USER'S MANUAL

AIE900B-ONX Series

Edge AI Embedded System

User's Manual

AXIOMTEK

www.axiomtek.com

Disclaimers

This manual has been carefully checked and believed to contain accurate information. Axiomtek Co., Ltd. assumes no responsibility for any infringements of patents or any third party's rights, or any liability arising from such uses.

Axiomtek does not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information in this document. Axiomtek does not make any commitment to update any information in this manual.

Axiomtek reserves the right to change or revise this document and/or product at any time without notice.

No part of this document may be reproduced, stored in a retrieval system, or transmitted in any forms or by any means, electronic, mechanical, photocopying, recording, among others, without prior written permissions of Axiomtek Co., Ltd.

October 2025, Version A2
Printed in Taiwan

Safety Precautions

Before getting started, please read the following important safety precautions.

1. The AIE900B-ONX does not come with an operating system which must be loaded first before installation of any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing any internal components. Use a wrist grounding strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the AIE900B-ONX prior to making any installation. Be sure both the system and all external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the AIE900B-ONX is properly grounded.
4. Make sure the voltage of the power source is correct before connecting it to any power outlet.
5. Turn Off system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the system.
6. Do not leave equipment in an uncontrolled environment where the storage temperature is below -40℃ or above 80℃ as it may damage the equipment.
7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
   - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help discharge any static electricity on human body.
   - When handling boards and components, wear a wrist grounding strap available from most electronic component stores.
8. Note!! Caution with touch! AIE900B-ONX will be hot when it's on.

Classification

1. Degree of production against electric shock: not classified
2. Degree of protection against ingress of water: IP40
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
4. Mode of operation: Continuous

Note: All I/O connectors should be connected with corresponding cables when the system is operating with IP40 rated definition. If some of the I/O ports are not to be used or connected during operation, users must use I/O covers to plug the ports in order to meet the IP40 standard.

General Cleaning Tips

Please keep the following precautions in mind while understanding the details fully before and during any cleaning of the computer and any components within.

A piece of dry cloth is ideal to clean the device.

1. Be cautious of any tiny removable components when using a vacuum cleaner to absorb dirt on the floor.
2. Turn the system off before cleaning up the computer or any components within.
3. Avoid dropping any components inside the computer or getting circuit board damp or wet.
4. For cleaning, be cautious of all kinds of cleaning solvents or chemicals which may cause allergy to certain individuals.
5. Keep foods, drinks or cigarettes away from the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning computer and peripherals, users can also use house hold items accordingly for cleaning. Listed below are items available for cleaning computer or computer peripherals.
Pay special attention to components requiring designated products for cleaning as mentioned below.

- Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, it is recommended to use a piece of cloth.
- Water or rubbing alcohol: A piece of cloth may be somewhat moistened with water or rubbing alcohol before being rubbed on the computer. Unknown solvents may be harmful to plastic parts.
- Absorb dust, dirt, hair, cigarette and other particles outside of a computer can be one of the best methods of cleaning a computer. Over time these items may restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are applicable to reach areas in keyboard, mouse and other areas.
- Foam swabs: If possible, it is better to use lint free swabs such as foam swabs.

Note: It is strongly recommended that customer should shut down the system before start to clean any single components.

Please follow the steps below:

1. Close all application programs;
2. Close operating software;
3. Turn off power switch;
4. Remove all devices;
5. Pull out power cable.

Scrap Computer Recycling

If the computer equipment's needs the maintenance or are beyond repair, we strongly recommended that you should inform your Axiomtek distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your Axiomtek distributor for recycling and we will make the proper arrangement.

Trademarks Acknowledgments

Table of Contents

SECTION 1
INTRODUCTION

AIE900B-ONX-1L4P

8-CH GMSL1/2 Camera Ports
(Optional, by project)

▲ Front view

▲ Rear view

This chapter contains general information and detailed specifications of the AIE900B-ONX. Chapter 1 includes the following sections:

- General Description
- System Specifications
- Dimensions
- I/O Outlets
- Packing List
- Model List
- Optional Accessories

1.1 General Description

The AIE900B-ONX is a cutting-edge, fanless edge AI system powered by the NVIDIA® Jetson Orin™ NX Series supercomputer on a module. With the remarkable AI performance of Super up to 157 TOPS, this ready-to-use system is designed to meet the demands of advanced edge AI applications.

Featuring one GbE LAN and four GbE PoE ports (30 Watts) and four USB3.2 Gen2 ports, the AIE900B-ONX facilitates seamless integration with 3D LiDAR, IP cameras, and various vision navigation sensors. The system supports a broad power range of 9 to 36 VDC with smart ignition control. Additionally, it boasts 5G, LTE and Wi-Fi connectivity through M.2 slot and mPCIe slot, ensuring uninterrupted and efficient communication.

Tailored for computer vision, service robots, robotics, AMRs, and other edge AI applications, the AIE900B-ONX stands out as an exceptional platform. Its flexible features and high-performance capabilities establish it as an outstanding system suitable for a wide range of comprehensive edge AI applications across diverse industries.

- **Features**
  1. **NVIDIA® Jetson Orin™ NX Super (Up to 157 TOPS)**
  2. Seamless connectivity: 5G, Wi-Fi, and GbE combined
  3. Effortless management with USB and PoE device power control
  4. Supports four USB and four PoE for camera & sensor connectivity
  5. Enables 24/7 secure remote monitoring, control, and OTA deployment, powered by Allxon
  6. Supports the NVIDIA Isaac™ Robot Operating System (ROS) SDK for AI-powered robot development

- **Reliable and Stable Design**
  The AIE900B-ONX adopts the advanced fanless system and supports the PCIex4 NVMe through M.2 interface, which makes it especially suitable for AI computing environments, best for smart city, GPU-accelerated processing, edge computing and smart retail applications.

- **JetPack SDK Supported**
  The AIE900B-ONX supports JetPack 6.2 or later. NVIDIA JetPack SDK is the most comprehensive solution for building end-to-end accelerated AI applications. JetPack provides a full development environment for hardware-accelerated AI-at-the-edge development on Nvidia Jetson modules.

  JetPack includes Jetson Linux with bootloader, Linux kernel, Ubuntu desktop environment, and a complete set of libraries for acceleration of GPU computing, multimedia, graphics, and computer vision. It also includes samples, documentation, and developer tools for both host computer and developer kit and supports higher level SDKs such as DeepStream for streaming video analytics, Isaac for robotics, and Riva for conversational AI.

- **Ideal for In-vehicle Usage**
  AIE900B-ONX is a compact solution for in-vehicle edge AI applications. With four 802.3at PoE+ ports, and optional 8 x Fakra-Z connector for GMSL1/2 camera, and integrated wireless connectivity (5G, Wi-Fi, LTE, GPS, Bluetooth), it caters to diverse needs. The inclusion of CAN bus for communication and 8-CH DI/DO for sensor/actuator control, along with ignition power control and wide-range DC input, ensures superior performance in a compact form factor.

- **OS Supported**
  The AIE900B-ONX supports Linux Ubuntu 22.04.

- **High-performance NVMe SSD Storage Supported**
  The AIE900B-ONX supports one M.2 Key M 2280 with PCI-Express 4.0 x4 interface.

- **Wide Range Power Input with Ignition Power Control Supported**
  The AIE900B-ONX supports 9 to 36 VDC (Typical 12/24 VDC) wide range power input with smart ignition control.

1.2 System Specifications

1.2.1 Product & System Specification

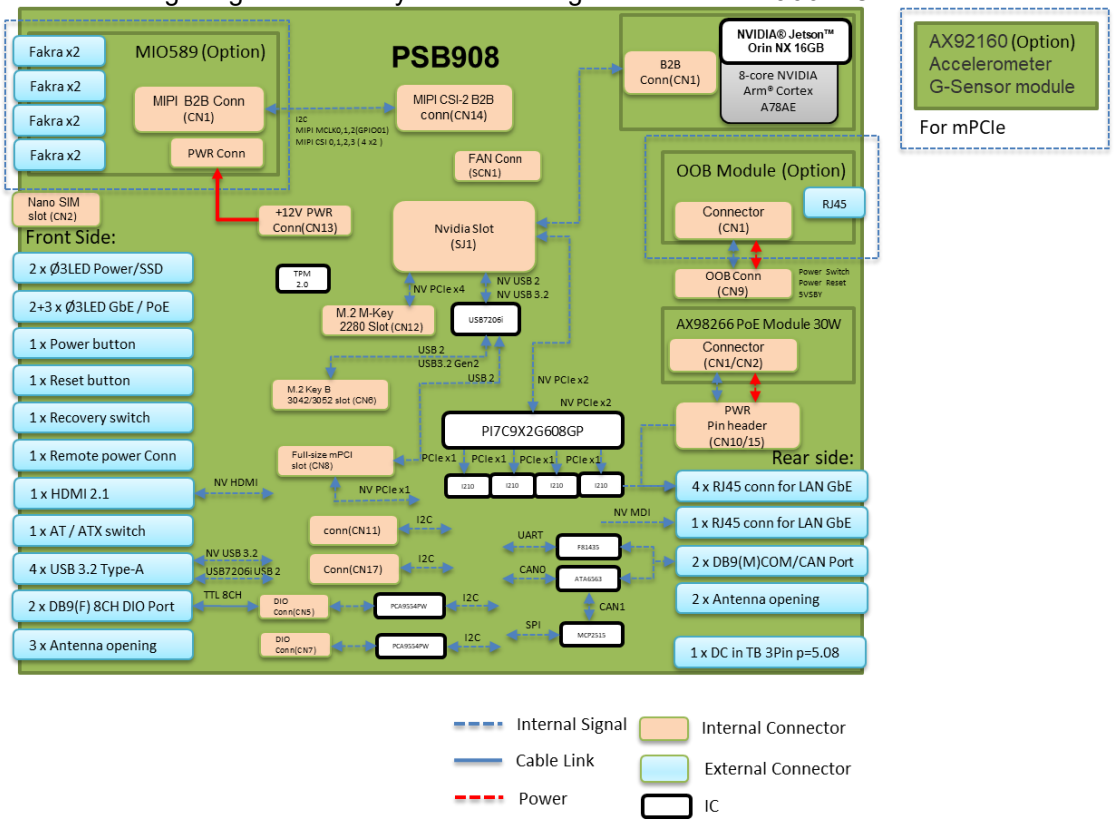
Product Specification	
AI Accelerator	**NVIDIA® Jetson Orin™ NX 16GB Super (Up to 157 TOPS)** *Under planning (by Project): NVIDIA® Jetson Orin™ NX 8GB Super (Up to 117 TOPS), Orin™ Nano 8GB Super (Up to 67 TOPS) or Orin™ Nano 4GB Super (Up to 34 TOPS)
CPU	8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
GPU	1024-core NVIDIA Ampere GPU with 32 Tensor Cores
System Memory	16GB 128-bit LPDDR5 102.4 GB/s onboard
Watchdog Timer	Built-in NVIDIA® Jetson Orin™ NX
Serial Port	2 x DB9 for COM (RS-232/422/485) & CAN
USB	4 x USB 3.2 Gen2 Type A (one for recovery port)
Ethernet & PoE	1 x 10/100/1000 Mbps LAN (via Orin™ NX) 4 x 10/100/1000 Mbps PoE (Intel® I210-IT) *IEEE 802.3at, Max. up to 30 Watts **Note:** AIE900B is a power supply device. Two PSE (Power Sourcing Equipment) devices should not be connected together, which may cause the risk of power conflict. Correctly connect PD Device or switch without PoE. If you need PoE switch, please find the switch with uplink port.
GMSL	8 x Fakra-Z connector for GMSL1/2 camera (optional, by project)

Display	1 x HDMI 2.1 Output (Resolution: up to 4096x2160 @60Hz)
Digital I/O	1 x DB9 for 8-CH DIO
Storage	1 x M.2 Key M 2280 PCI-Express 4.0 x4 NVMe SSD slot *Orin NX no longer has built-in eMMC and only supports an SSD for the bootable device.
Expansion	1 x Full-size PCI Express Mini Card slot (USB + PCIe signal) for Wi-Fi/LTE 1 x M.2 Key B 3042/3052 slot (USB 3.2 Gen2 signal) for LTE/5G 1 x Nano SIM slot for LTE/5G
Others	1 x Recovery switch (for image update) 1 x Remote power switch 1 x AT/ATX switch 1 x Power button 1 x Reset button 1 x 9 to 36 VDC power input connector (with smart ignition control) 1 x Grounding screw 5 x SMA-type antenna connector 1 x fan connector (with PWN) for fan option 1 x pin header for Debug port 1 x I2S 1 x LTE connection management 1 x Front panel pin header 1 x TPM 2.0 (need command input) 1 x out-of-band (OOB) module for remote management (optional) 1 x pin header for Power & Reset button & 1 x 5V power output (< 2W) for Allxon OOB module
System Indicator	1 x Yellow LED for M.2 SSD storage 1 x Green LED for system power-on 5 x Green LED for LAN/PoE status

System Specification	
Power Supply	Input: 9 to 36 VDC (Typical 12/24 VDC) with smart ignition control Inrush Current: 1.87A / 1.37A
Construction	Aluminum extrusion and heavy-duty steel, IP40
Operation Temperature	**40W Power Mode**: -25°C to +70°C (-13°F to +158°F)
Humidity	10% - 95% relative humidity, non-condensing
Vibration	IEC 60068-2-64 (with SSD: 3Grms STD, random, 5 to 500 Hz, and 1 hr/axis) MIL-STD-810H, Method 514.8, and Category 20
Shock	IEC 60068-2-27 (with SSD: 50G, half sine, and 11 ms duration) MIL-STD-810H, Method 516.8, and Procedure I
Dimensions (W x D x H)	**AIE900B-ONX-1L4P:** 239.0 x 185.3 x 79.4 mm (9.41" x 7.30" x 3.13")
Weight (Net / Gross)	**AIE900B-ONX-1L4P:** 2.54 kg (5.60 lb) without package 4.59 kg (10.12 lb) with package
Certifications	CE, FCC Class A, UKCA
OS Support	JetPack 6.2 or later (Linux Ubuntu 22.04 or later)
Mounting	Wall mount/ VESA mount/ DIN-rail mount

1.2.2 Block Diagram

The following diagrams show you block diagram of the AIE900B-ONX.

