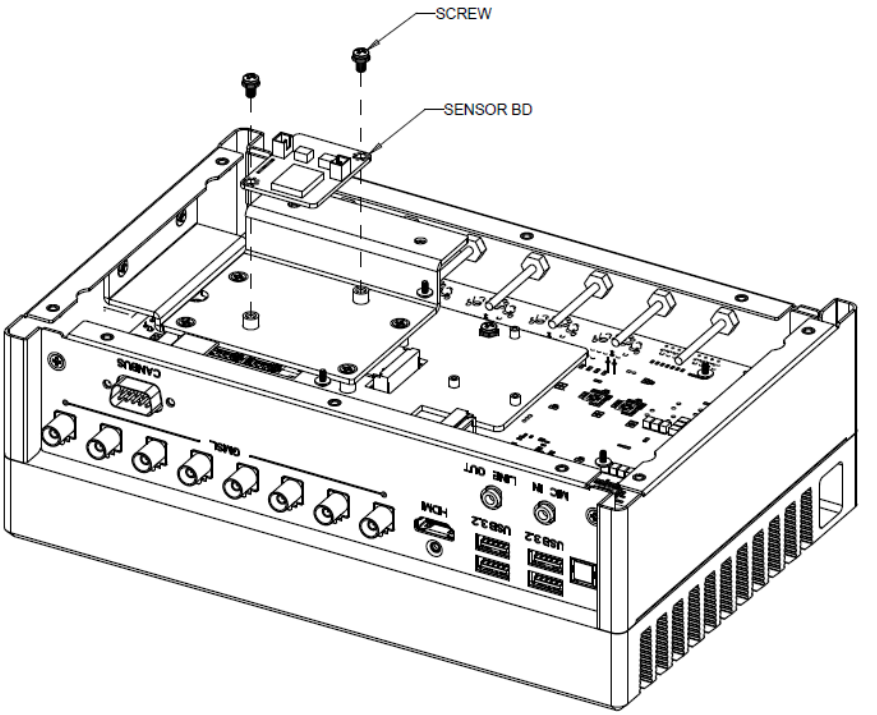
2.5 Hardware Installation

2.5.1 Sensor Board Installation

Step 1: Remove the bottom cover of the system by removing the ten (10) screws, as shown below.



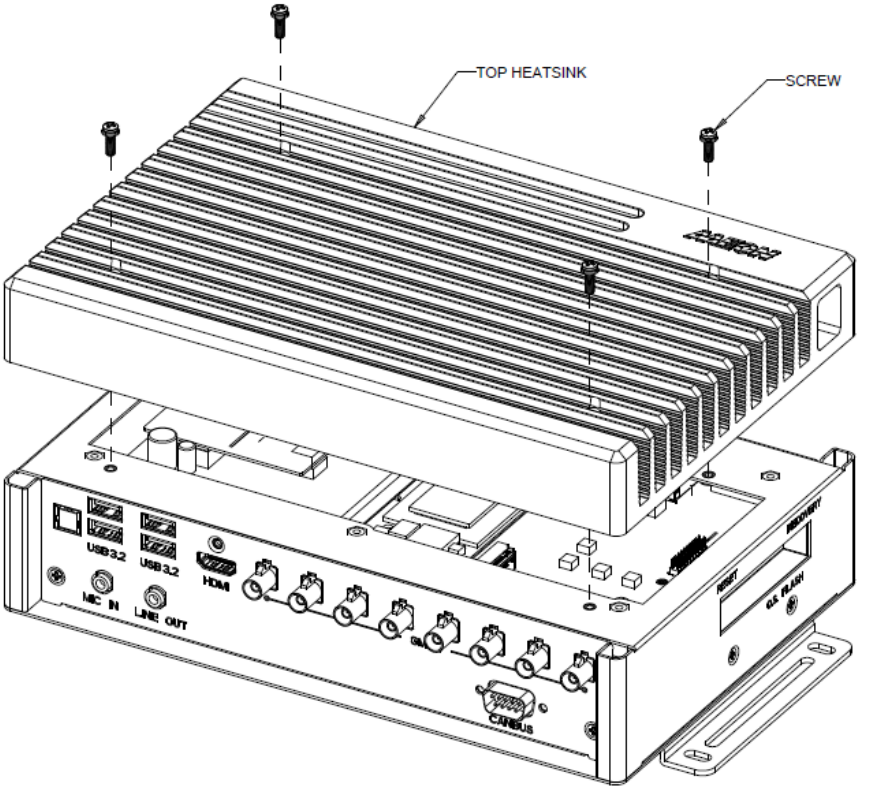
Step 2: Affix the sensor board to the bracket using the two (2) screws as shown below.



