

User Manual

Rev042324

AIR-030

Edge AI System



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Attention!

This product contains a hard copy of the Chinese user manual for China CCC certification purposes. A PDF of the English user manual is included on the accompanying CD. Please disregard the hard copy Chinese user manual if the product is not sold and/or installed in China.

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Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for assistance.

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Warnings, Cautions, and Notes

Warning! Warnings indicate conditions that if not observed can cause personal injury!



Les avertissements indiquent des conditions qui, si elles ne sont pas observées, peuvent entraîner blessure!

Caution! Cautions are included to help prevent hardware damage and data losses. For example:



“Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.”
Des précautions sont incluses pour éviter les dommages matériels et les données pertes.

Note! Notes provide additional optional information.



Packing List

Before system installation, check that the items listed below are included and in good condition. If any item does not accord with the list, contact your dealer immediately.

- 1 x AIR-030 unit
- 1 x Registration and 2-year warranty card
- 1 x China RoHS
- 1 x Simplified Chinese user manual

Ordering Information

Model Number	Description
AIR-030-B90A1	Edge AI NVIDIA AGX Orin 32G inference system
AIR-030-S30A1	Edge AI NVIDIA AGX Orin 64G inference system

Optional Accessories

Optional Item for Default SKU

Part Number	Description
96PSA-A150W19P4-4	Power adapter 100-240V 150W 19V
1702002600	Power cord UL 3P 10A 125V 183 cm (US)
1702002605	Power cord EU 3P 2.5A 250V 183 cm (EU)
1702031801	Power cord BSI 3P 2.5A 250V 183 cm (UK)
1700000237	Power cable, 3-Pin 183cm, PSE type

Optional Items for Expansion Kit

Part number	Description
AMO-0301	AIR-030 1 x PCIe*16 Riser card
AMK-A0045	Thermal Kit for using PoE/5G on AIR-030

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. By means of a power cord connected to a socket-outlet with earthing connection.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient over-voltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning, or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below $-40\text{ }^{\circ}\text{C}$ ($-40\text{ }^{\circ}\text{F}$) or above $85\text{ }^{\circ}\text{C}$ ($185\text{ }^{\circ}\text{F}$) as this may damage the components. The equipment should be kept in a controlled environment.
16. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box.
17. **CAUTION:** Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
18. Always disconnect the power cord from the chassis before manually handling the hardware. Do not implement connections or configuration changes while the device is powered on. Sudden power surges may damage sensitive electronic components.
19. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).
20. **DISCLAIMER:** These instructions are provided according to IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein.
21. This product is intended to be supplied by an UL Listed power Adapter, or DC power source, rated: 9~36Vdc, 16.66-4.16A, T_{ma}=60 degrees C, if need further

assistance, please contact Advantech for further information (Tma 50 degree C=Operating temperature)

22. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.

Consignes de Sécurité

1. Veuillez lire attentivement ces instructions de sécurité.
2. Veuillez conserver ce manuel de l'utilisateur pour référence ultérieure.
3. Veuillez débrancher cet équipement de la prise secteur avant le nettoyage. Utilisez un chiffon humide. Ne pas utiliser de détergent liquide ou pulvérisé pour le nettoyage. Utilisez une feuille ou un chiffon humide pour le nettoyage.
4. Pour les équipements enfichables, la prise de courant doit être à proximité de l'équipement et doit être facilement accessible.
5. S'il vous plaît garder cet équipement de l'humidité.
6. Posez cet équipement sur une surface fiable lors de l'installation. Une chute ou une chute pourrait causer des blessures.
7. Les ouvertures sur le boîtier sont destinées à la convection d'air, protégeant ainsi l'équipement de la surchauffe. **NE COUVREZ PAS LES OUVERTURES.**
8. Au moyen d'un cordon d'alimentation connecté à une prise de courant avec mise à la terre.
9. Placez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez rien sur le cordon d'alimentation.
10. Tous les avertissements et mises en garde sur l'équipement doivent être notés.
11. Si l'appareil n'est pas utilisé pendant une longue période, débranchez-le du secteur pour ne pas être endommagé par une surtension transitoire.
12. Ne jamais verser de liquide dans les ouvertures de ventilation; Cela pourrait provoquer un incendie ou un choc électrique.
13. N'ouvrez jamais l'équipement. Pour des raisons de sécurité, seul le personnel de maintenance qualifié doit ouvrir l'équipement.
14. Si l'une des situations suivantes se présente, faites vérifier le matériel par le personnel de service:
 - Le cordon d'alimentation ou la fiche est endommagé.
 - Un liquide a pénétré dans l'appareil.
 - L'équipement a été exposé à l'humidité.
 - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
 - Equipment L'équipement est tombé et a été endommagé.
 - Equipment L'équipement présente des signes évidents de rupture.
15. Ne laissez pas cet équipement dans un environnement où la température de stockage peut être inférieure à -40° C (-40° F) ou supérieure à 85° C (185° F). Cela pourrait endommager l'équipement. L'équipement doit être dans un environnement contrôlé.
16. Tout composant non vérifié peut causer des dommages inattendus. Pour garantir une installation correcte, veuillez toujours utiliser les composants (ex. Vis) fournis avec la boîte d'accessoires.
17. **ATTENTION:** L'ordinateur est équipé d'un circuit d'horloge temps réel alimenté par batterie. Il y a un risque d'explosion si la batterie est remplacée de manière incorrecte. Remplacez uniquement avec le même type ou un type équivalent recommandé par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.

18. Débranchez toujours complètement le cordon d'alimentation de votre châssis lorsque vous utilisez du matériel. Ne faites pas de connexion quand l'appareil est sous tension. Les composants électroniques sensibles peuvent être endommagés par des surtensions soudaines.
19. Niveau de pression acoustique au poste de l'opérateur selon la norme CEI 704-1: 1982 n'est pas supérieur à 70 dB (A).
20. **AVERTISSEMENT:** Cet ensemble d'instructions est donné conformément à la norme CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans ce.
21. Ce produit est destiné à être alimenté par un adaptateur secteur répertorié UL ou une source d'alimentation CC, évalué: 9~36Vdc, 16.66-4.16A, Tma = 50 degrés C, si besoin d'assistance supplémentaire, veuillez contacter Advantech pour plus d'informations. (Tma 50 degrés C = Fonctionnement Température)
22. **ZONE D'ACCES RESTREINTE:** L'équipement ne doit être installé que dans une zone d'accès restreint.

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Chapter 1

General Introduction

This chapter gives background information on AIR-030 series.

1.1 Introduction

Advantech's AIR-030 is a high-end series of edge AI systems powered by NVIDIA Jetson. Featuring a robust design with dimensions of 200 x 220 x 74 mm (7.87" x 8.66" x 2.91"), the AIR-030 series delivers energy-efficient with powerful AI inferencing capabilities by utilizing NVIDIA Jetson AGX Orin 32G and 64 SoM.

Next-Level and powerful AI Performance with NVIDIA Jetson AGX Orin

AIR-030 is powered by the NVIDIA Jetson AGX Orin 32G and 64G SoM, which providing high computing power for CPU performance up to 12 cores and delivering up to 275 TOPS AI performance. AIR-030 is designed to serve as an industrial-grade system with ruggedized chassis and aluminum heat sink. The AIR-030 supports wide-range 9 ~ 36Vdc input and wide operating temperatures (-10 ~ 55° C; 14 ~131° F).

Comprehensive I/O and connectivity: camera, wireless, and peripheral integration

Advantech's AIR-030 series features diverse I/O ports — including 4 x USB 3.2 Type A, USB 3.2 Type C, 3 x 2.5 GbE, 4 x RS-232/422/485, 1 x DIO, and CANBus for data acquisition and communication. The AIR-030 series supports multiple expansions to better accommodate wireless modules and advanced edge AI applications, with 1 x M.2 B key 2280/3052 for NVME storage and 5G connectivity, 1 x M.2 2230 E key for Wi-Fi connectivity, and 1 x PCIe x16 slot for additional function card support.