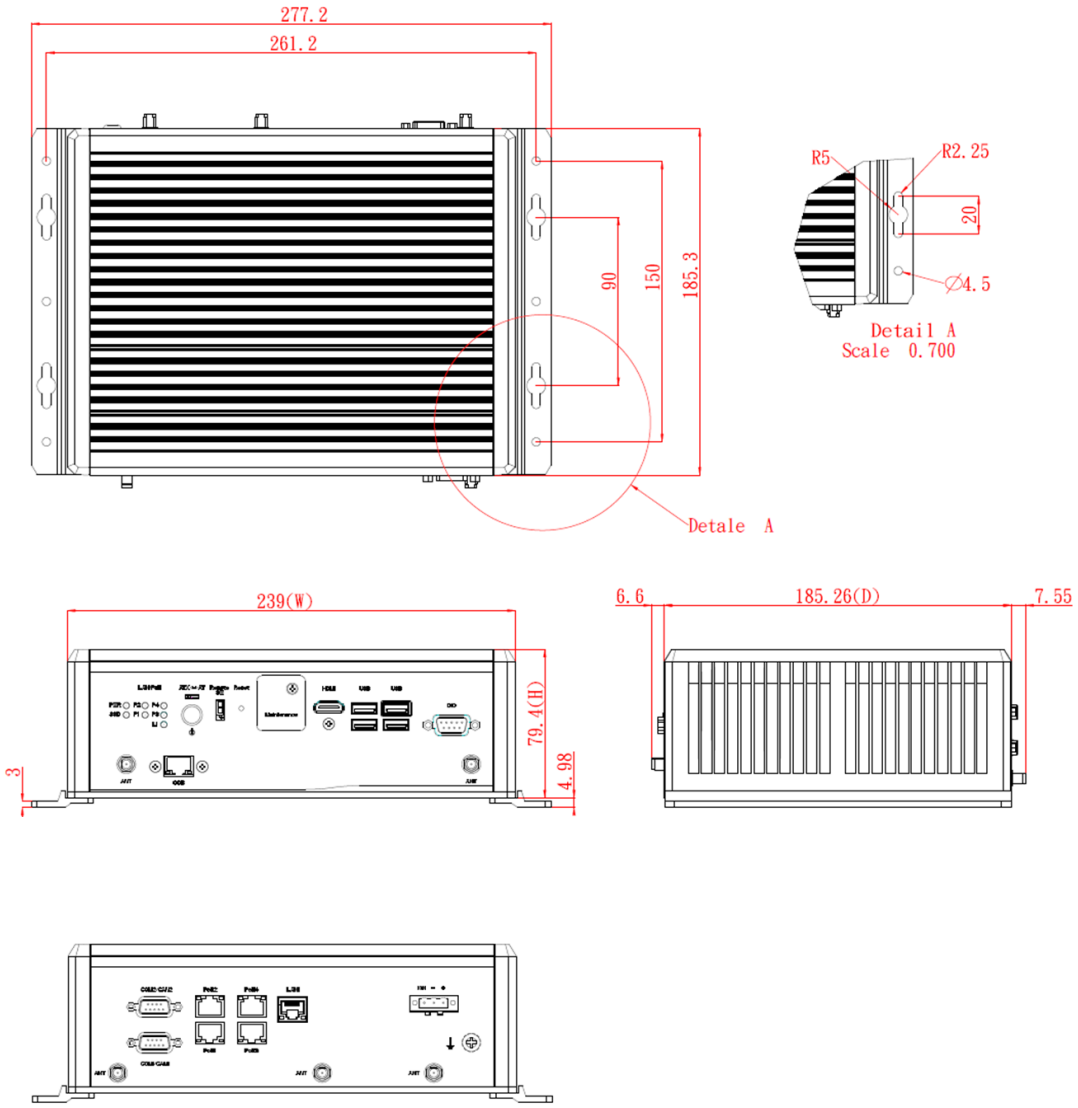


Note: All specifications and images are subject to change without notice.

1.3 Dimensions

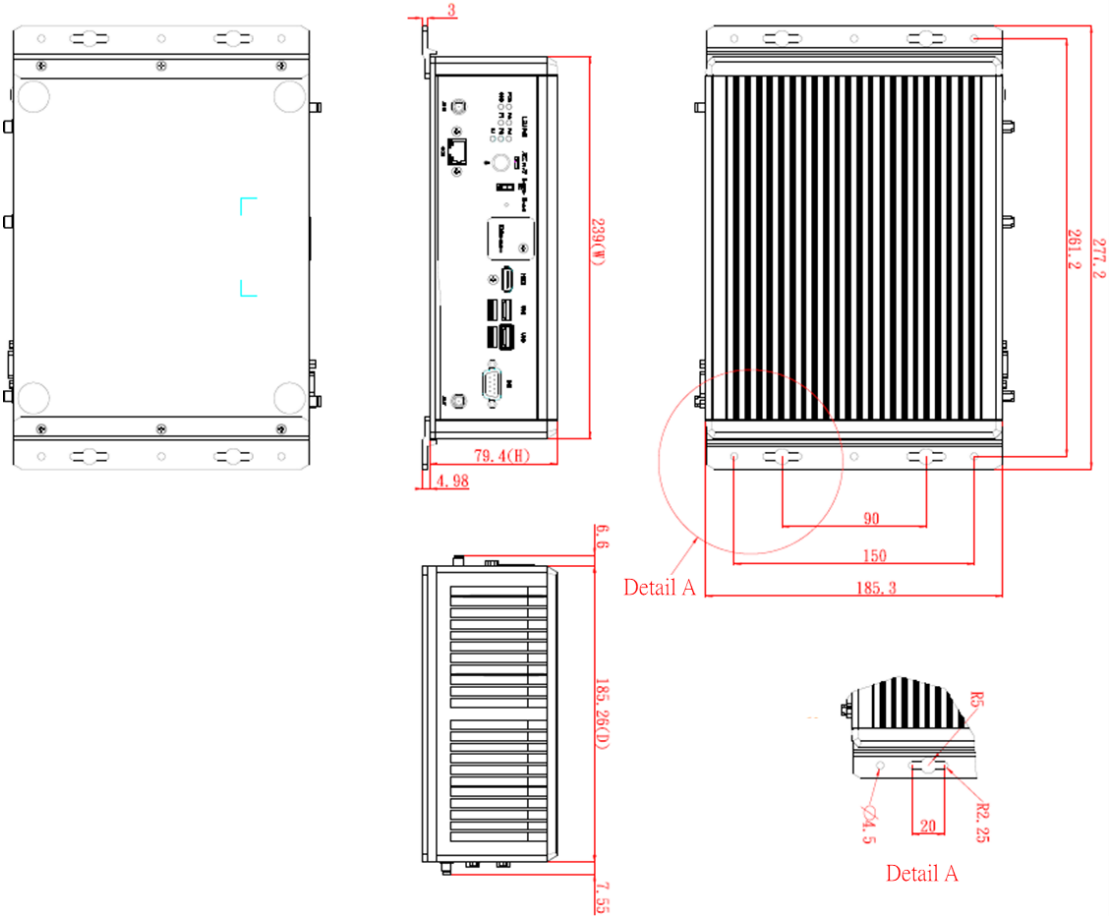
The following diagrams show you dimensions and outlines of the AIE900B-ONX.

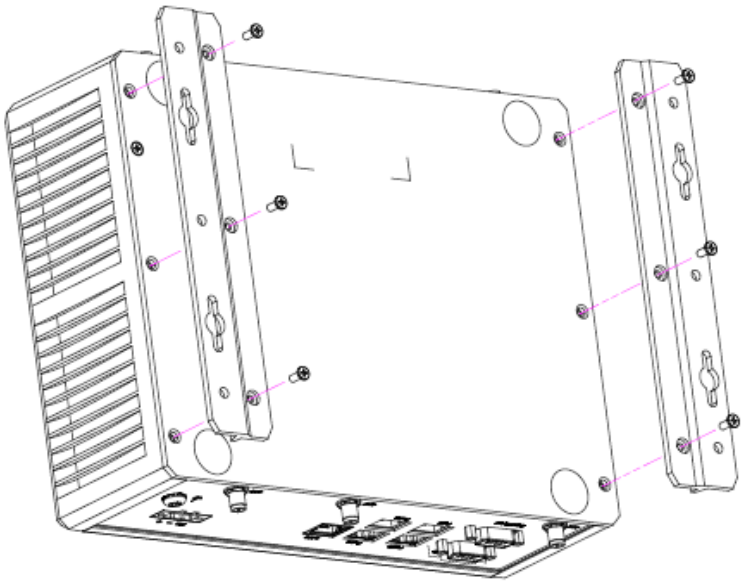
1.3.1 System Dimension: AIE900B-ONX-1L4P



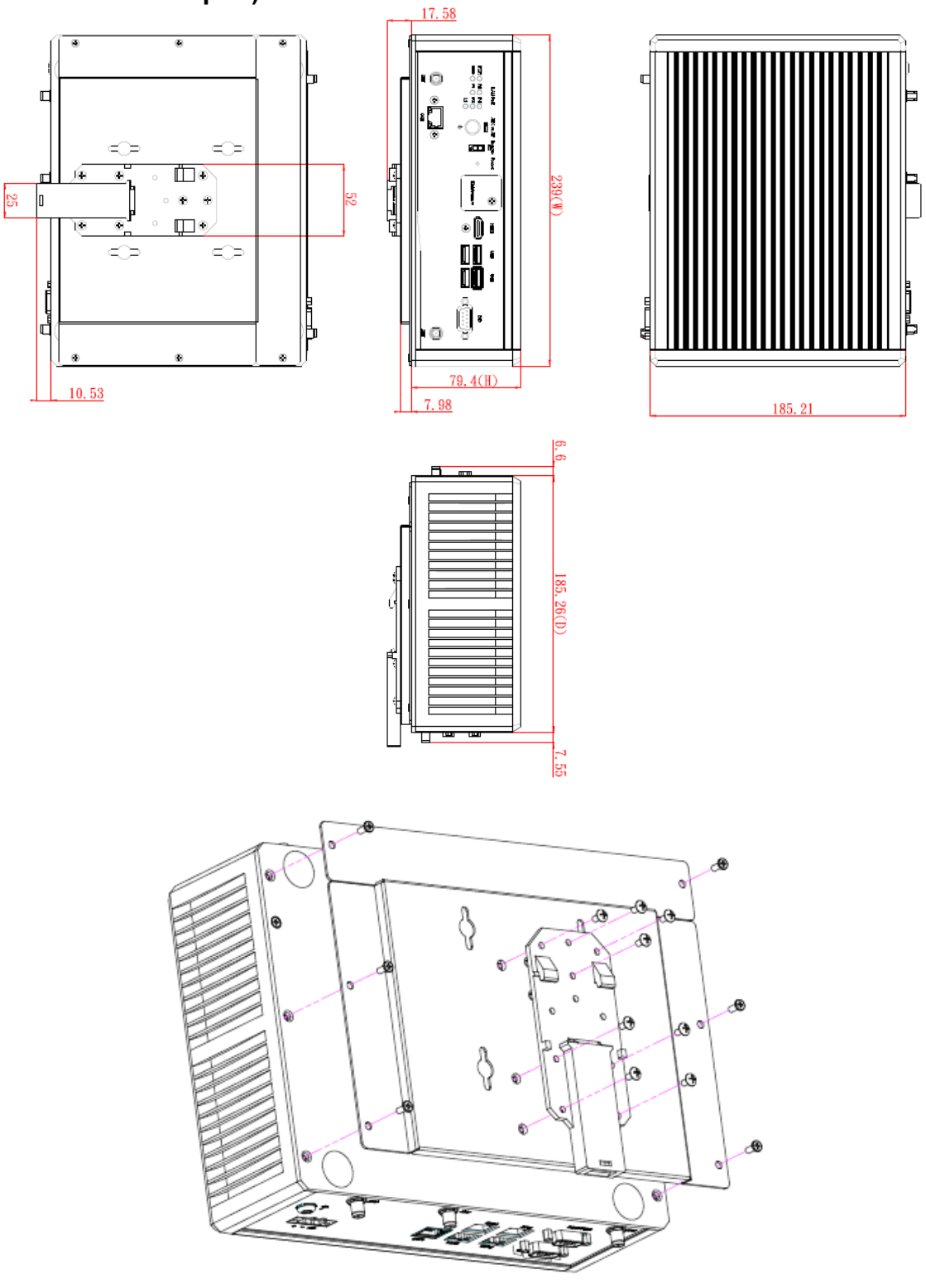
1.3.2 Wall Mount Bracket Dimension (Screw: M3 *8L 6pcs)

Mount AIE on Drywall: Minimum screw size: M4 x 6L (Depends on the thickness of drywall)