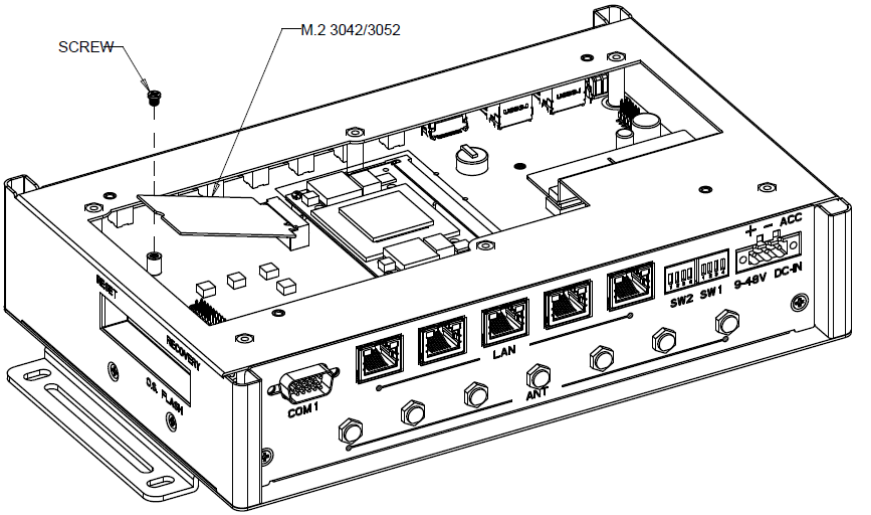
2.5.2 M.2 Expansion Card Installation

Before installing your M.2 expansion module(s), ensure the system is powered down and disconnect the power cord from the system. Make sure you have the module(s) ready to install.

Step 1: Remove the top heatsink of the chassis by removing the four (4) screws, as shown.

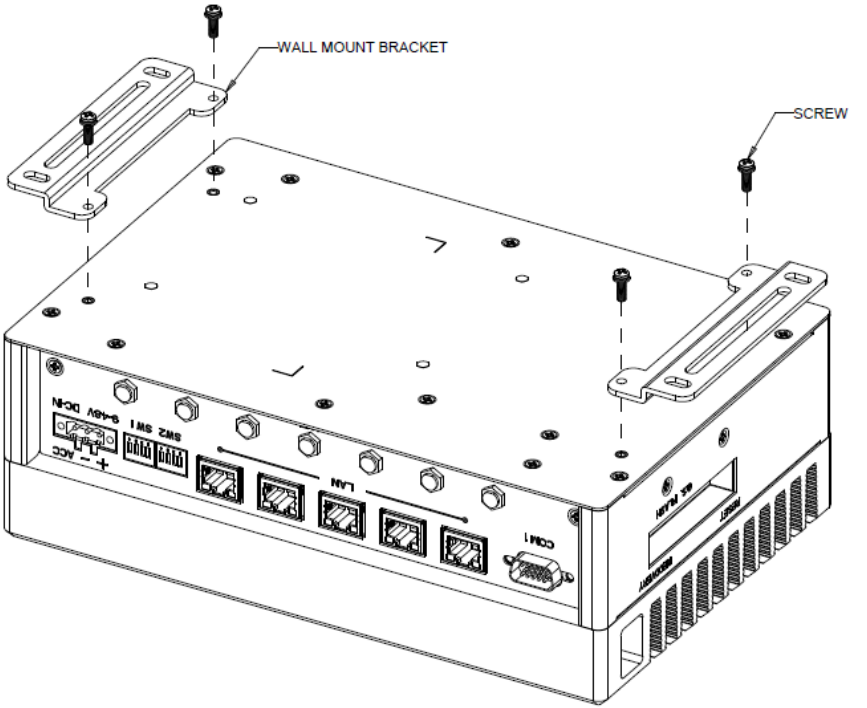


Step 2: Note the location of each M.2 Key slot. Follow standard installation procedures, inserting the module at a 45° angle, then affixing the module(s) using the screw(s) as shown.