1.2 Product Features

1.2.1 General

	AIR-030-B90A1	AIR-030-S30A1
CPU	8-core Arm Cortex-A78AE	12-core Arm Cortex-A78AE
GPU	1792-core NVIDIA Ampere™ GPU with 56 Tensor Cores	2048-core NVIDIA Ampere™ GPU with 64 Tensor Cores
Memory	32GB LPDDR5	64GB LPDDR5
Storage	64GB eMMC 5.1	64GB eMMC 5.1
Ethernet	3 x 2.5GbE	3 x 2.5GbE
Serial Port	4 x RS-232/422/485	4 x RS-232/422/485
CANBus	2	2
DIO	16 bit	16 bit
USB Type A	4 x USB 3.2 Gen 2 2 x internal USB 2.0 for dongle	4 x USB 3.2 Gen 2 2 x internal USB 2.0 for dongle
USB Type C	1 x USB 3.2 Gen 2	1 x USB 3.2 Gen 2
Expansion	1 x M.2 2280 B Key 1 x M.2 2230 E Key 1 x PCIe x 16 (only support x8 Signal)	1 x M.2 2280 B Key 1 x M.2 2230 E Key 1 x PCIe x 16 (only support x8 Signal)

Note! The PCIe x 16 slot only support on dual layer SKU, please order AMO-0301 expansion kit to utilize PCIe x 16 function.



1.2.2 Display

- **Resolution:** 1x HDMI 2.0, max. 3840x2160@60Hz

1.2.3 Ethernet

- **Chipset:** Intel® i225LM
- **Speed:** 10/100/1000/2500 Mbps
- **Interface:** 3 x RJ45

1.2.4 I/O Ports and Expansion

- 1 x PCIe x16 (support x8 signal)
- 2 x internal USB2.0 Type A for USB dongle
- 1 x HDMI 2.0 max. 3840x2160@60Hz
- 4 x USB 3.2 Type A/1 x USB 3.2 Type C
- 1 x 16-bit DI/DO (DB25 connector)
- 4 x RS-232/RS-422/RS-485
- 2 x CANBus
- 1 x OTG Micro USB
- 1 x M.2 2230 E Key
- 1 x M.2 2280 B key

1.2.5 CPU

- **AIR-030-B90A1:** 8-core Arm Cortex-A78AE
- **AIR-030-S30A1:** 12-core Arm Cortex-A78AE

1.2.6 GPU

- **AIR-030-B90A1:** 1792-core NVIDIA Ampere GPU with 56 Tensor Cores
- **AIR-030-S30A1:** 2048-CORE NVIDIA Ampere GPU with 64 Tensor Cores

1.2.7 Audio

- **Audio Interface:** Realtek ALC5640, High Definition Audio, Line-Out

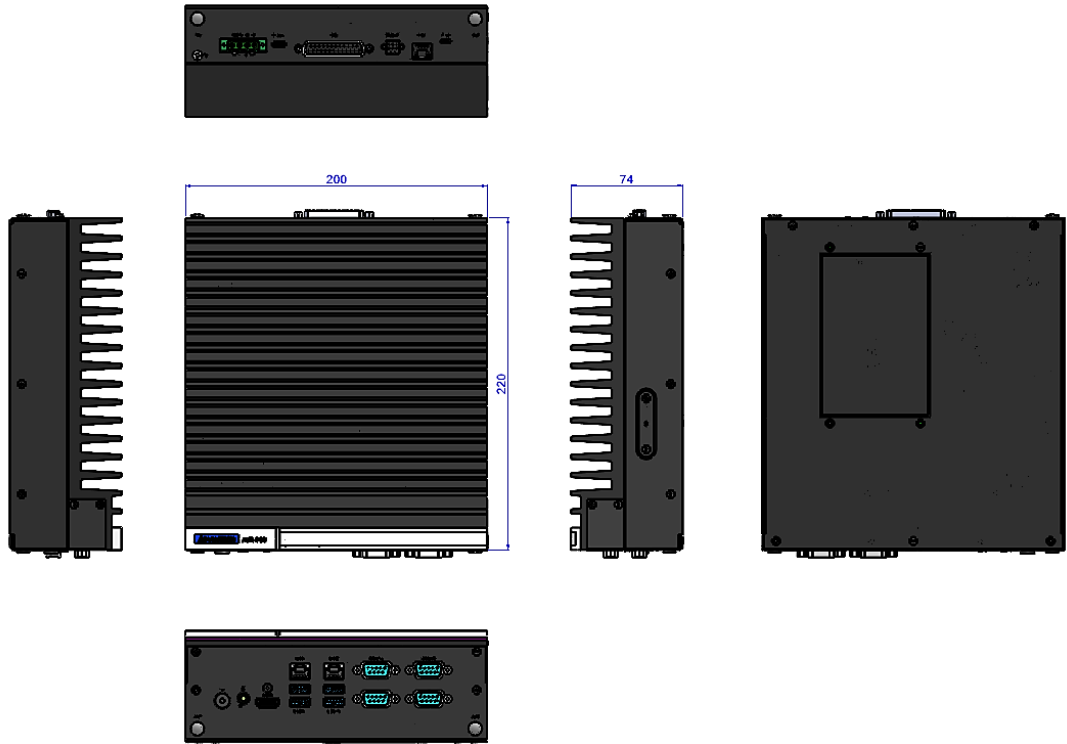
1.3 Mechanical Specifications

1.3.1 System Dimensions

AIR-030 single layer (standard)

AIR-030-B90A1/AIR-030-S30A1

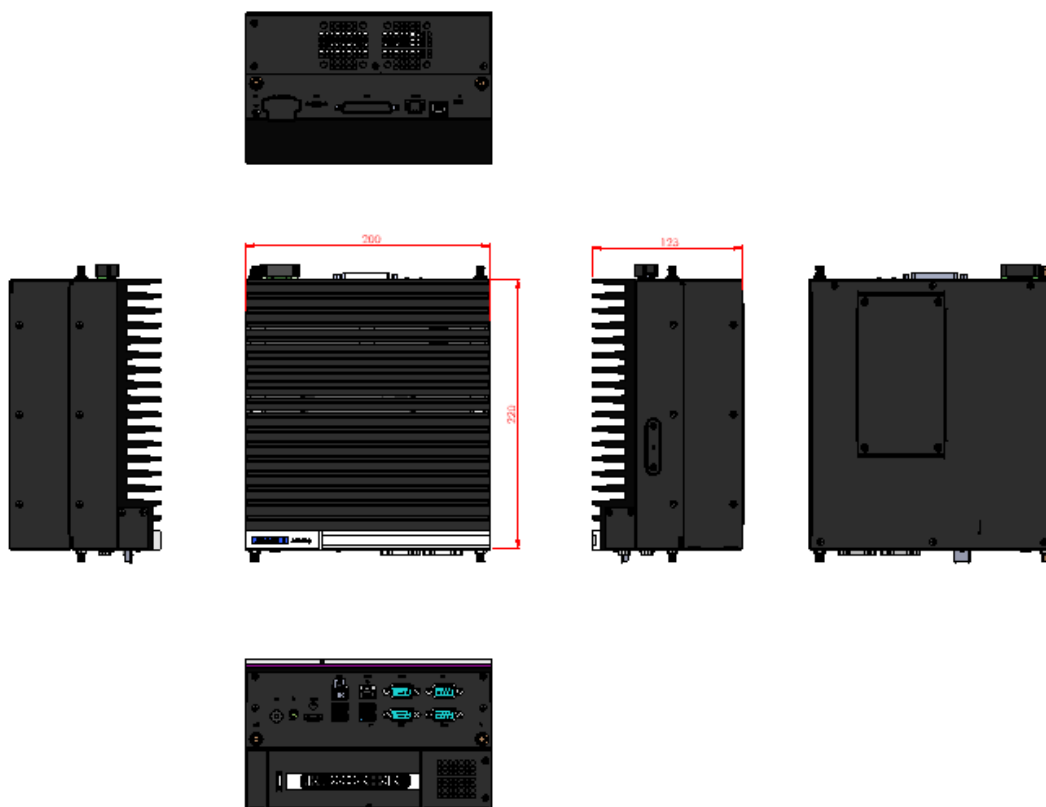
200 x 220 x 74mm (7.87 x 8.66 x 2.91 in)