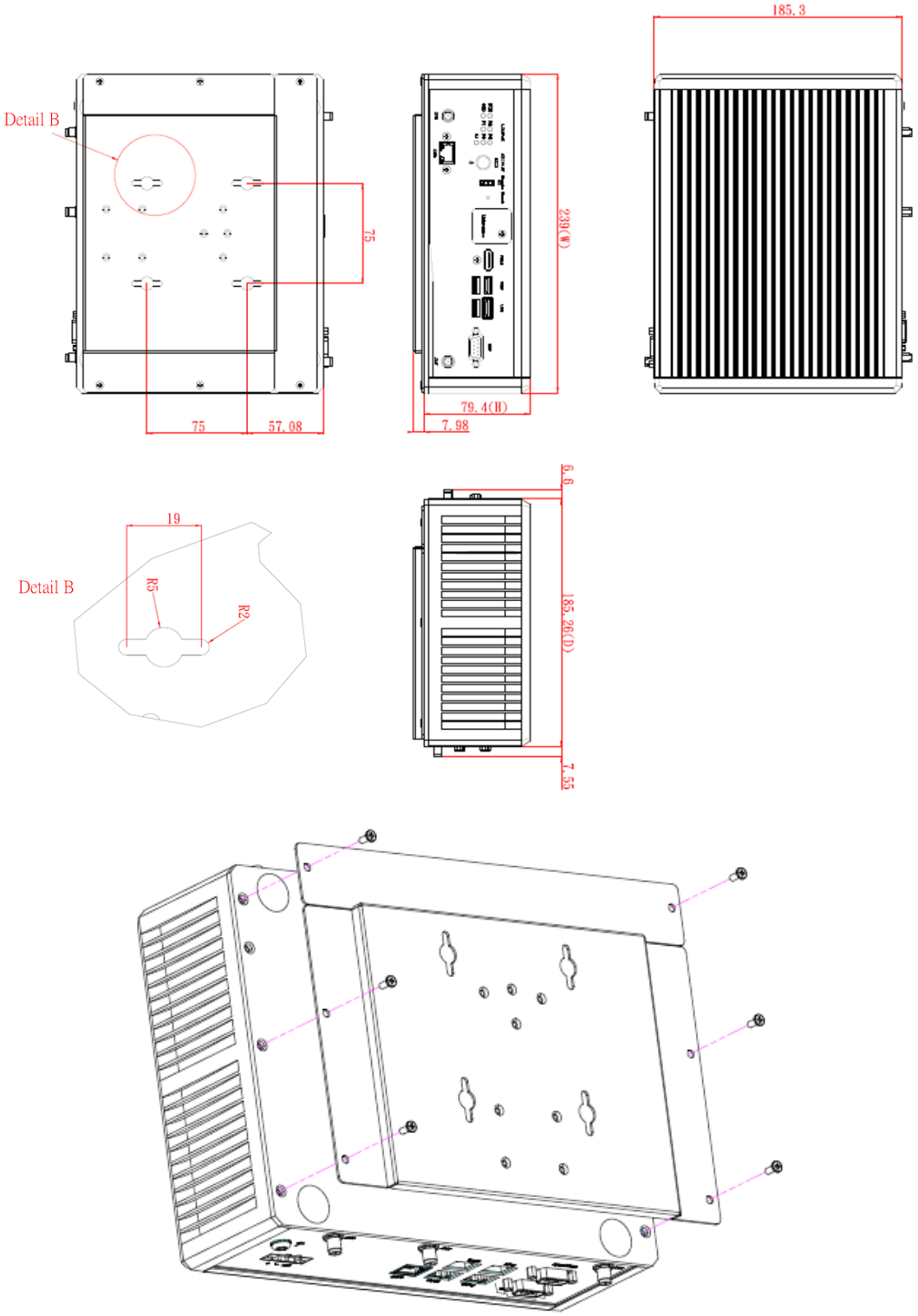




1.3.3 Din-rail Mount Bracket Dimension (Screw: M3*6L 8pcs & M3*8L 6pcs)



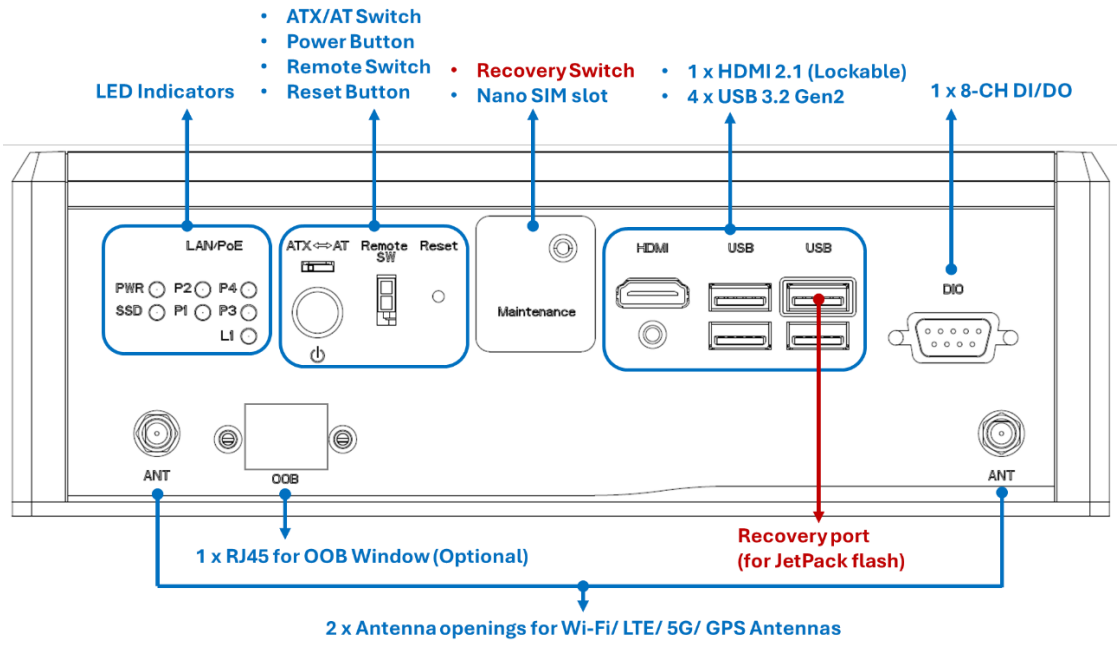
1.3.4 VESA Arm Mount Bracket Dimension (Screw: M3*8L 6pcs)



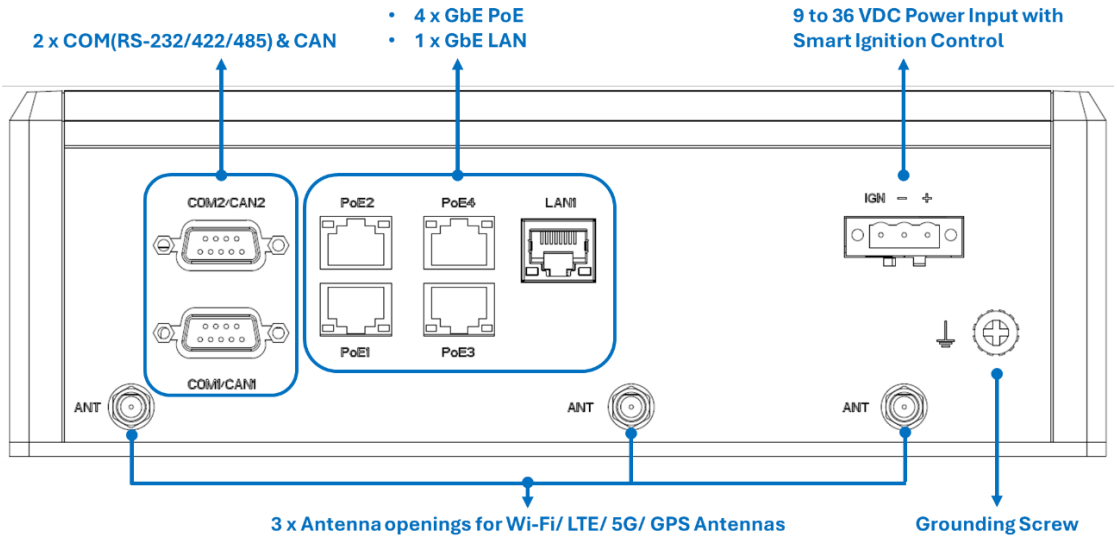
1.4 I/O Outlets

The following figures show you I/O outlets from the front & rear view of the AIE900B-ONX.

- **Front View drawing: AIE900B-ONX-1L4P**



- **Rear View drawing: AIE900B-ONX-1L4P**



1.5 Packing List

The package bundled with your AIE900B-ONX should contain the following items:

- **1 x AIE900B-ONX system unit**
- **1 x 3 Pin terminal block connector for power**
- **4 x Foot pad**
- **1 x Screws pack**
- **1 x 2 Pin cable for Remote power switch**
- **1 x M.2 SSD thermal kit (for M.2 SSD drive)**
- **1 x M.2 5G module thermal kit (for 5G module)**

※ Regarding the latest product manual, please download them from Axiomtek official website.

1.6 Model List

AIE900B-ONX-1L4P	Fanless Edge AI System with NVIDIA® Jetson Orin™ NX 16GB, 1 HDMI, 1 GbE LAN, 4 GbE PoE, 4 USB, 2 COM/CAN, and 8-CH DIO

※ If you cannot find this package or any items are missing, please contact Axiomtek distributors immediately.

1.7 Optional Accessories

Part Number	Description
E29R150110	Wall mount kit
E29R150111	VESA mount kit
E29R150112	DIN-rail mount kit
	M.2 NVMe SSD 128GB or above *The AIE900B-ONX requires an SSD for image installation. Please order an SSD if you need image installation service.
	Wi-Fi module kit (mPCIe)
	LTE module kit (M.2 or mPCIe)
	5G module kit
	Out-of-band (OOB) module
509000001500	24V/120W Adapter
	Power Cord

Note: The optional accessory list may be subject to change without notice.

This page is intentionally left blank.

SECTION 2
HARDWARE INSTALLATION

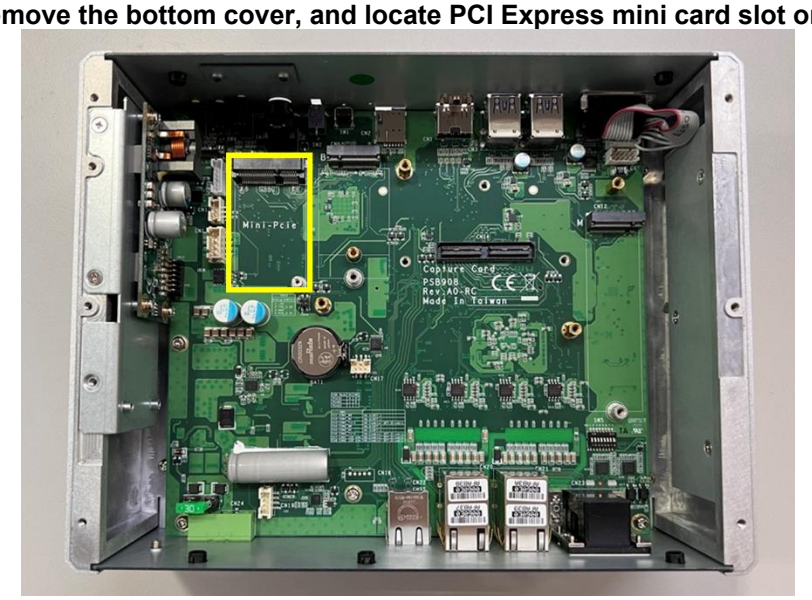
The AIE900B-ONX is convenient for your various hardware configurations, such as SSD (Solid State Drive), M.2 Key B module, and PCI Express Mini Card modules. Chapter 2 will show you how to install the hardware.

2.1 Installing the PCI Express Mini Card

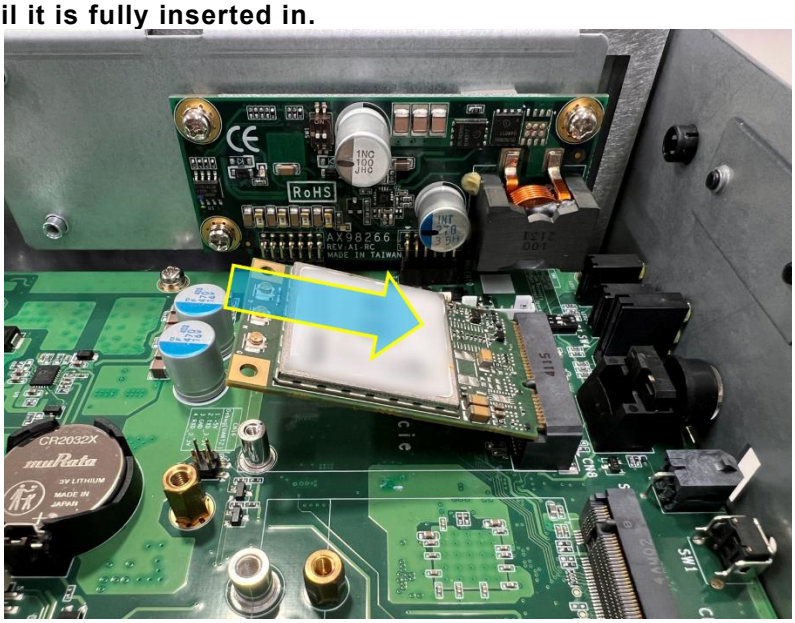
Step 1 Turn off the system, and unplug the power adapter.

Step 2 Turn the system upside down to locate screws at the bottom side as red marked and loosen seven screws.

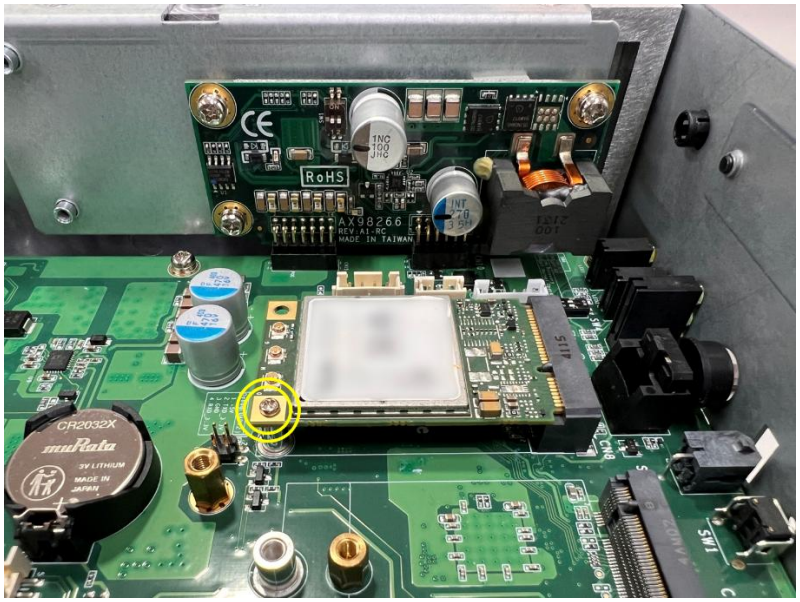
Step 3 Remove the bottom cover, and locate PCI Express mini card slot on the board.