2.5.3 Wall Mount Bracket Installation

Step 1: Affix the two wall mount brackets to the bottom side of the chassis using the four (4) screws, as shown.



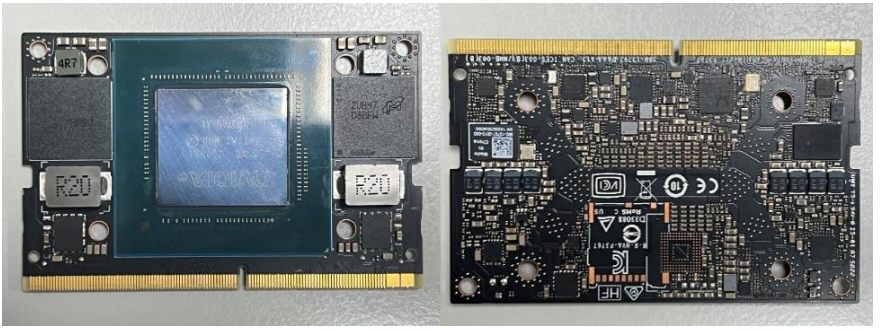
Chapter 3

BSP Flash Guide

3.1 Before Installation

Before starting the process, ensure that your BOXER-8655AI system is turned off and disconnected from power. You will also need a Host PC running Ubuntu 20.04/22.04, and make sure that the NVIDIA Jetson Orin NX module is installed on the BOXER-8655AI 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 "BOXER-8655AI_J6.0.0_A00_1.0.0_20240918.tar.gz" into the directory of your Host PC running Ubuntu 20.04/22.04.

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.

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 BOXER-8655AI_J6.0.0_A00_1.0.0_20240918.tar.gz
```

Note: Do not decompress the file (Internal.tar.gz) 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:

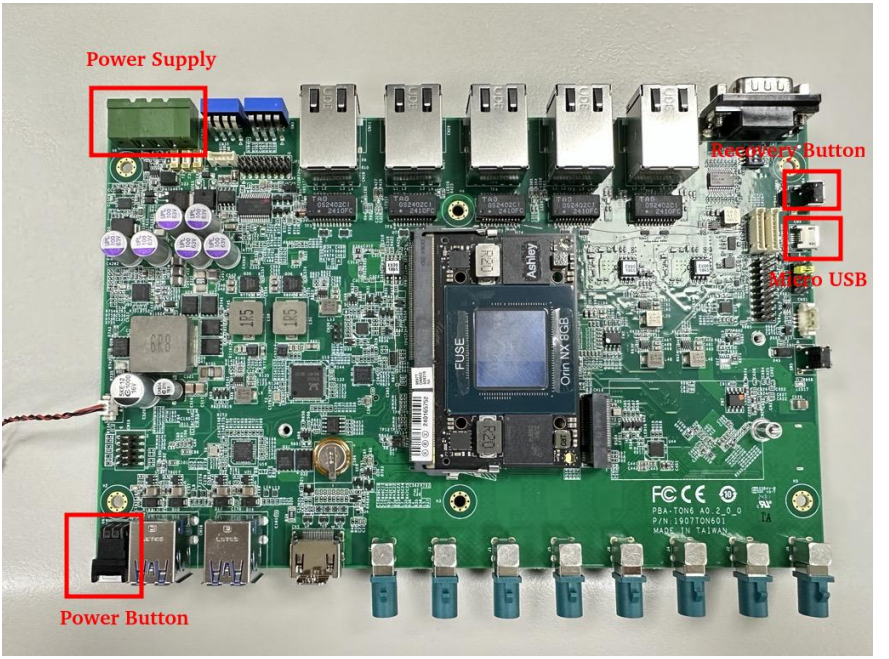
1. Connect the Micro-USB plug on the USB cable to the Recovery Port on the BOXER-8655AI and the other end to an available USB port on the Host PC.
2. Connect the BOXER-8655AI power supply.
3. Press and hold the recovery key button. While holding the recovery key button, power on the system, and continue to hold the recovery key button for two seconds before release, then BOXER-8655AI should enter recovery mode.
4. To check if device is in recovery mode, enter lsusb command in terminal on Host