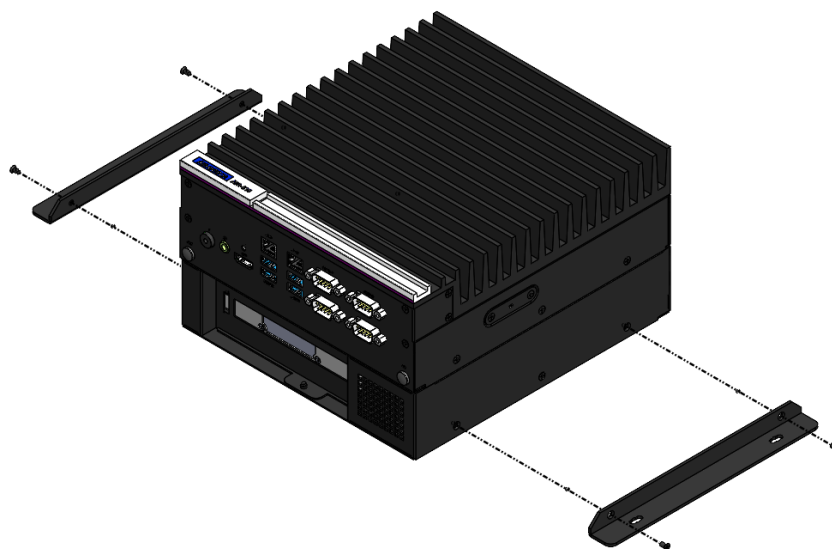
Wall mounting Kit



AIR-030 dual layer (optional)
200 x 220 x 123mm (7.87 x 8.66 x 4.84 in)



Wall mounting kit



1.3.2 Weight

AIR-030-B90A1/AIR-030-S30A1: 3.63 kg (8lb)

1.4 Power Requirements

1.4.1 System Power

- Power Input: DC In 9 ~36V

1.4.2 RTC Battery

- Lithium: 3V/220mAh

1.5 Environmental Specifications

1.5.1 Operating Temperature

- -10 ~ 60° C (-14 ~ 140° F), with 0.7m/s air flow

1.5.2 Relative Humidity

- 95% @ 40° C (104° F) (non-condensing)

1.5.3 Storage Temperature

- -40 ~ 85° C (-40 ~ 185° F)

1.5.4 Vibration Tolerance

- When the system is equipped with an M.2 SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis, (x, y, z) 3 axes

1.5.5 Shock Tolerance

- When the system is equipped with an M.2 SSD: 30 G, IEC 60068-2-27, half sine, 11 ms duration

1.5.6 Safety Certification

- UL, CB, and CCC

1.5.7 EMC Certification

- CE, FCC Class B, CCC, and BSMI

Chapter 2

Hardware Installation

This chapter details instructions for installing AIR-030 hardware and external I/O.

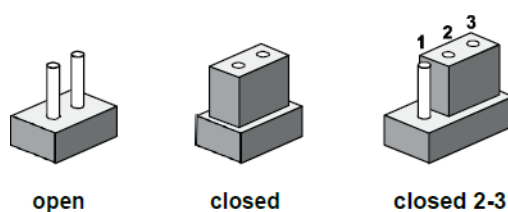
2.1 Introduction

The following sections demonstrate the internal jumper settings and the external connector pin assignments.

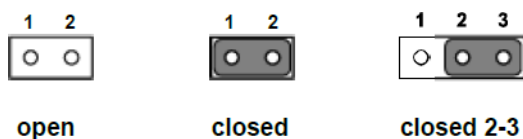
2.2 Jumpers

2.2.1 Jumper Description

AIR-030 can be configured to satisfy specific application requirements by setting jumpers. A jumper is a metal bridge used to close an electric circuit. 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, connect the pins with the clip. To open a jumper, remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. For these jumpers, connect either pins 1 and 2, or 2 and 3.



The jumper settings are schematically diagrammed in this manual as follows:



A pair of needle-nose pliers may be necessary when working with jumpers. Users with concerns regarding the ideal hardware configuration for your application should contact your local distributor or sales representative before making any changes. Usually, only a standard cable is required to make most connections.

2.2.2 Jumper List

Table 2.1: Jumper Setting	
Location	Function
RESET_RECOVER_1	System reset button
JPERSON1	AT/ATX Mode
COM1 SW1	COM1 RS232/422/485 mode selection
COM2 SW1	COM2 RS232/422/485 mode selection
COM4 SW1	COM3 RS232/422/485 mode selection
COM5 SW1	COM4 RS232/422/485 mode selection
UART5 SW	M.2 E-Key and COM5 UART interface selection
LAN3_MKE_SW1	M.2 E-Key and LAN3 PCIe interface selection
COM1_SAFE1	COM1 failsafe function selection
COM2_SAFE1	COM2 failsafe function selection
COM4_SAFE1	COM3 failsafe function selection
COM5_SAFE1	COM4 failsafe function selection

2.2.3 Jumper Location

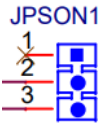
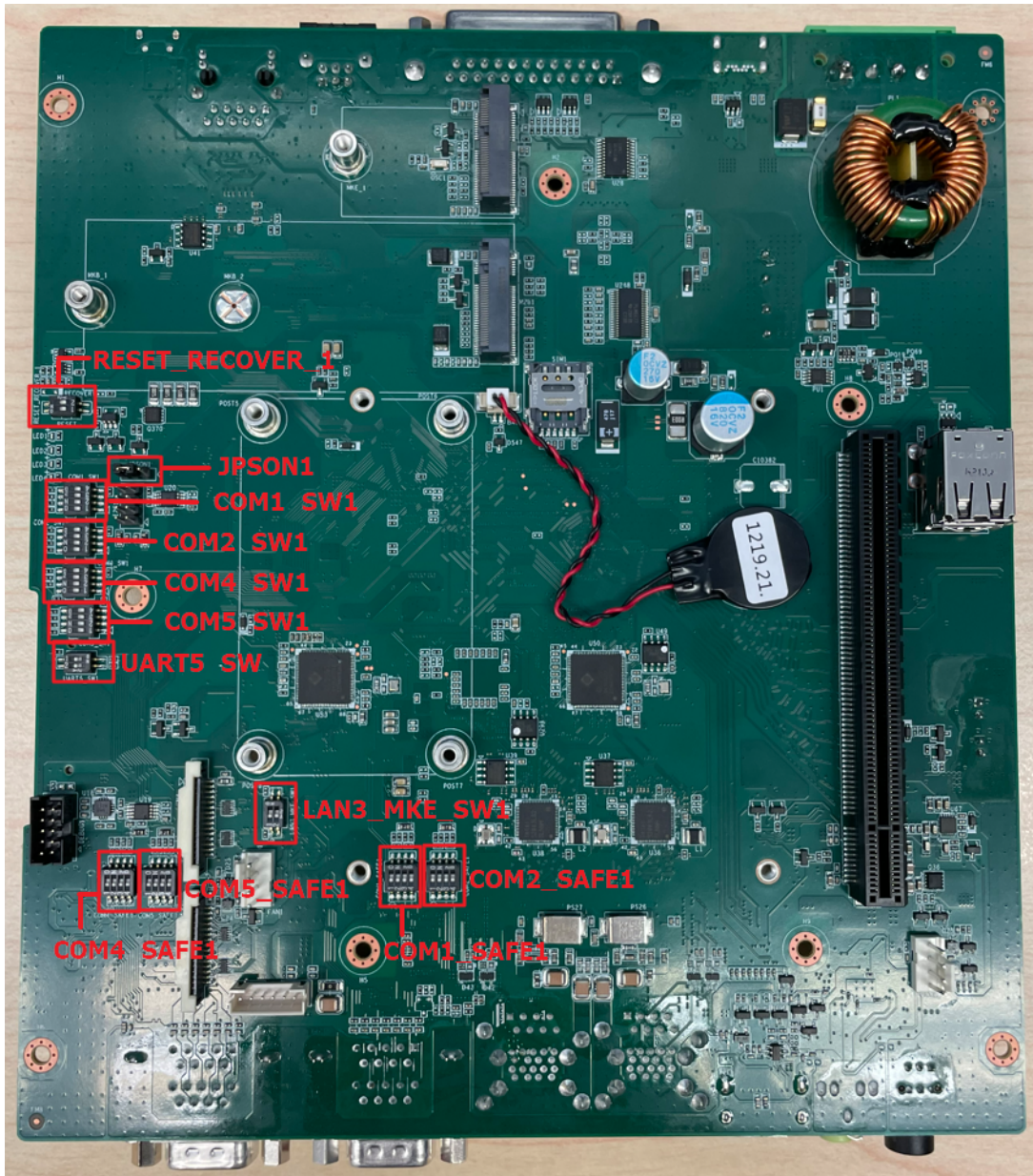


Table 2.2: JPSON1 AT/ATX Mode	
Default Setting	ATX (2-3)
Jumper Setting	AT(1-2)

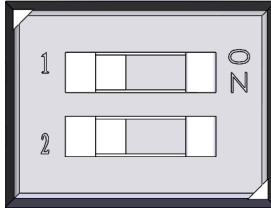


Table 2.3: Reset and Recovery Switch

	Mode/Description	Pin1	Pin2
RESET_RECOVER_1 Setting	Reset Device	ON: Enable OFF: Disable (Default)	-
	Recovery Device	-	ON: Enable OFF: Disable (Default)