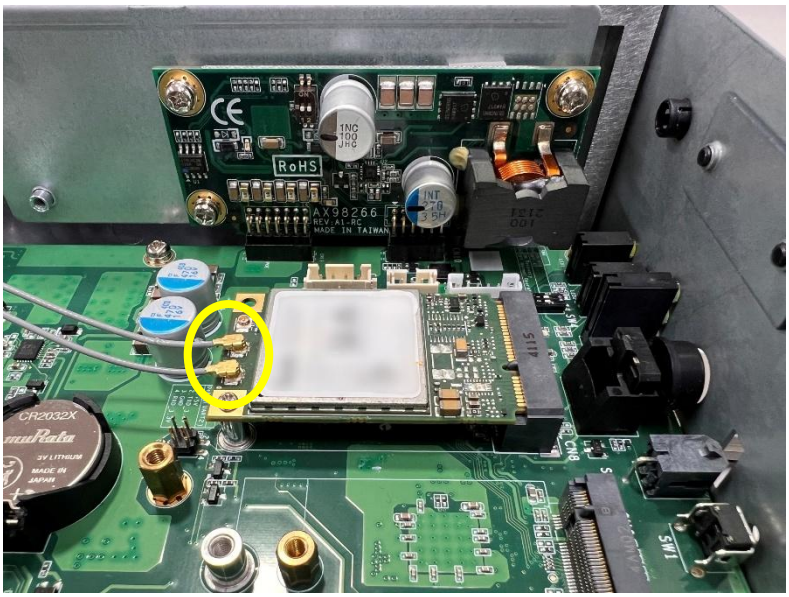
Step 4 Holding the PCI Express mini card at a 45 degree angle up from horizontal, slowly insert the golden fingers into the PCI Express slot until it is fully inserted in.



Step 5 Press it down gently, but firmly, and then secure the PCI Express mini card to the carrier by tightening up the one M2 Phillips screw to the marked position.



Step 6 Connect the SMA cables to the PCI Express mini card.



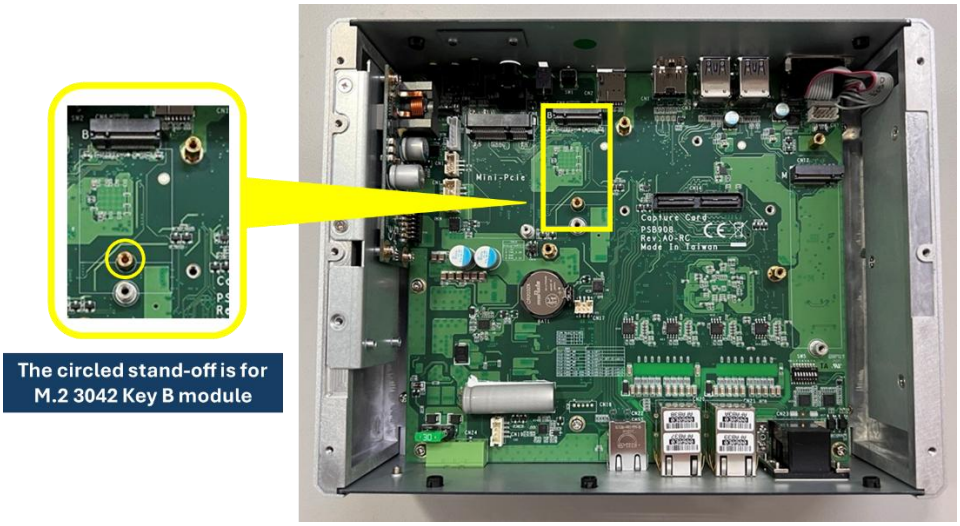
2.2 Installing the M.2 Key B 3042/3052 LTE or 5G Module

Step 1 **Turn off the system, and unplug the power adapter.**

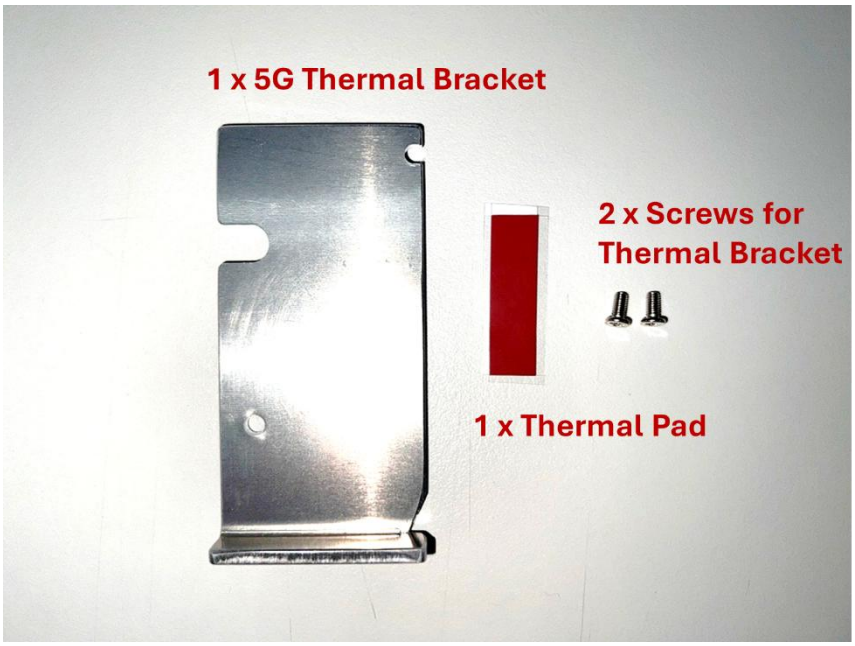
Step 2 **Flip the system upside down and loosen five screws at the bottom side, as marked with red circles in the figure below.**

Step 3 **Take off the bottom cover, and locate the M.2 3042/3052 Key B slot on the carrier board.**

Note: To prevent mechanical interference, please remove the stand-off for the M.2 3042 Key B module before installing the M.2 3052 Key B module.



Step 4 **Take the 5G thermal bracket, one thermal pad, and two M3 screws out of the package box.**

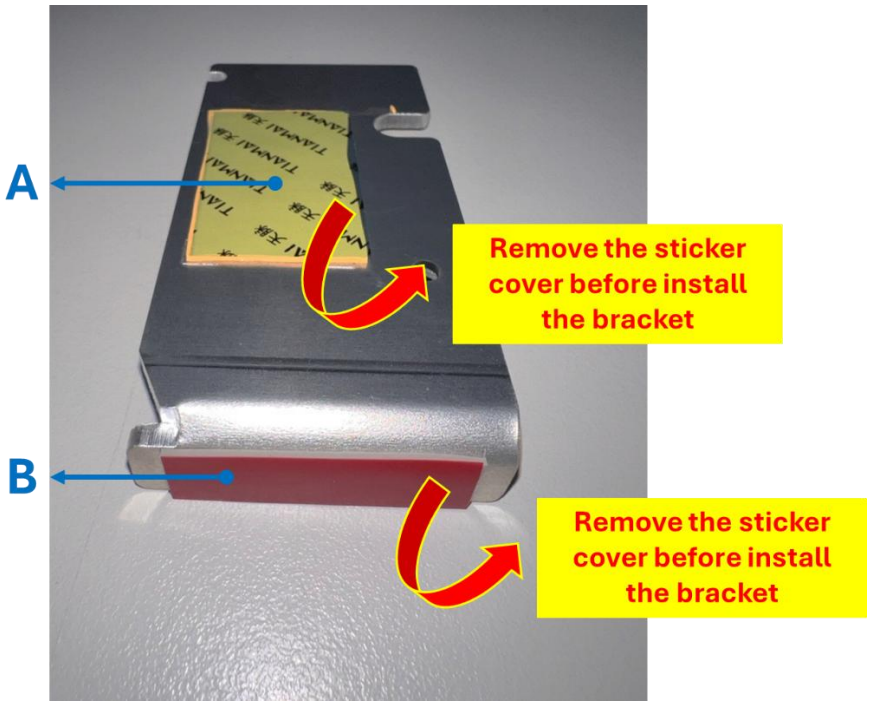


Step 5 **Attach the thermal pad onto the 5G thermal bracket.**

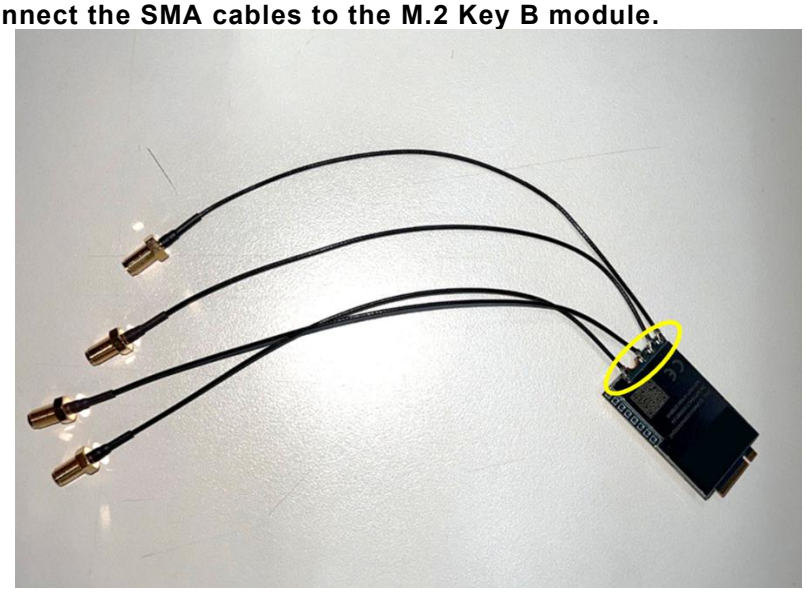
Note: **Thermal Pad dimensions:**

- **A: 35mm (L) x 10mm (W) x 1mm (H) (Pre-mounted on bracket)**
- **B: 40mm (L) x 21mm (W) x 1mm (H) (Installed by the user)**

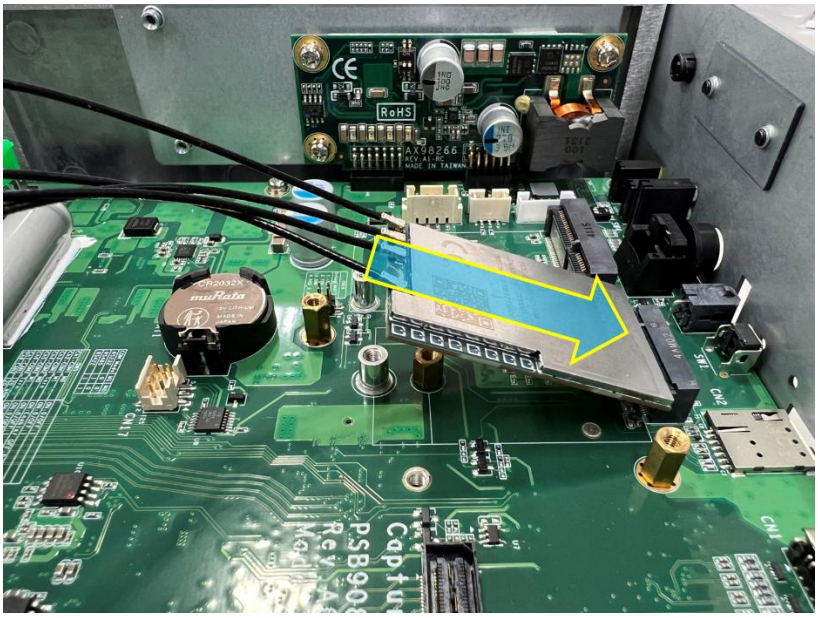
Remove the sticker cover before install the bracket.



Step 6 Connect the SMA cables to the M.2 Key B module.

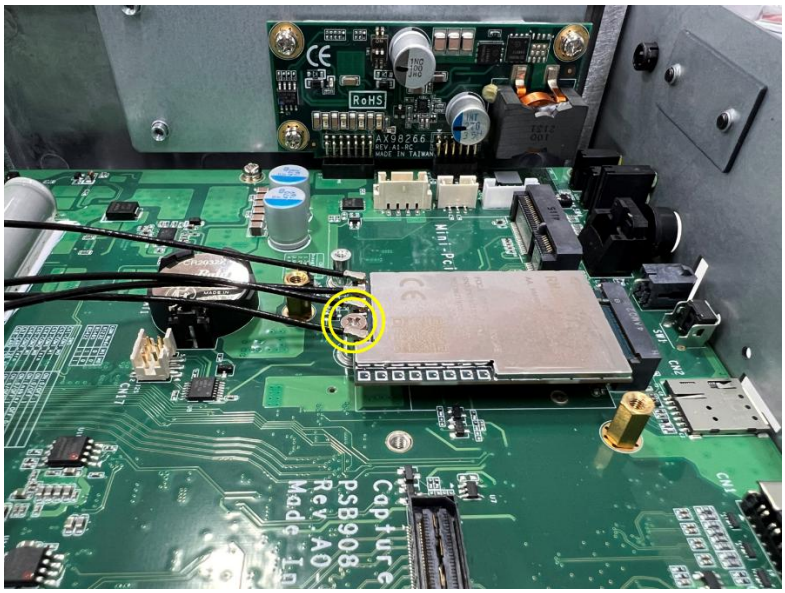


Step 7 While holding the M.2 Key B 3052 module at a 30 degree angle up from the horizontal, slowly insert the golden fingers into the M.2 Key B 3042/3052 slot, until it is fully inserted in place.