```
$ lsusb | grep "0955:7523"
```

If successful, the command will return "0955:7223 Nvidia Corp"

```
Bus 001 Device 018: ID 0955:7523 NVidia Corp.
```

Note: Recovery mode can't be initiated while Jetson Orin NX module is disassembled. Ensure the 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 BOXER-8655AI.

1. Open a terminal on the Ubuntu Host PC, then navigate the folder you extracted in the previous section.
2. Enter the following command in the terminal to create the image for the first time. This command will also flash the image:

   ```
   $ ./flashboxer -s 62517420 nvme
   ```

3. Please wait until the image is fully installed. Once the installation is complete, you should see a similar message prompt to the one shown in below picture:

4. For subsequent flashes, you can update up to 10 targets simultaneously using the following command:

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

3.4 Check BSP Version

Once the flash image is successfully installed, the system 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

BOXER-8655AI_J6.0.0_A00_1.0.0_20240918

{PJ_IF}_{JPV_IF}_A00_{IMGV_IF}_{BD_IF}

For example:

BOXER-8655AI_J6.0.0_A00_1.0.0_20240918

Note: Filename may differ from this example.

{PJ_IF} is Project Information; e.g. BOXER-8655AI

{JPV_IF} is Jetpack Version; e.g. J6.0.0

{IMGV_IF} is Build Version; e.g. 1.0.0

{BD_IF} is Build Date; e.g. 20240918

Chapter 4

OS User Guide

4.1 Introduction

The BOXER-8655AI Ubuntu/Linux OS version and preinstalled SDK components are as follows:

For Jetpack 6.0.0 rev2 (l4t 36.3)

1. Ubuntu/Linux version
    a. Ubuntu version: 22.04.4
    b. Kernel version: 5.15.136-tegra
    c. UEFI firmware version: 36.3.0-gcid-36191598
2. Built-in all Jetson SDK Components
    a. CUDA 12.2.1
    b. cuDNN 8.9.4
    c. TensorRT 8.6.2
    d. OpenCV 4.8
    e. Vulkan 1.3
    f. VPI 3.1
    g. NVIDIA Container Runtime 2.1
    h. Multimedia API 36.3.0
    i. Nsight Systems 2024.2
    j. Nsight Graphics 2023.4
    k. Nsight Perf SDK 2023.5
    l. Deepstream 7.0
3. Built-in Allxon DMS
    a. Please refer https://www.allxon.com/solutions

Default login user/password:

Account: aaeon

Password: aaeon

4.2 Update Note

Running **$ sudo apt upgrade** command in terminal will overwrite the **AAEON kernel device tree(.dtb)/kernel image(Image)/bootloader** in OS, which may result in unexpected outcomes, such as the loss of I/O ports.

To prevent this, **AAEON disables the NVIDIA apt repository by default** for updating NVIDIA apt packages.

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/

4.3 Power Mode for BOXER-8655AI

NVIDIA Jetson Orin NX power mode can be selected and monitored via GUI, pls refer following picture:

Note: Power mode is dependent on DRAM size. For more detailed information please visit: https://developer.nvidia.com/embedded/jetson-modules

4.4 DIO/GPIO Setting Command for BOXER-8655AI

1. GPIO test command:

   Please refer to HW DIO/GPIO section for PIN Number and GPIO ID mapping. Take "GPIO ID:PQ.05" as an example on JetPack 6.0.0 :

   # Set the output value

   # high

   $ sudo gpioset --mode=wait $(sudo gpiofind " PQ.05")=1

   # low

   $ sudo gpioset --mode=wait $(sudo gpiofind " PQ.05")=0

   # Set GPIO direction to input mode and read the input value of GPIO

   $ sudo gpioget $(sudo gpiofind " PQ.05")

2. FAN PWM control command:

   Stop NV fan control daemon

   $ sudo systemctl stop nvfancontrol

   Set PWM value

   $ echo [PWM_duty_cycle] > /sys/devices/platform/pwm-fan/hwmon/hwmon<x>/pwm1

* Where:

  [PWM_duty_cycle] is a value in the range [0, 255].

  <x> is a kernel enumerated number for fan hwmon.