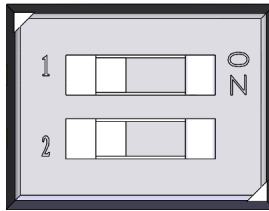


Table 2.4: M.2 E-Key and LAN3 PCIe Interface Selection

	Mode/Description	Pin1	Pin2
LAN3_MKE_SW1 Setting	M.2 E-Key/LAN3	ON: M.2 E-Key Enable OFF: LAN3 Enable (Default)	-

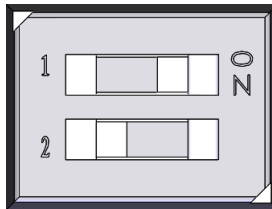


Table 2.5: M.2 E-Key and COM4 UART interface selection

	Mode/Description	Pin1	Pin2
UART5_SW1 Setting	COM4/M.2 E-Key	ON: COM4 Enable (Default) OFF: M.2 E-Key Enable	
	M.2 B-Key Signal		ON: USB3 OFF: PCIe (Default)

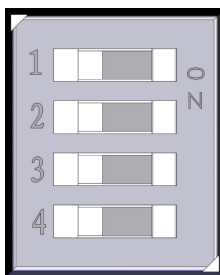


Table 2.6: COM Port Mode Selection					
	Mode/Description	Pin1	Pin2	Pin3	Pin4
COM1_SW1 (COM1) COM2_SW2(COM2) COM4_SW3(COM3) COM5_SW4(COM4) Setting	RS-232 (Default)	OFF	OFF	OFF	OFF
	RS-422	ON	OFF	ON: Termination Enable OFF: Termination Disable	OFF
	RS-485 (Software flow control)	ON	ON	OFF	ON
	RS-485 (Hardware flow control) Termination Enable	ON	ON	ON	ON: Receiver OFF: Transmitter

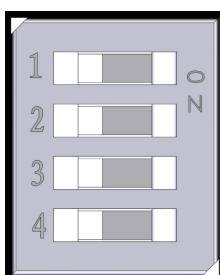
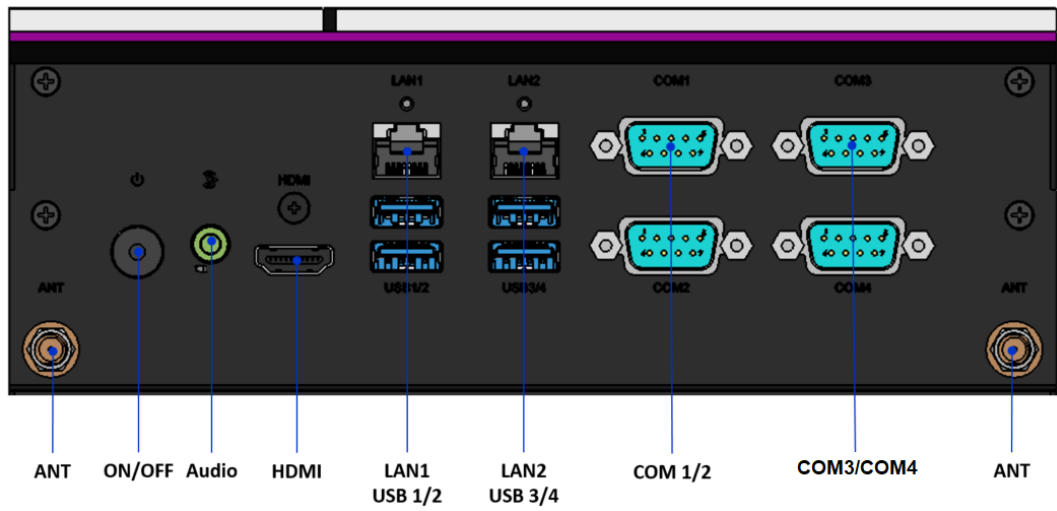


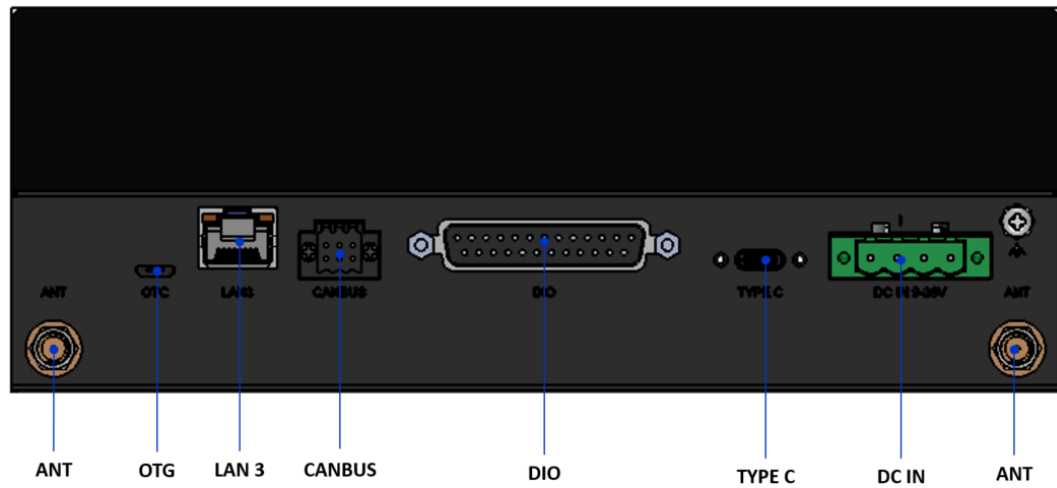
Table 2.7: COM Port Failsafe Function Selection					
	Mode/Description	Pin1	Pin2	Pin3	Pin4
COM1_SAFE1(COM1) COM2_SAFE2(COM2) COM4_SAFE3(COM3) COM5_SAFE4(COM4) Setting	Default	OFF	OFF	OFF	OFF
	RS422_TX/RX external pull up/down	ON	ON	ON	ON
	RS-485 TX external pull up/down	ON	ON	OFF	OFF

2.3 I/O Introduction

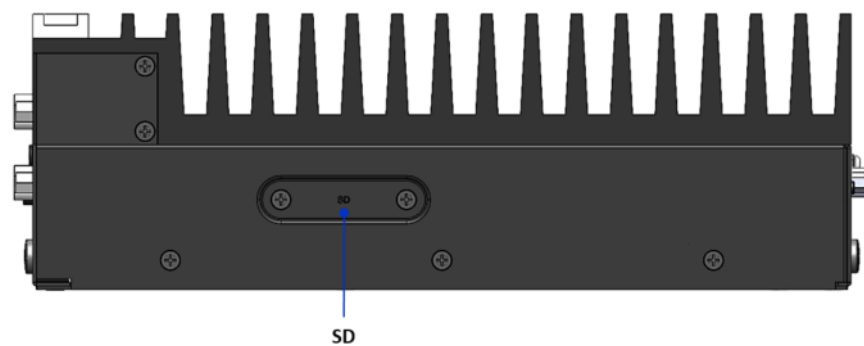
Front View



Rear View



Side View



2.4 External I/O

2.4.1 Power On/Off Button

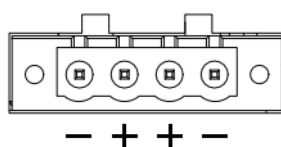
AIR-030 features a Power On/Off button with an LED indicators on the top side that show On status (Green LED).



Figure 2.1 Power On/Off Button

2.4.2 Power Input Connector

The power input connector supports DC in 9~36V.



2.4.3 LAN3 LED Indication

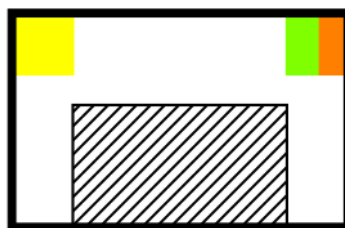


Table 2.8: LED Indication of RJ45 Connector (LAN3 I225LM)				
LED	Position	Color	LED State	NIC State
Link/ Activity	To the left of the connector	Yellow	On	Active Connection
			Blinking	Transmit/ Receive Activity
			Off	LAN link is not established
Link Speed	To the right of the connector	Green/Orange	orange	2500 Mbps /1000 Mbps
			Green	100 Mbps
			Off	10 Mbps

2.4.4 Ethernet Connector (LAN)

AIR-030 is equipped with three Intel® i225-LM Ethernet controllers connected to LAN1, LAN2 and LAN3. The Ethernet ports provide standard RJ-45 jack connectors, and only LAN3 with LED indicators on the sides to show Active/Link status (Yellow LED) and speed status (Orange/Green LED).