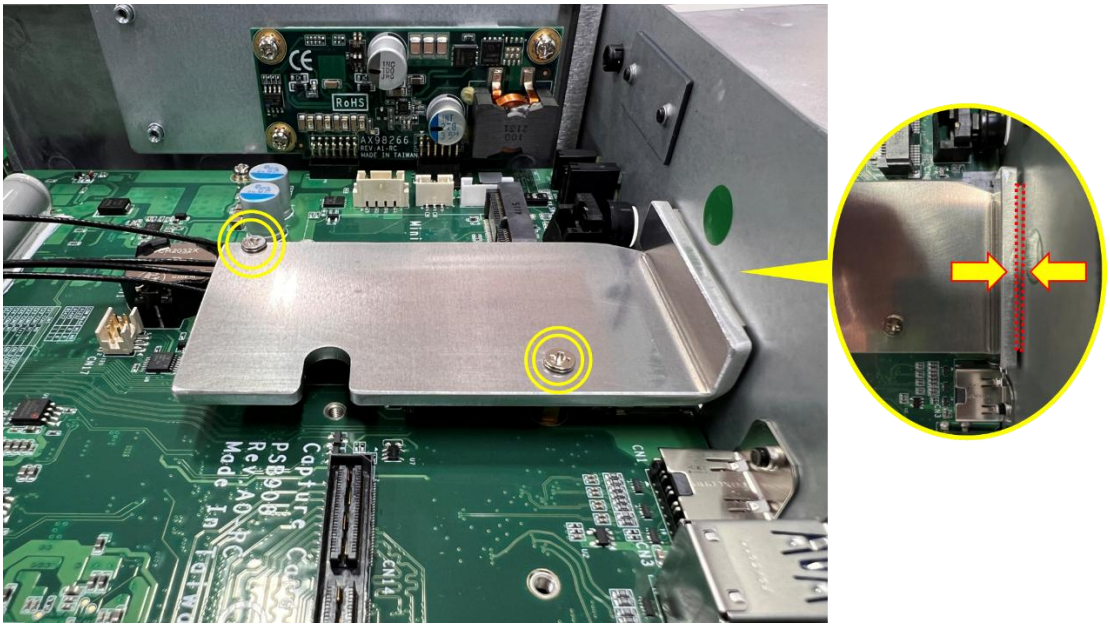
Step 8 **Press the M.2 Key B 3052 module down gently, but firmly, and then secure the module to the carrier by tightening up one M3 screw to the marked position.**

Note: M3 screw requires the tightening torque: 4.5~5.5Kgf-cm



Step 9 **Remove the thermal pad sticker cover first. Place the 5G thermal bracket on the M.2 Key B 3052 module, then secure the bracket to the carrier by firmly tightening the two M3 screws to the marked positions. Ensure that the thermal pad on the side is securely attached to the chassis.**

Note: Remove the sticker cover before install the bracket.

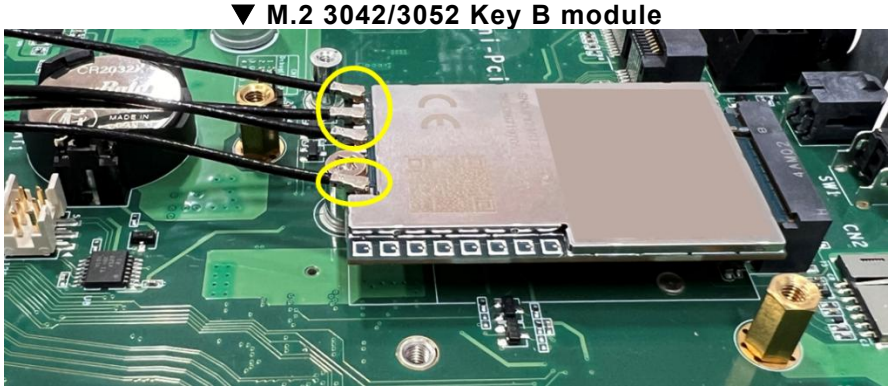


2.3 Installing 5G or LTE or Wi-Fi Antenna Cable

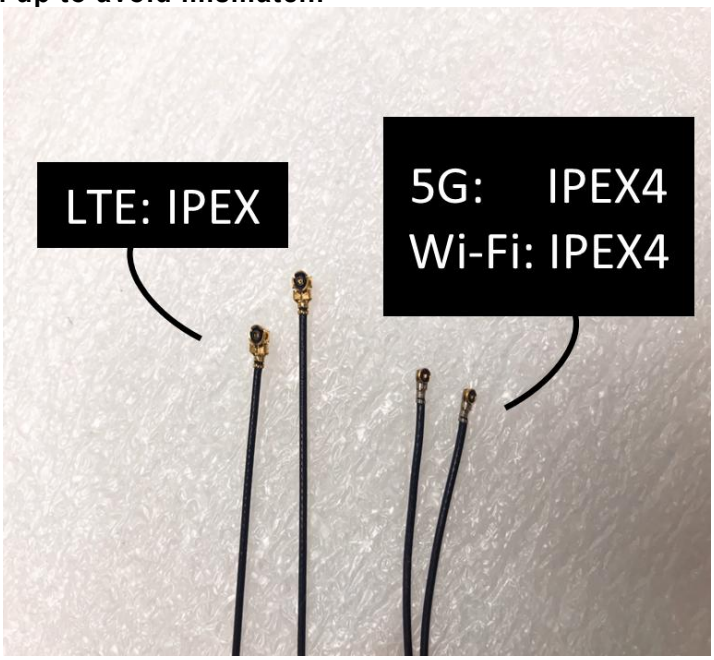
Step 1 **Install the Mini PCIe card or M.2 Key B module, securing it with a screw and connecting it using SMA cables. For more details, please refer to sections 2.1 to 2.2.**

▼ PCI Express mini card

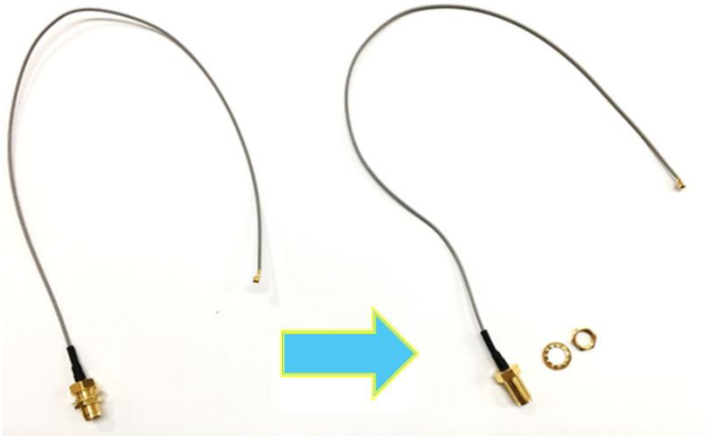
▼ M.2 3042/3052 Key B module



Note: The 5G, LTE and Wi-Fi modules come with a different type of SMA cable, one is IPEX, and another one is IPEX4. Please do not mix them up to avoid mismatch.

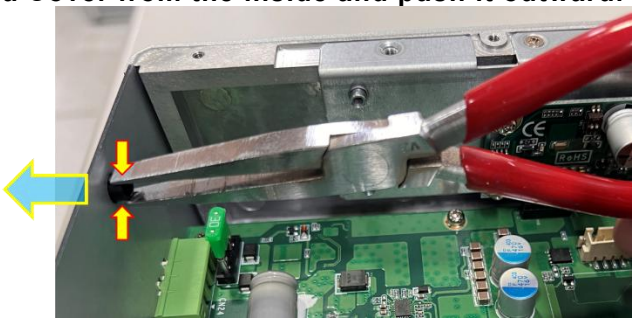


Step 2 Before installing the antenna cable onto the chassis, kindly remove the hex nut and washer.



Step 3 Install the antenna cable connectors through the openings on the chassis, put the washer and Hex nut into the antenna cable connector, and then tighten them up.

Note: Remove the antenna cover, please use needle-nose pliers to grip the Antenna Cover from the inside and push it outward.

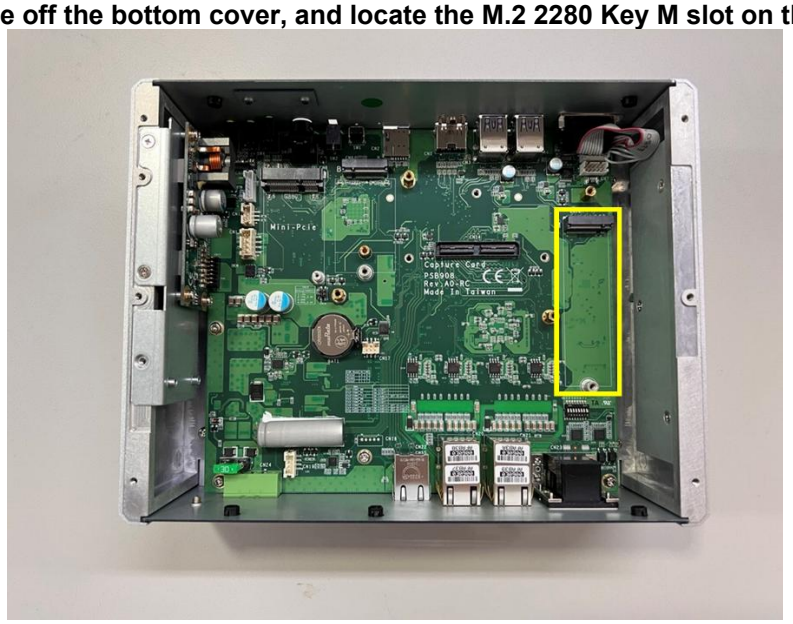


2.4 Installing the M.2 2280 Key M SSD Drive

Step 1 **Turn off the system, and unplug the power adapter.**

Step 2 **Flip the system upside down and loosen five screws at the bottom side, as marked with red circles in the figure below.**

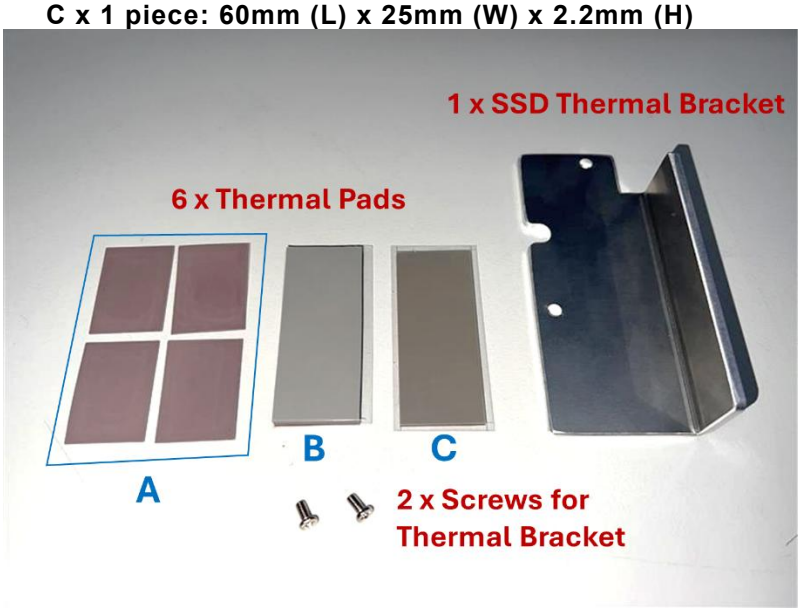
Step 3 **Take off the bottom cover, and locate the M.2 2280 Key M slot on the board.**



Step 4 **Take the SSD thermal bracket, six thermal pads, and two M3 screws out of the package box.**

Note: Thermal Pad dimensions:

- **A x 4 pieces: 32mm (L) x 23mm (W) x 0.5mm (H)**
- **B x 1 piece: 60mm (L) x 25mm (W) x 4.5mm (H)**
- **C x 1 piece: 60mm (L) x 25mm (W) x 2.2mm (H)**

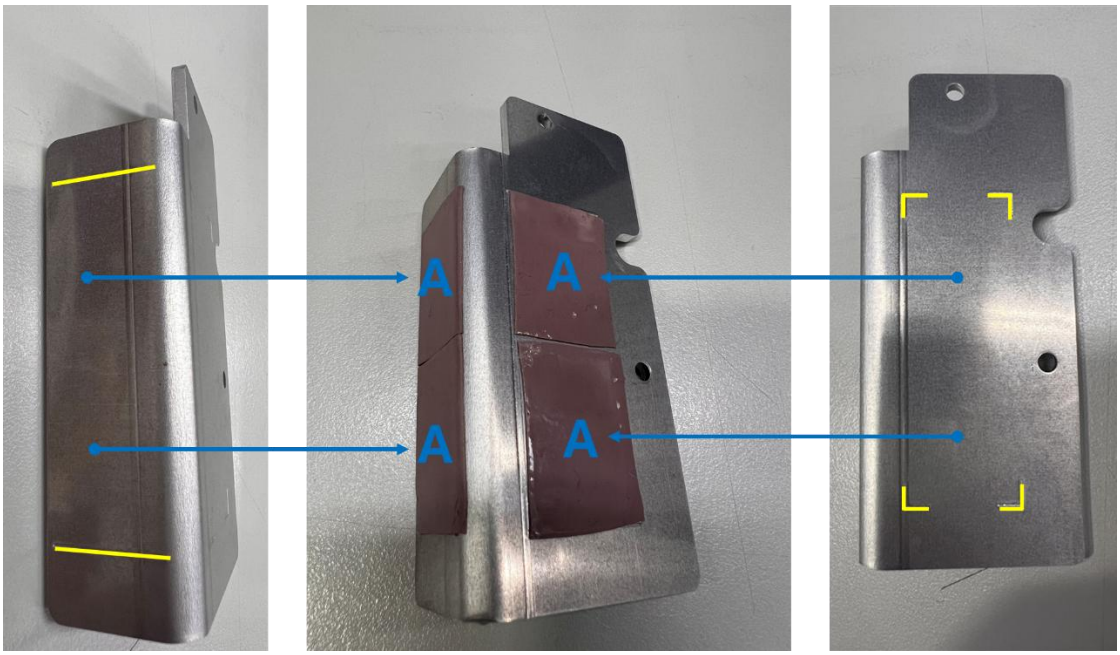


Step 5 **Attach the four thermal pads onto the SSD thermal bracket and place the thermal pads align with the mark on thermal bracket.**

Note: Thermal Pad dimensions:

- **A x 4pcs: 32mm (L) x 23mm (W) x 0.5mm (H)**

Remove the sticker cover before install the bracket.