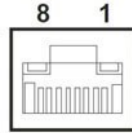


Figure 2.2 Ethernet Connector (LAN)

Table 2.9: Ethernet Connector (LAN) Pin Definition			
Pin	Signal Name	Pin	Signal Name
R1	MDI0+_b	R2	MDI0-_b
R3	MDI1+_b	R4	MDI2+_b
R5	MDI2-_b	R6	MDI1-_b
R7	MDI3+_b	R8	MDI3-_b
L1	LAN3_LINK100#	L2	LAN3_LINK1000#
L3	LAN3_ACT#	L4	+V3.3_LAN

2.4.5 USB 3.0 Connector

AIR-030 supports 4 x USB 3.2 Type A interfaces. These support Plug-and-Play functionality and hot swapping for up to 127 x external devices.



Figure 2.3 USB Connector

Table 2.10: USB 3.0 Connector Pin Definition			
Pin	Signal Name	Pin	Signal Name
U1	VDD_5V	U2	HUB1_DN
U3	HUB1_DP	U4	GND
U5	HUB1_SSRX_N	U6	HUB1_SSRX_P
U7	GND	U8	HUB1_SSTX_N
U9	HUB1_SSTX_P		

2.4.6 COM Connector

AIR-030 provides four 9-pin D-sub connector, which supports RS232/422/485 serial communication interface ports. The default setting is RS-232, if you want to use RS-422/485, you can use the switch to select the mode.

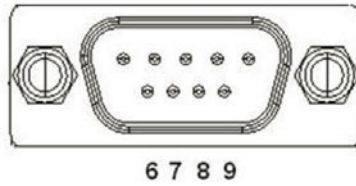


Figure 2.4 COM Connector

Table 2.11: COM Connector Pin Definition			
Pin	RS-232	RS-422	RS-485
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

NC represents "No Connection".

2.4.7 HDMI Connector

AIR-030 offers integrated 19-pin receptacle connector HDMI 2.0 interfaces. The HDMI link supports resolutions up to 3840 X 2160 @ 60 Hz.

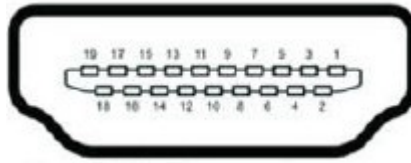


Figure 2.5 HDMI Connector

Table 2.12: HDMI Connector Pin Definition	
Pin	Signal Name
1	HDMI_TX2+
2	GND
3	HDMI_TX2-
4	HDMI_TX1+
5	GND
6	HDMI_TX1-
7	HDMI_TX0+
8	GND
9	HDMI_TX0-
10	HDMI_CLK+
11	GND
12	HDMI_CLK-
13	NC
14	NC
15	HDMI_DCLK
16	HDMI_DDAT
17	GND
18	+V5_HDMI-HPD
19	DDP0_HPD

NC represents "No Connection".

2.4.8 Antenna Socket

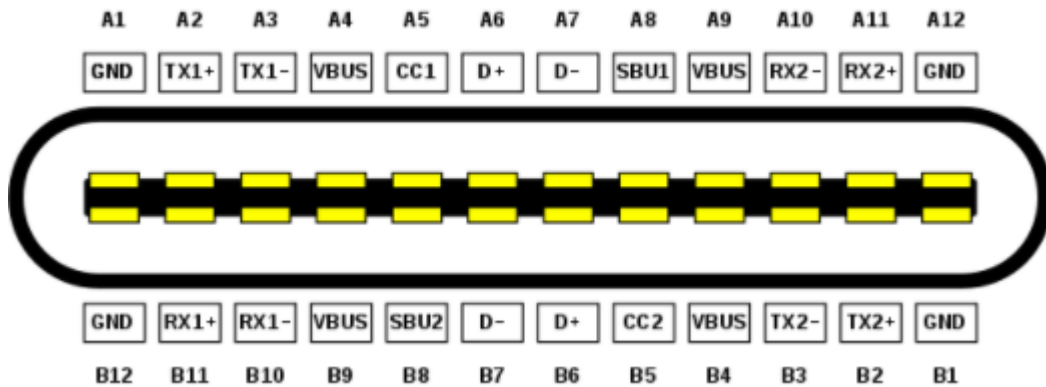
AIR-030 reserves four antenna sockets for installing wireless/LTE device antennas. Each antenna socket is labeled "ANT" for easy identification.



Figure 2.6 Antenna Socket

2.4.9 USB Type C

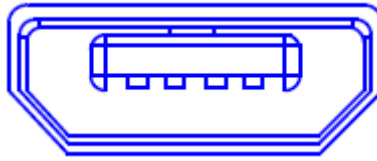
AIR-030 supports USB Type-C 24 pin USB connector with a rotationally symmetrical connector.



Type-C receptacle A pin layout		
Pin	Name	Description
A1	GND	Ground return
A2	SSTXp1	SuperSpeed differential pair #1, TX, positive
A3	SSTXn1	SuperSpeed differential pair #1, TX, negative
A4	V _{BUS}	Bus power
A5	CC1	Configuration channel
A6	Dp1	USB 2.0 differential pair, position 1, positive
A7	Dn1	USB 2.0 differential pair, position 1, negative
A8	SBU1	Sideband use (SBU)
A9	V _{BUS}	Bus power
A10	SSRXn2	SuperSpeed differential pair #4, RX, negative
A11	SSRXp2	SuperSpeed differential pair #4, RX, positive
A12	GND	Ground return
Type-C receptacle B pin layout		
Pin	Name	Description
B12	GND	Ground return
B11	SSTXp1	SuperSpeed differential pair #2, RX, positive
B10	SSTXn1	SuperSpeed differential pair #2, RX, negative
B9	V _{BUS}	Bus power
B8	SBU2	Sideband use (SBU)
B7	Dn2	USB 2.0 differential pair, position 2, negative [a]
B6	Dp2	USB 2.0 differential pair, position 2, positive [a]
B5	CC2	Configuration channel
B4	V _{BUS}	Bus power
B3	SSRXn2	SuperSpeed differential pair #3, TX, negative
B2	SSRXp2	SuperSpeed differential pair #3, TX, positive
B1	GND	Ground return

2.4.10 Micro USB for OTG

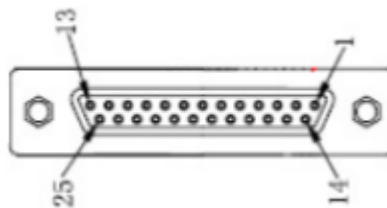
Micro USB port is supported by OTG for system recovery only.



Pin	Signal Name
1	+5V
2	DATA-
3	DATA+
4	GND_1
5	GND_2

2.4.11 Digital I/O

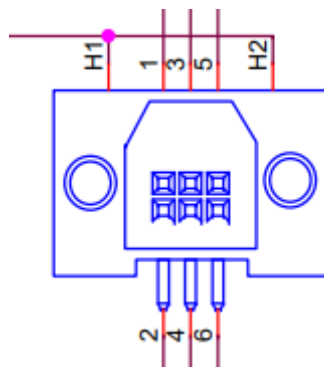
AIR-030 offers 16-bit DI/O and pin definition as below.



Pin	Signal Name	Pin	Signal Name
1	GND	2	I2C_GPIO_0_CONN
3	I2C_GPIO_1_CONN	4	I2C_GPIO_2_CONN
5	I2C_GPIO_3_CONN	6	I2C_GPIO_4_CONN
7	I2C_GPIO_5_CONN	8	I2C_GPIO_6_CONN
9	I2C_GPIO_7_CONN	10	VDD_5V_DIO
11	NC	12	NC
13	NC	14	GND
15	I2C_GPIO_8_CONN	16	I2C_GPIO_9_CONN
17	I2C_GPIO_10_CONN	18	I2C_GPIO_11_CONN
19	I2C_GPIO_12_CONN	20	I2C_GPIO_13_CONN
21	I2C_GPIO_14_CONN	22	I2C_GPIO_15_CONN
23	VDD_5V_DIO	24	NC
25	NC	26	GND

2.4.12 CANBUS Port and Pin Definition

AIR-030 offers CANBUS port and pin definition as below.



Pin	Signal Name
1	CAN0_D-
2	CAN1_D+
3	GND
4	GND
5	CAN0_D+
6	CAN1_D-

2.4.13 Audio Connector

AIR-030 features one phone jack connector that supports a stereo Line-Out audio port. The audio chip is controlled by ALC5640.



2.5 Installation

2.5.1 M.2 B Key Installation

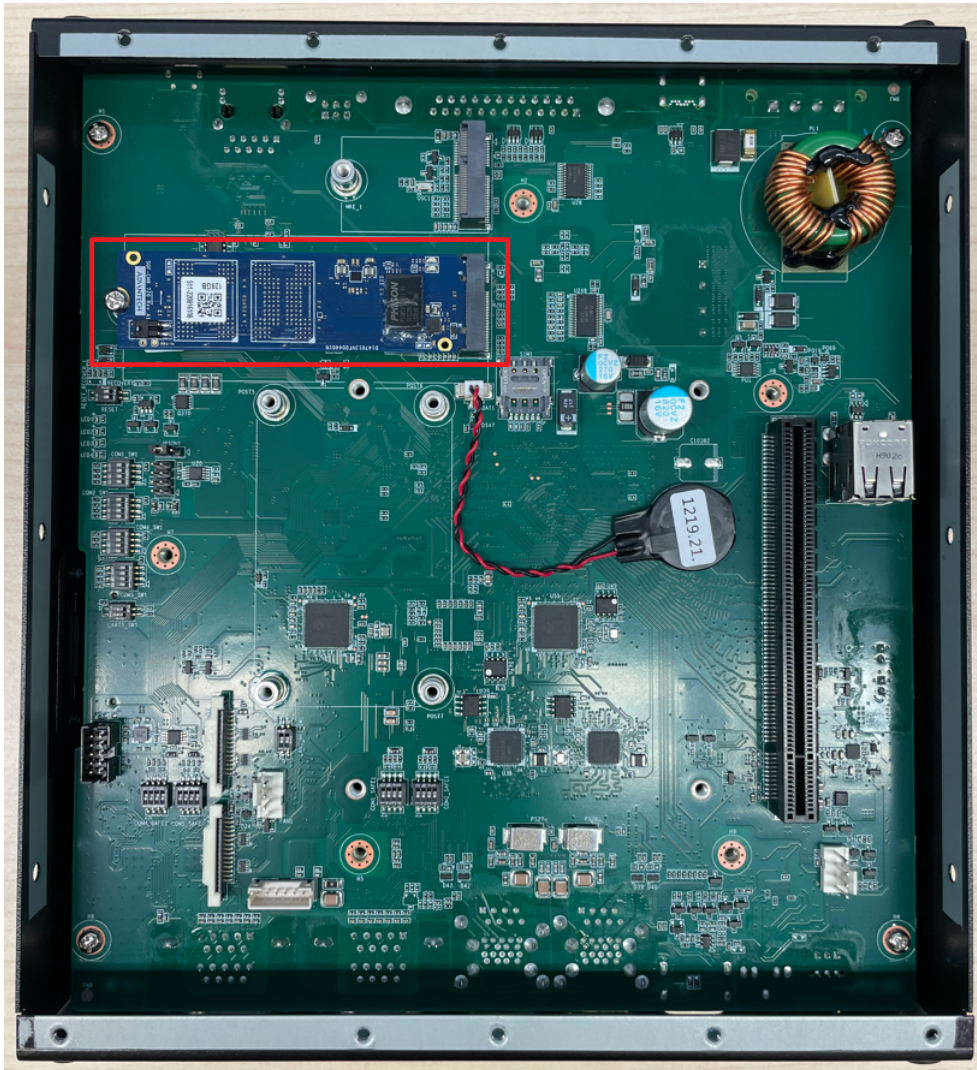
1. Loosen the 6 screws on left and right side of AIR-030.



2. Loosen the 6 screws and remove the bottom cover.



3. Install M.2 2280 B/B+M Key module.



4. Secure the bottom cover with screws (6 screws on bottom cover and 6 screws on left and right side plate).





2.5.2 M.2 E Key Installation

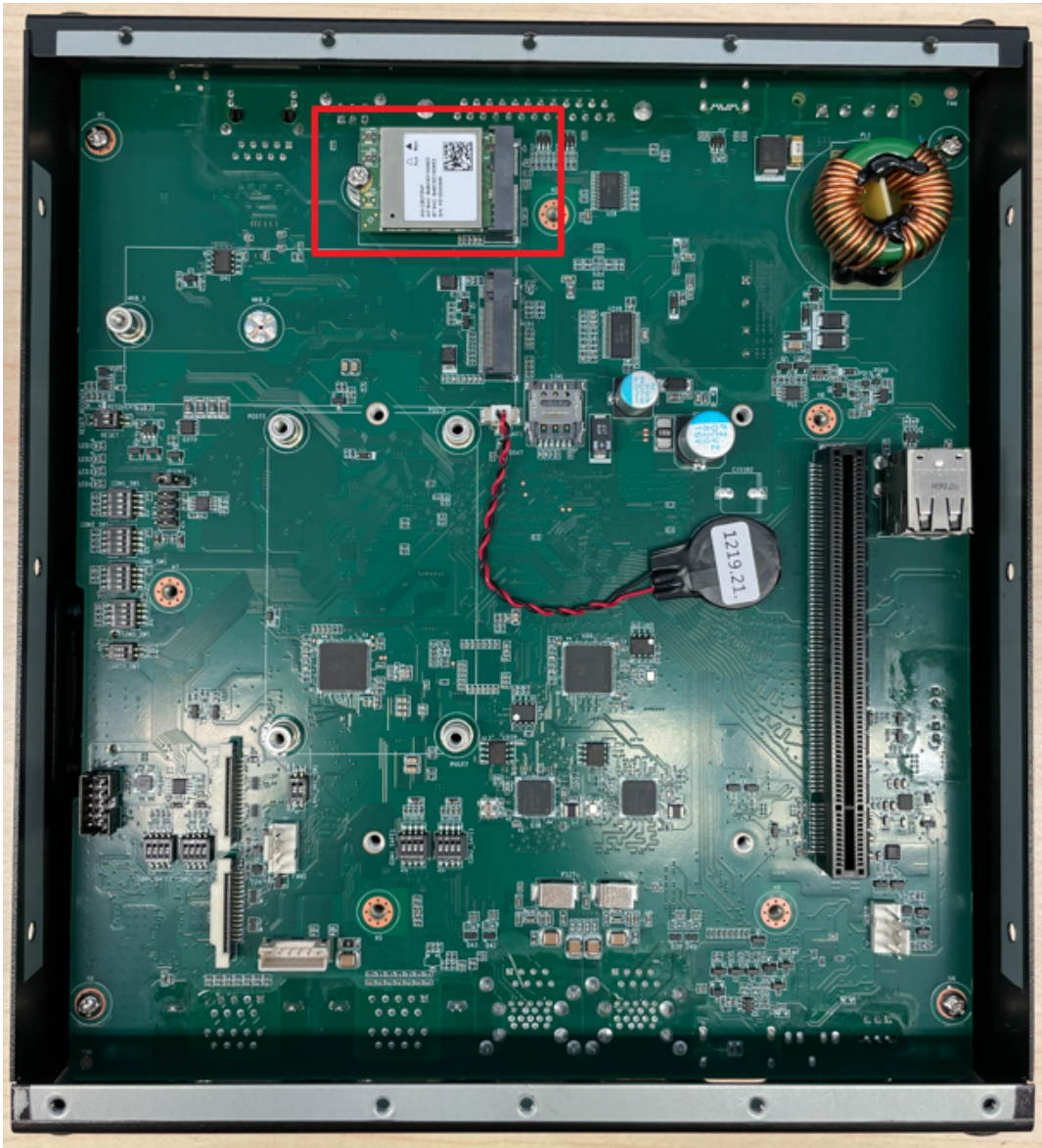
1. Loosen the 6 screws on left and right side of AIR-030.



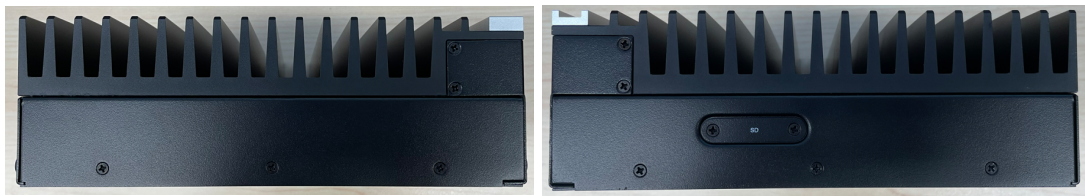
2. Loosen the 6 screws and remove the bottom cover.