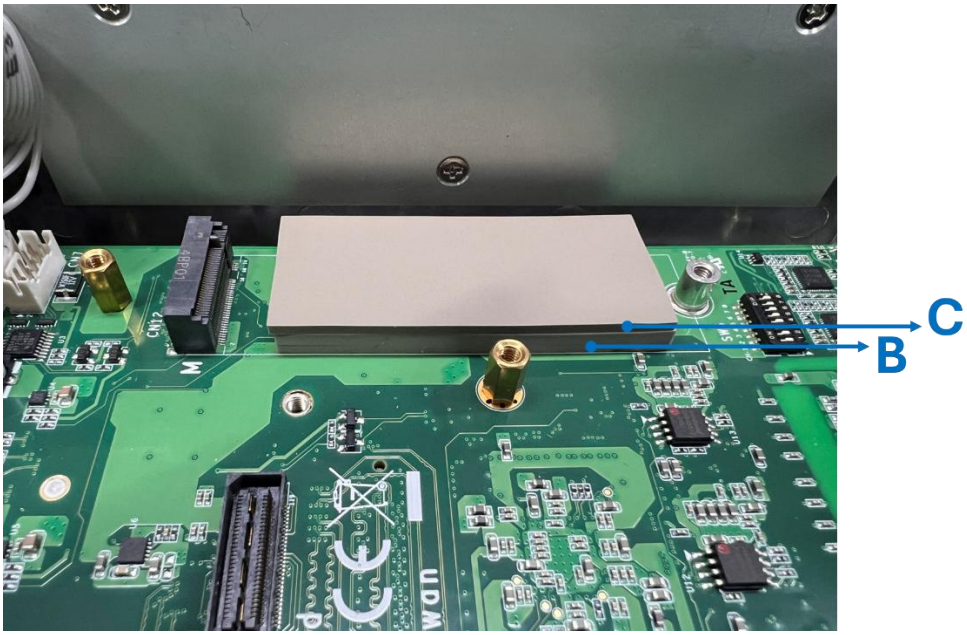


Step 6 **Apply two thermal pads onto the M.2 2280 Key M slot. Apply B thermal pad first, and then apply C thermal pad.**

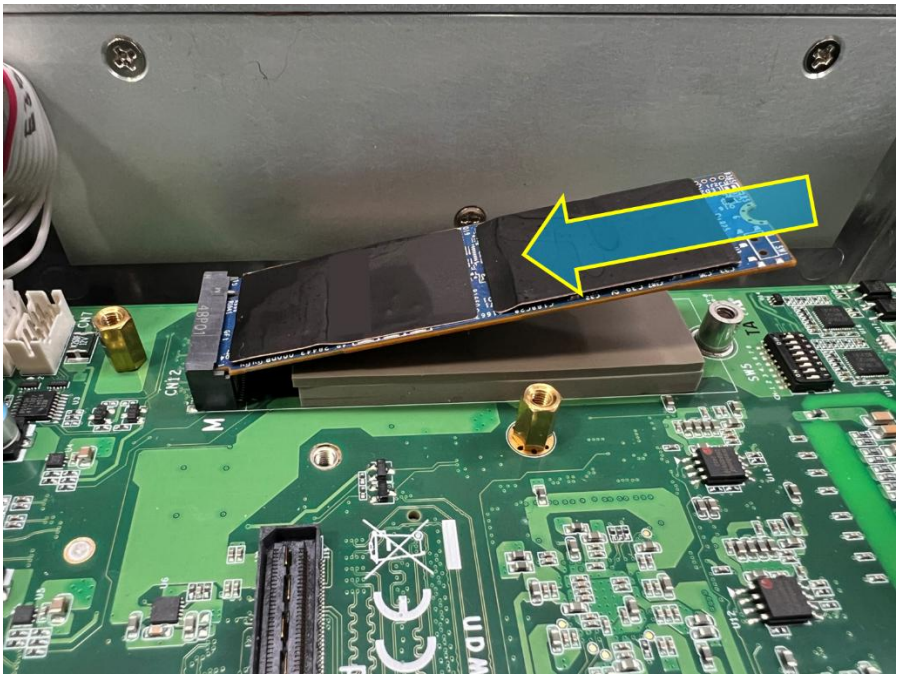
Note: Thermal Pad dimensions:

- **B x 1 piece: 60mm (L) x 25mm (W) x 4.5mm (H)**
- **C x 1 piece: 60mm (L) x 25mm (W) x 2.2mm (H)**

Remove the sticker cover before install the bracket.



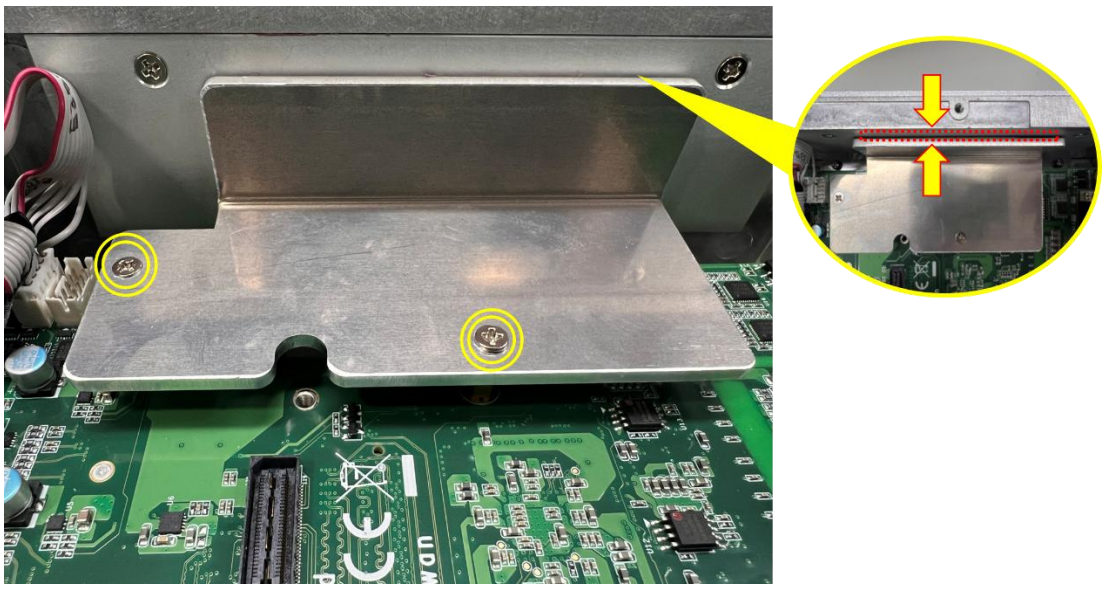
Step 7 **While holding the M.2 2280 Key M SSD drive at a 30-degree angle up from the horizontal, slowly insert the golden fingers into the M.2 2280 Key M slot, until it is fully inserted in place.**



Step 8 **Press the M.2 2280 Key M SSD drive down gently, but firmly, and then secure the M.2 2280 Key M SSD drive to the carrier by tightening up one M3 screw to the marked position.**

Step 9 **Place the SSD thermal bracket on the M.2 2280 Key M SSD drive, then secure the bracket to the carrier by firmly tightening the two M3 screws to the marked positions. Ensure that the thermal pad on the side is securely attached to the chassis.**

Note: Remove the sticker cover before install the bracket.



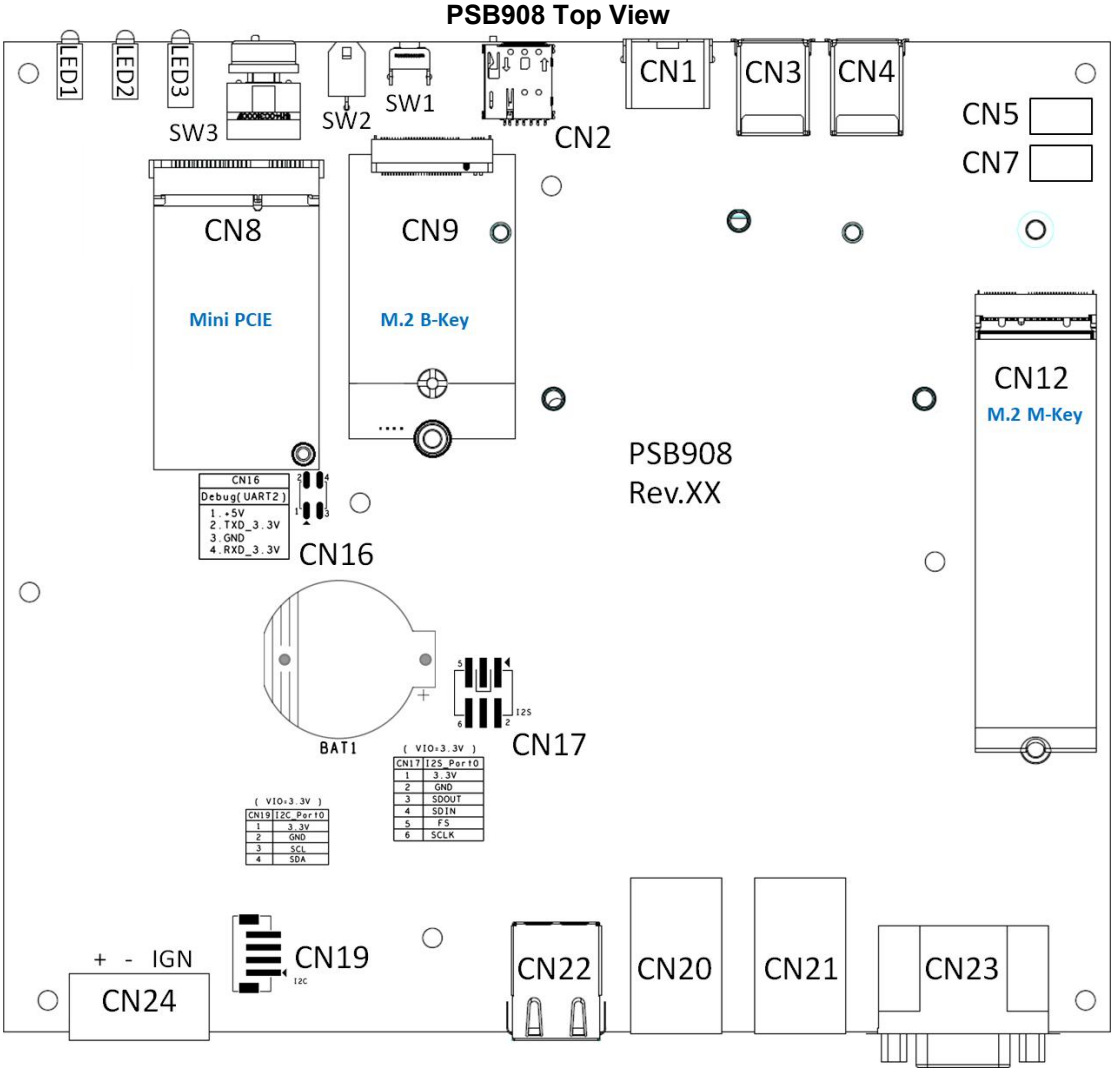
This page is intentionally left blank.

SECTION 3
CONNECTOR & PIN DEFINITIONS

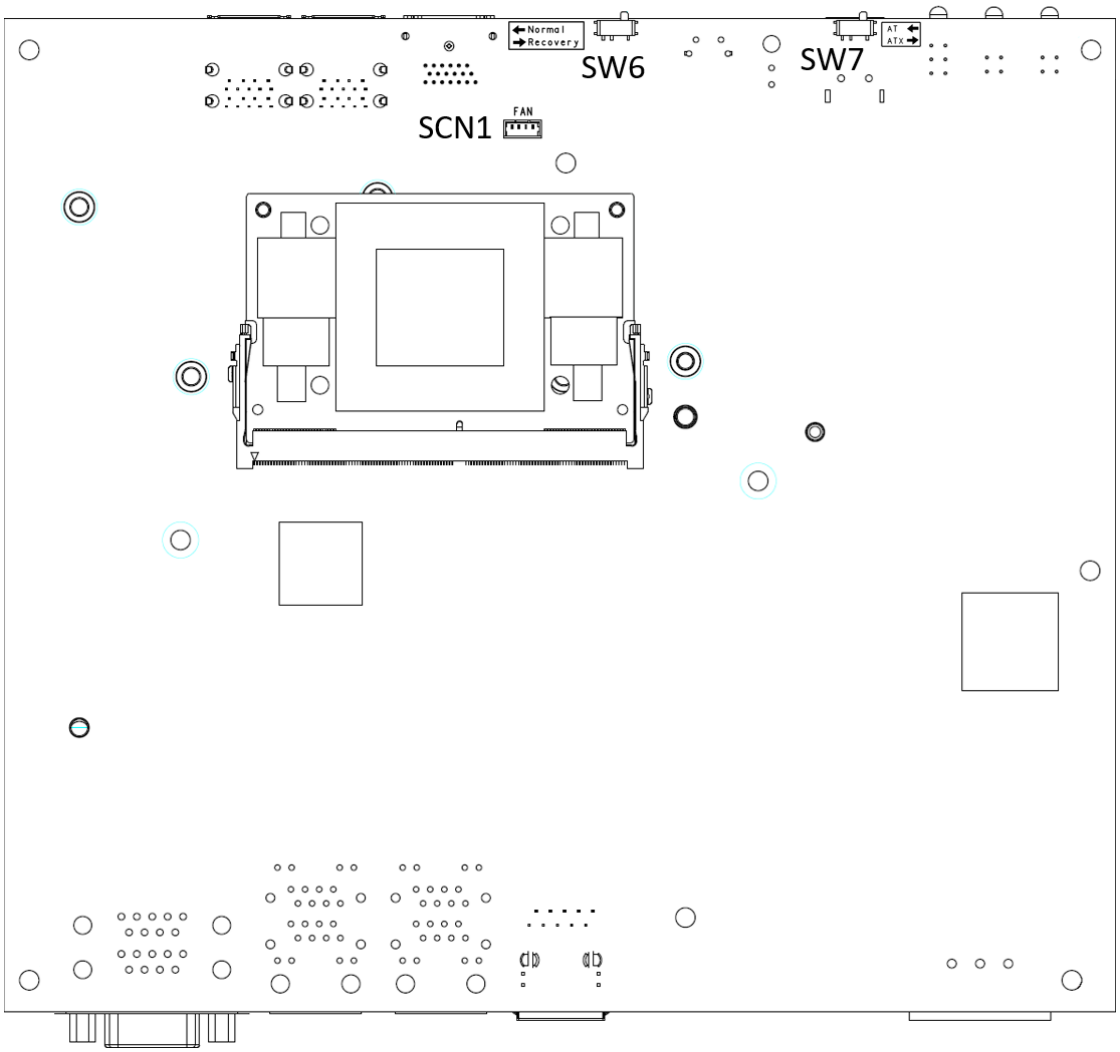
This chapter contains connector information and detailed pin definitions of the AIE900B-ONX.