3. Install M.2 2230 E Key module.



- Secure the bottom cover with screws (6 screws on bottom cover and 6 screws on left and right side plate).



2.5.3 POE Module Installation

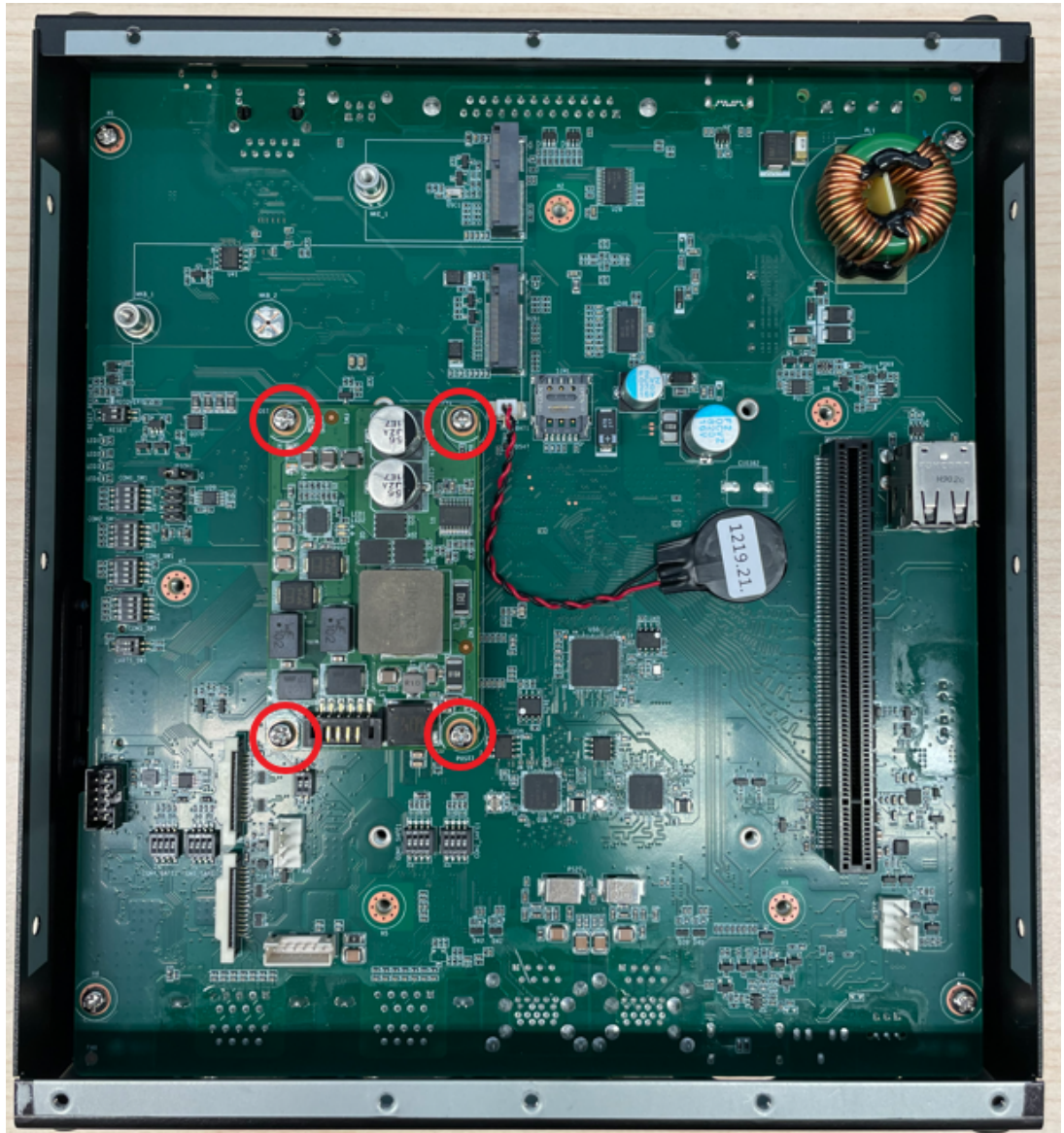
- Loosen the 6 screws on left and right side of AIR-030.



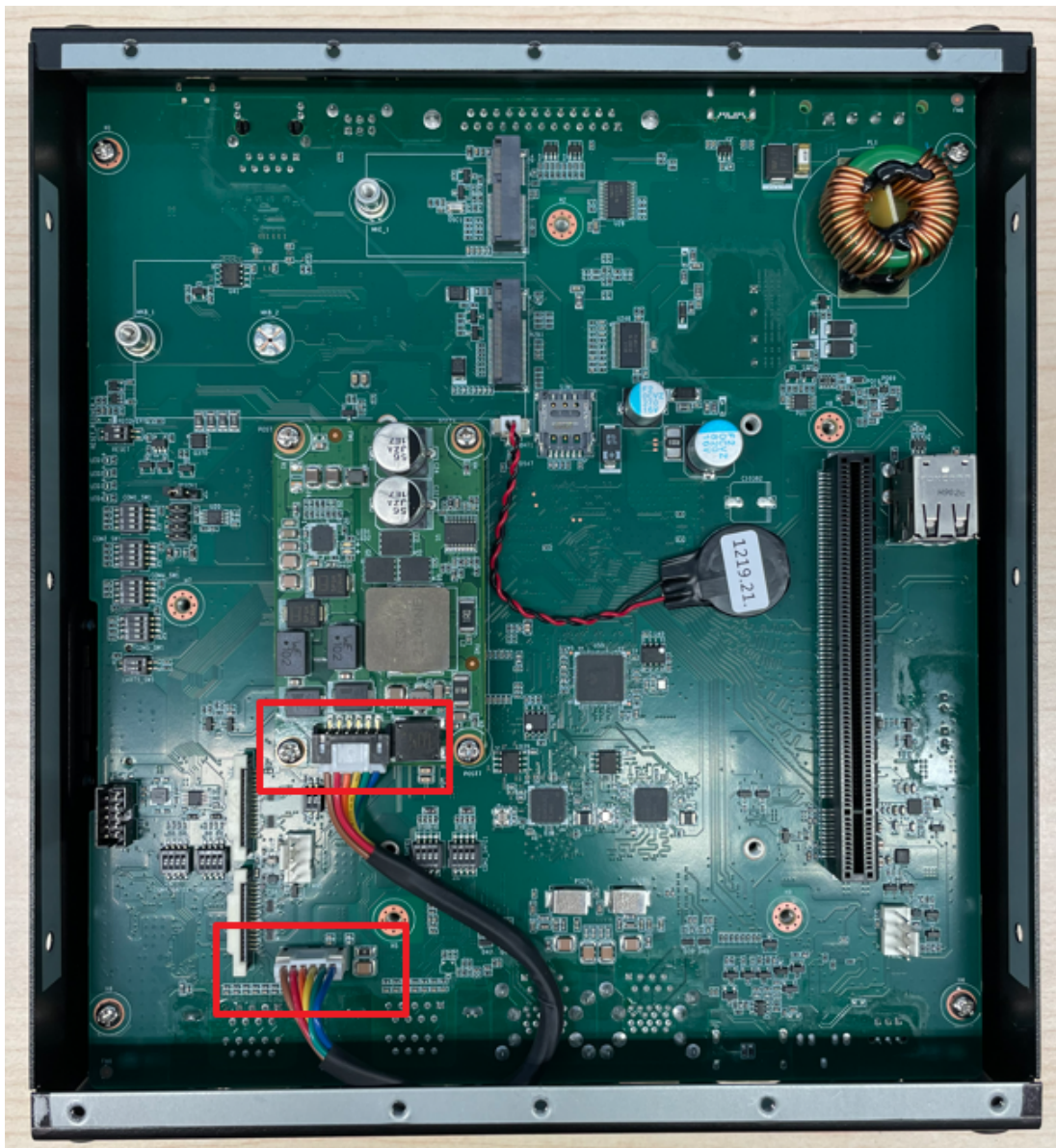
2. Loosen the 6 screws and remove the bottom cover.



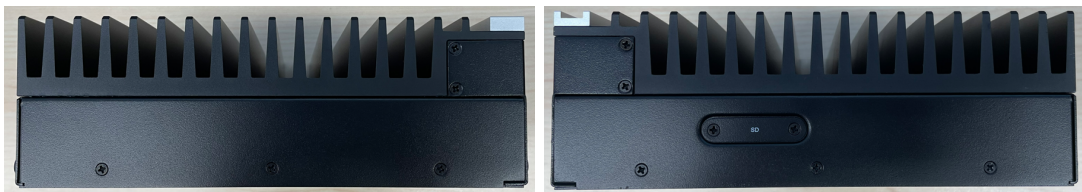
3. Install the POE module and secure it with 4 screws.