3.1 Connector Location

PSB908 Top View



PSB908 Bottom View



Note: We strongly recommend that you should not modify any unmentioned jumper setting without Axiomtek FAE's instruction. Any modification without instructions might cause damage to the system.

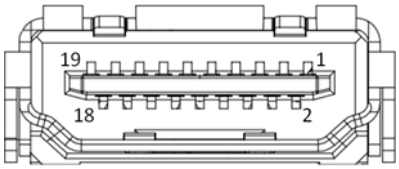
3.2 Connectors

Connectors connect the board with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table showing you all connectors, buttons and switches on the **AIE900B-ONX** Series.

Connectors / Buttons / Switches	PCB Location	Section
HDMI Connector	CN1	3.2.1
Nano SIM Card Slot	CN2	3.2.2
USB3.2 Gen2 Type A Connector	CN3, CN4	3.2.3
Digital IO Connector	CN5, CN7	3.2.4
PCI-Express Mini Card slot	CN8	3.2.5
M.2 3042/3052 Key B Slot	CN9	3.2.6
M.2 2280 Key M PCIe x4 SSD slot	CN12	3.2.7
Debug UART Connector	CN16	3.2.8
I2S Connector	CN17	3.2.9
I2C Connector	CN19	3.2.10
Ethernet / PoE Port	POE1~POE4, LAN1 (CN20, CN21, CN22)	3.2.11
Serial & CAN Port Connector	CN23	3.2.12
DC Phoenix Power In Connector	CN24	3.2.13
Fan Connector	SCN1	3.2.14
Reset Button	SW1	3.2.15
Remote Power Switch Connector	SW2	3.2.16
Power Button	SW3	3.2.17
Recovery Mode Switch	SW6	3.2.18
AT/ATX Switch	SW7	3.2.19
CMOS Battery Interface	BAT1	3.2.20
Power and Storage LED Indicator	LED1	3.2.21
LAN and PoE Link LED Indicator	LED2, LED3	3.2.22

3.2.1 HDMI Connector (CN1)

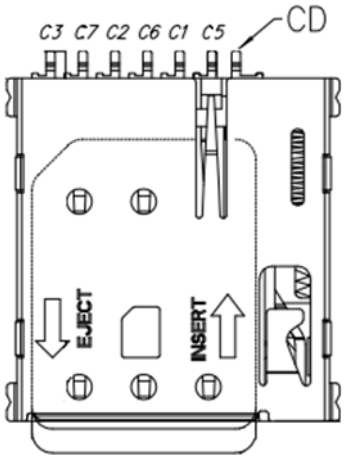
The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable.



Pin	Signal	Pin	Signal
1	HDMI1_DATA2+	2	GND
3	HDMI1_DATA2-	4	HDMI1_DATA1+
5	GND	6	HDMI1_DATA1-
7	HDMI1_DATA0+	8	GND
9	HDMI1_DATA0-	10	HDMI1_CLK+
11	GND	12	HDMI1_CLK-
13	NC	14	NC
15	HDMI1_SCL	16	HDMI1_SDA
17	GND	18	+5V
19	HDMI_HTPLG		

3.2.2 Nano SIM Card Slot (CN2)

AIE900B-ONX has a Nano SIM card slot (CN2). To make sure the system functions correctly, you need to use the Nano SIM card along with a 5G/LTE module. Please insert the LTE module into the PCI-Express Mini Card slot (CN8) for LTE/3G networks. Additionally, for 5G/LTE(CAT6 or above) wireless networks, you can insert 5G/LTE module into the M.2 3042/3052 Key B slot (CN9).

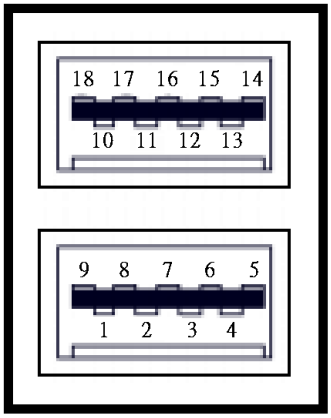


Pin	Signal
C1	UIM PWR
C2	UIM RST
C3	UIM CLK
C5	GND
C6	UIM VPP
C7	UIM DATA
CD	NC

3.2.3 USB3.2 Gen2 Type A Connector (CN3,CN4)

The Universal Serial Bus connectors are compliant with USB 2.0 (480Mbps) and USB 3.2 Gen2 (10Gbps), and ideally for installing USB peripherals such as camera, sensor, keyboard, mouse, scanner, etc.

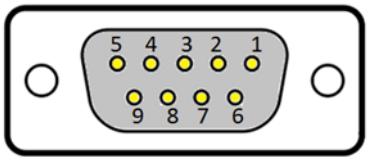
Note: **The USB port with a white border is the recovery port and can be used for JetPack flash purposes. For more details, please refer to Section 4.1 JetPack SDK Flash Method.**



Pin	Signal	Pin	Signal
1	5V_USB	10	5V_USB
2	USB1_D-	11	USB2_D-
3	USB1_D+	12	USB2_D+
4	GND	13	GND
5	USB_SS1_RX-	14	USB_SS2_RX-
6	USB_SS1_RX+	15	USB_SS2_RX+
7	GND	16	GND
8	USB_SS1_TX-	17	USB_SS2_TX-
9	USB_SS1_TX+	18	USB_SS2_TX+

3.2.4 Digital I/O Connector (DIO) (Female) (CN5, CN7)

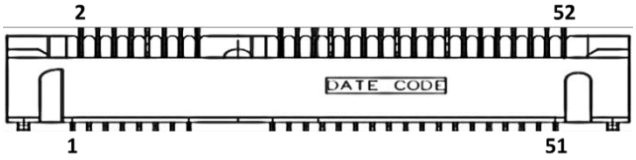
The AIE900B-ONX supports one 8-Channel digital I/O connector (5V TTL). The digital I/O is controlled via software programming.



Pin	Signal	Pin	Signal
1	DIO_0	5	DIO_4
2	DIO_1	6	DIO_5
3	DIO_2	7	DIO_6
4	DIO_3	8	DIO_7
9	GND		

3.2.5 PCI-Express Mini Card Connector (CN8)

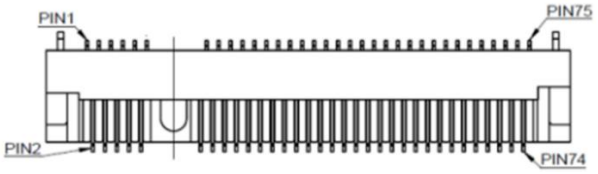
The AIE900B-ONX supports a full-size PCI-Express Mini Card slot. It is applying to either PCI-Express or USB 2.0 signal and complies with PCI-Express Mini Card Spec. V1.2.



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3V	3	NC	4	GND
5	NC	6	+1.5V	7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA	11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET	15	GND	16	UIM_VPP
17	NC	18	GND	19	NC	20	Pull up to +3.3V
21	GND	22	PERST#	23	PEX2_RX-	24	+3.3V
25	PEX2_RX+	26	GND	27	GND	28	+1.5V
29	GND	30	NC	31	PEX2_TX-	32	NC
33	PEX2_TX+	34	GND	35	GND	36	USB2.0_D-
37	GND	38	USB2.0_D+	39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#	43	GND	44	NC
45	NC	46	NC	47	NC	48	+1.5V
49	NC	50	GND	51	NC	52	+3.3V

3.2.6 M.2 3042/3052 Key B Slot (CN9)

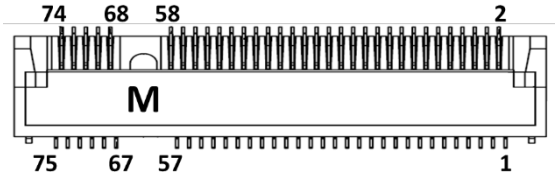
The AIE900B-ONX comes with one M.2 3042/3052 Key B USB3.2 Gen2 (10Gbps) slot for LTE (CAT6 or above) or 5G module.



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Config_3	2	+3.3V	3	GND	4	+3.3V
5	GND	6	Pull up 10K ohm to 3.3V	7	USB_D+	8	Pull up 100K ohm to 3.3V
9	USB_D-	10	NC	11	GND	12	CONNECT OR KEY B
13	CONNECT OR KEY B	14	CONNECT OR KEY B	15	CONNECT OR KEY B	16	CONNECT OR KEY B
17	CONNECT OR KEY B	18	CONNECT OR KEY B	19	CONNECT OR KEY B	20	NC
21	GND	22	NC	23	Pull up 10K ohm to 1.8V	24	NC
25	NC	26	NC	27	GND	28	NC
29	USB3_RX-	30	UIM_RESET	31	USB3_RX+	32	UIM_CLK
33	GND	34	UIM_DATA	35	USB3_TX-	36	UIM_PWR
37	USB3_TX+	38	NC	39	GND	40	NC
41	NC	42	NC	43	NC	44	NC
45	GND	46	NC	47	NC	48	NC
49	NC	50	NC	51	GND	52	NC
53	NC	54	NC	55	NC	56	NC
57	GND	58	NC	59	NC	60	NC
61	NC	62	NC	63	NC	64	NC
65	NC	66	NC	67	Pull up 10K ohm to 1.8V	68	NC
69	GND	70	+3.3V	71	GND	72	+3.3V
73	NC	74	+3.3V	75	GND		

3.2.7 M.2 2280 Key M PCIe x4 SSD Slot (CN12)

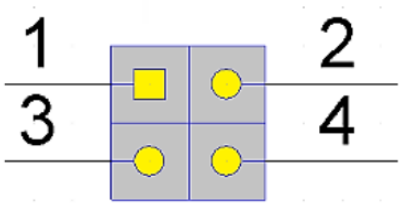
The AIE900B-ONX comes with one M.2 2280 Key M PCIe x4 NVMe SSD slot for storage.



Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	+3.3V	3	GND	4	+3.3V
5	PEX3_RX-	6	NC	7	PEX3_RX+	8	NC
9	GND	10	LED_1#	11	PEX3_TX-	12	+3.3V
13	PEX3_TX+	14	+3.3V	15	GND	16	+3.3V
17	PEX2_RX-	18	+3.3V	19	PEX2_RX+	20	NC
21	GND	22	NC	23	PEX2_TX-	24	NC
25	PEX2_TX+	26	NC	27	GND	28	NC
29	PEX1_RX-	30	NC	31	PEX1_RX+	32	NC
33	GND	34	NC	35	PEX1_TX-	36	NC
37	PEX1_TX+	38	NC	39	GND	40	NC
41	PEX0_RX-	42	NC	43	PEX0_RX+	44	NC
45	GND	46	NC	47	PEX0_TX-	48	NC
49	PEX0_TX+	50	PERST#	51	GND	52	CLKREQ#
53	PEX0_REF CLKn	54	PEWAKE#	55	PEX0_REF CLKp	56	NC
57	GND	58	NC	59	CONNECT ORKey M	60	CONNECT OR Key M
61	CONNECT OR Key M	62	CONNECT OR Key M	63	CONNECT ORKey M	64	CONNECT OR Key M
65	CONNECT OR Key M	66	CONNECT OR Key M	67	NC	68	NC
69	NC	70	+3.3V	71	GND	72	+3.3V
73	GND	74	+3.3V	75	GND		

3.2.8 Debug UART Connector (CN16)

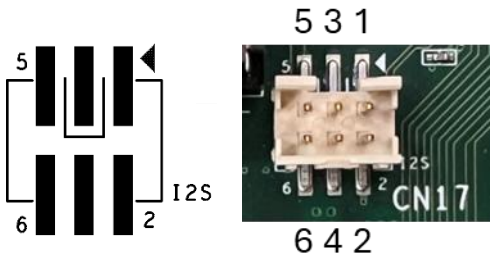
CN16 is the serial debug port (UART Port0) for debugging purposes during software development.



Pin	Function
1	+5V
2	TXD_3.3V
3	GND
4	RXD_3.3V

3.2.9 I2S Connector (CN17)

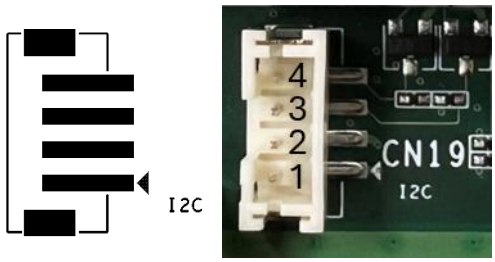
This is a 6-pin (pitch=2.00mm) connector for I2S interface, which is compliant with Amphenol Minitek® 2.00mm BTB/WTB - 98424-G52-06ALF.



Pin	Function
1	3.3V
2	GND
3	SDOUT
4	SDIN
5	FS
6	SCLK

3.2.10 I2C Connector (CN19)

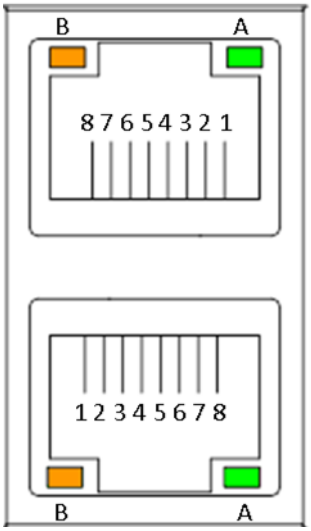
CN19 is connect to I2C port 0 of the NVIDIA® Jetson Orin™ NX, and it has pull up 2.2k ohm to 3.3V on carrier board.