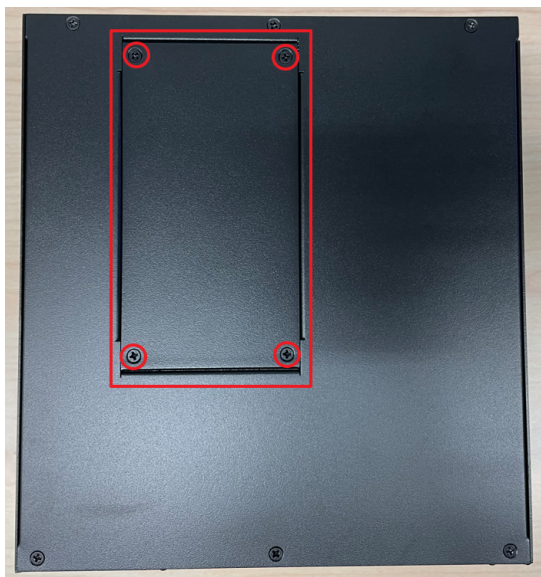
4. Connect the power cable between POE module (POE_PWR1) and M/B (POE_PWR1).



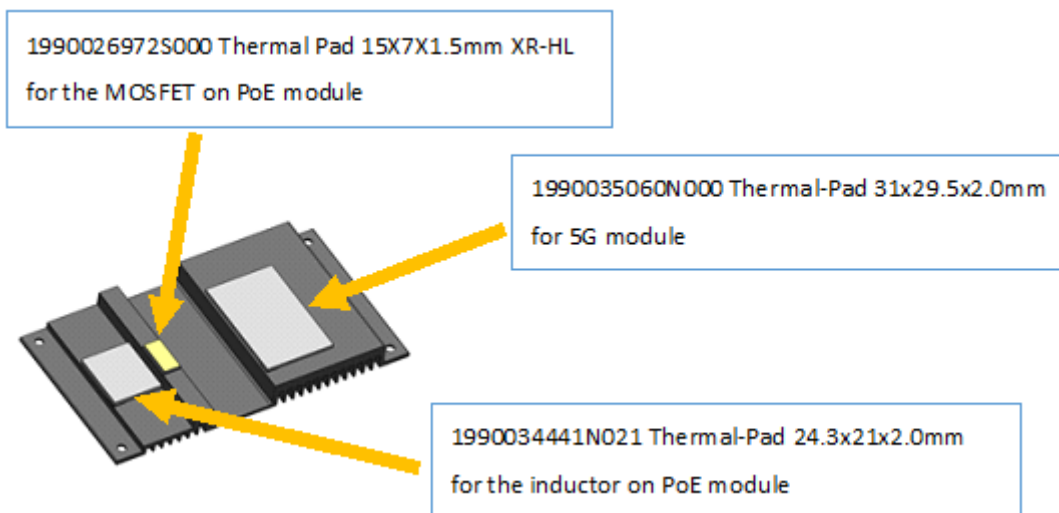
- Secure the bottom cover with screws (6 screws on bottom cover and 6 screws on left and right side plate).



- Replace the I-door plate with heatsink for POE module and fasten the four screws back onto the system.

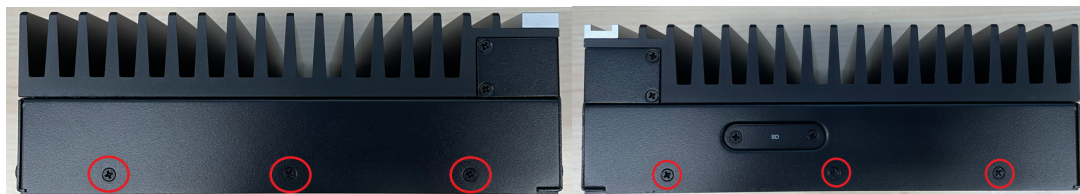


Note! Please ensure the thermal pads are put as following instruction before installation.

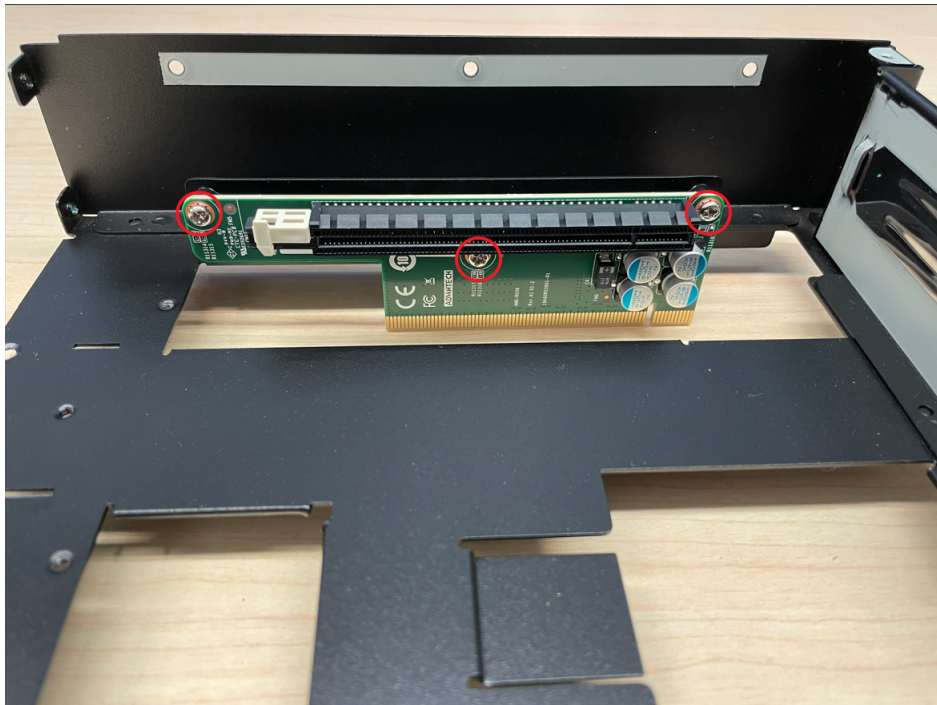


2.5.4 Expansion Kit Installation

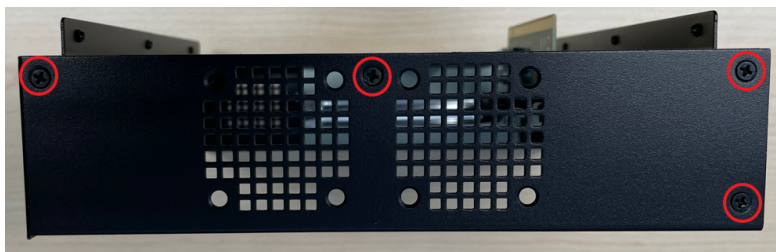
1. Remove bottom cover. Loosen the 6 screws on left and right side of AIR-030. And loosen the 6 screws on bottom cover.



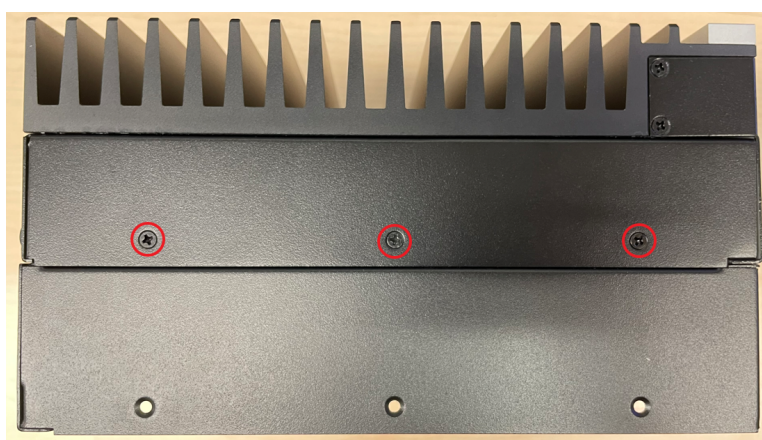
2. Screw AMO-R039 riser card on expansion kit.



3. Assembly the two mechanical parts for second layer. And fasten the screws on front and rear plate.



4. Stack expansion layer with system, and fasten three screw on each rear side.



5. Secure the bottom cover with screws (6 screws on bottom cover and 6 screws on left and right side plate).





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