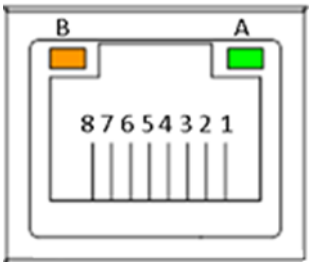
Pin	Function
1	3.3V
2	GND
3	SCL
4	SDA

3.2.11 Ethernet / PoE Ports (CN20, CN21, CN22)

The AIE900B-ONX comes with five RJ-45 connectors: LAN1 (NVIDIA® Jetson Orin™ NX) and PoE1/ PoE2/ PoE3/ PoE4 (Intel® I210-IT). Both of PoE1/ PoE2/ PoE3/ PoE4 are non-isolated PoE ports, which are compliant IEEE 802.3at Type 1 & Type 2, and the total power budget is 30 Watts maximum.



CN20 & CN21 (GbE PoE, PSE)	
Pin	**Signal**
1	Tx+(Data transmission positive)
2	Tx-(Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 1000 base T-Only)
8	RJ-1(For 1000 base T-Only)
A	Speed LED (1000M: Amber 100M: Green)
B	Active LED (Amber)



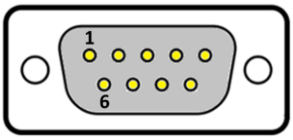
CN22 (GbE)	
Pin	**Signal**
1	Tx+(Data transmission positive)
2	Tx-(Data transmission negative)
3	Rx+(Data reception positive)
4	RJ-1(For 1000 base T-Only)
5	RJ-1(For 1000 base T-Only)
6	Rx- (Data reception negative)
7	RJ-1(For 1000 base T-Only)
8	RJ-1(For 1000 base T-Only)
A	Speed LED (1000M: Amber 100M: No light)
B	Active LED (Amber)

3.2.12 Serial & CAN Port Connector (CN23)

AIE900B-ONX features two DB9 connectors for two serial port (RS-232 / RS-422 / RS-485, Default is set as RS-232) as well as one CAN-bus port.

Note:

- The COM signals originate from UART signals on NVIDIA® Jetson Orin™ NX. NVIDIA's official mapping designates: COM port corresponds to "ttyTHS1", and Debug port corresponds to "ttyTCU0".
- Baud Rate: 50~115200



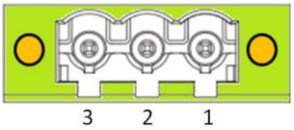
Pin	RS-232	RS-422	RS-485
1		TX-	DATA-
2	RXD	TX+	DATA+
3	TXD	RX+	
4		RX-	
5	GND		
6	CAN_H		
7	RTS		RTS
8	CTS		CTS
9	CAN_L		

[Command Line]:

```
$ sudo su
$ cd /sys/devices/platform/f81435_mode_ctrl/f81435/

[Switch to RS232]: (Default Mode)
$ echo rs232 > uartMode
$ cat uartMode

[Switch to RS422]:
$ echo rs422 > uartMode
$ cat uartMode

[Switch to RS485]:
$ echo rs485 > uartMode
$ cat uartMode
```

3.2.13 DC Phoenix Power In Connector (CN24)

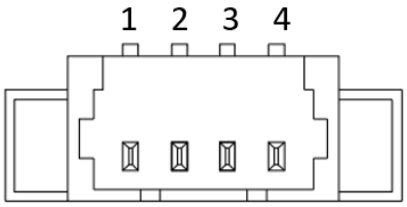
The AIE900B-ONX supports a 9V to 36V Phoenix DC-in connector for system power input.



Pin	Function
1	DC IN
2	GND
3	Ignition

3.2.14 Fan Connector (SCN1)

The AIE900B-ONX reserves a fan connector (SCN1) for a fan kit.



Pin	Signal
1	GND
2	5V
3	TACH
4	PWM

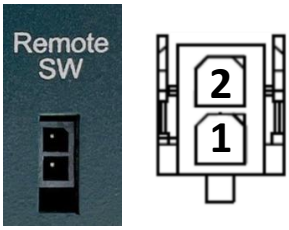
3.2.15 Reset Button (SW1)

Reset button can allow users to reset AIE900B-ONX during system abnormal situations.

Setting	Function
ON	Reset System
OFF	Keep system status

3.2.16 Remote Power Switch Connector (SW2)

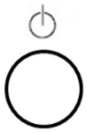
One 2-pin connector output for remote power on/off switch.



Setting	Function
Short (1-2)	Turn ON / OFF System
Open	Keep System Status

3.2.17 Power Button (SW3)

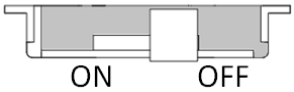
The power button can allow users to either turn on the AIE900B-ONX or forcibly shut down the system.



Function	Description
ON	Turn on system
OFF	Forcibly shut down the system

3.2.18 Recovery Mode Switch (SW6)

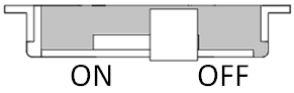
It will make NVIDIA® Jetson Orin™ NX force recovery mode when switching SW6 to ON before booting up the system.



Setting	Function
ON	Recovery Mode
OFF	Normal

3.2.19 AT/ATX Switch (External) (SW7)

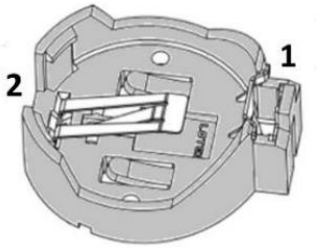
If you switch OFF SW7, the system will automatically power on upon receiving power input, without requiring you to press the soft power button. This switch enables the system to be powered on automatically.



Setting	Function
ON	ATX Mode (Default)
OFF	AT Mode

3.2.20 CMOS Battery Connector (BAT1)

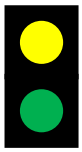
This connector is for CMOS battery interface.



Pin	Signal
1	+VBAT
2	GND

3.2.21 Power and Storage LED Indicators (LED1)

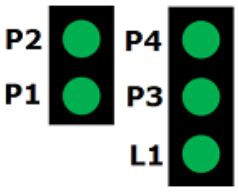
The Yellow LED is linked to Solid-state Drive (SSD) activity signal. LED flashes every time SSD is accessed. The power LED (Green) lights up and will remain steady while the system is powered on.



LED Color	Function
Yellow	M.2 SSD Activity
Green	Power ON /OFF

3.2.22 LAN and PoE Link LED Indicators (LED2, LED3)

The LED2 and LED3 are linked to one LAN and four PoE ports to receive their activity signals. Both LED2 and LED3 indicate activity, which blink as long as there is activity on the port.



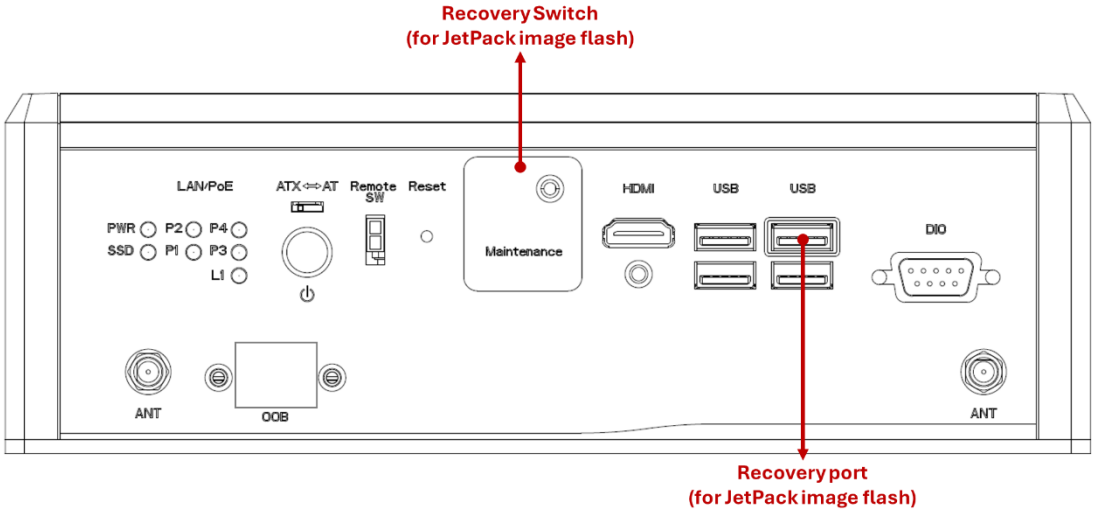
LED	Description	LED	Description
P2	PoE2 LAN Link Active	P4	PoE4 LAN Link Active
P1	PoE1 LAN Link Active	P3	PoE3 LAN Link Active
		L1	LAN1 LAN Link Active

SECTION 4
JETPACK SDK

This chapter provides users with a detailed description of how to flash NVIDIA Jetpack BSP for AIE900B-ONX, the user could follow the below instruction to install or reinstall Jetpack BSP by themselves.

4.1 Jetpack SDK Flash Method

Please use the following instructions to flash the JetPack to the AIE900B-ONX.



Please contact our sales or FAE for the latest Jetpack SDK and prepare a Linux host system running x86_64 Ubuntu v20.04 or later.

Note: If the Linux host system is running x86_64 Ubuntu v20.04 or later, please follow the instructions below to install Python first.

Step 1. Connect the Linux host system to internet

Step 2. Install Python with the command below:

```
sudo apt-get update
sudo apt-get install python-is-python3
```

Step1. AIE900B-ONX connection as follows:

- Connect a USB cable from the Linux host system to the USB Type A port at AIE900B-ONX, and switch the recovery switch to ON. For more details, please refer to **3.2.18 Recovery Mode Switch (SW6)**.
- Connect an HDMI monitor to AIE900B-ONX.

Step2. Open the terminal at the host system, and change the path to the image file directory,e.g., "~/Downloads", and check image tarball data integrity with the following commands:

```
$ cd ~/Downloads
$ md5sum -c <image_tarball_file_name>.tbz2.md5sum
```

Command Example:

$ md5sum -c mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0.tbz2.md5sum

```
axio@axio-desktop:~/Downloads$ md5sum -c mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0.tbz2.md5sum
mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0.tbz2: OK
axio@axio-desktop:~/Downloads$
```

Step3. If the check result returns OK, untar the image file with the command below:

```
$ tar jxvf <image_tarball_file_name>.tbz2
```

Command Example:

$ tar jxvf mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0.tbz2

```
axio@axio-desktop:~/Downloads$ tar jxvf mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0.tbz2
```

Step4. Change the directory to the image package folder with the command below:

```
$ cd <image_file_name>
```

Command Example:

$ cd mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0

```
axio@axio-desktop:~/Downloads$ cd mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0
axio@axio-desktop:~/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0$
```

Step5. Make sure the recovery switch(SW6) has been switched to ON, and run the command lsusb, then the command line "0955:7323 Nvidia Corp. APX" should be listed.

```
$ lsusb
```

```
axio@axio-desktop:~/Downloads$ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 005: ID 067b:23a3 Prolific Technology, Inc. USB-Serial Controller
Bus 001 Device 019: ID 0955:7323 NVIDIA Corp. APX
Bus 001 Device 003: ID 067b:2303 Prolific Technology, Inc. PL2303 Serial Port / Mobile Action MA-8910P
Bus 001 Device 007: ID 05e3:0608 Genesys Logic, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
axio@axio-desktop:~/Downloads$
```

Step6. Running the following command to flash the image.
`$sudo ./tools/kernel_flash/l4t_initrd_flash.sh --flash-only --massflash 5`

```
axio@axio-desktop:~/Downloads$ cd mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0
axio@axio-desktop:~/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0$ sudo ./tools/kernel_flash/l4t_initrd_flash.sh --flash-only --massflash 5
[sudo] password for axio:
# Entry added by NVIDIA initrd flash tool
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/tools/kernel_flash/tmp 127.0.0.1(rw,nohide,insecure,no_subtree_check,async,no_root_squash)
rpcbind: another rpcbind is already running. Aborting
Export list for localhost:
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/tools/kernel_flash/tmp 127.0.0.1
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/jetson-orin-nano-devkit-super.conf: line 29: /home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/p3768-0000-p3767-0000-a0.conf: No such file or directory
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/jetson-orin-nano-devkit-super.conf: line 29: /home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/p3768-0000-p3767-0000-a0.conf: No such file or directory
# Entry added by NVIDIA initrd flash tool
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/tools/kernel_flash/tmp 127.0.0.1(rw,nohide,insecure,no_subtree_check,async,no_root_squash)
rpcbind: another rpcbind is already running. Aborting
Export list for localhost:
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/tools/kernel_flash/tmp 127.0.0.1
/home/axio/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0/tools/kernel_flash/l4t_initrd_flash_internal.sh --network usb0 --usb-instance 1-5 --device-instance 0 --flash-only --external-device nvme0n1p1 -c "./tools/kernel_flash/flash_l4t_t234_nvme.xml" --network usb0 jetson-orin-nano-devkit-super nvme0n1p1
Start flashing device: 1-5, rcm instance: 0, PID: 43981
Log will be saved to Linux_for_Tegra/initrdlog/flash_1-5_0_20250709-145557.log
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes: 43981
```

Step7. The flashing procedure takes approximately 8 minutes or more. Once finished, and AIE900B-ONX will automatically reboot, and please switch the recovery switch(SW6) to OFF to return to standard mode.

[SUCCESS]:

```
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes: 43981
Ongoing processes:
axio@axio-desktop:~/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0$
```

[FAIL]: If the flashing procedure fails, you will see a message "Flash complete (WITH FAILURES)" as shown below. In this case, the AIE900B-ONX will not automatically reboot. Please press the reset button and repeat the flashing procedure.

```
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes: 45593
Ongoing processes:
Flash complete (WITH FAILURES)
axio@axio-desktop:~/Downloads/mfi_jetson-orin-nx-16GB-JP6.2-AIE900B-STD-V1.0.0$
```

THE DEFAULT LOGIN CREDENTIALS:

Username: nvidia Password: nvidia

※CAUTION:

Running `$ sudo apt upgrade` command for NVIDIA JetPack OTA may overwrite the BSP of the AIE series platform, which can cause unexpected results including losing I/O ports. For regular JetPack updates or reflashing, please contact our sales or FAE to get the latest AIE Series JetPack image.

4.2 Image Information Inquiry Command

Running `axiomtek.sh` command to inquiry the current image information, image version, L4T version, Linux kernel version, and Ubuntu version.

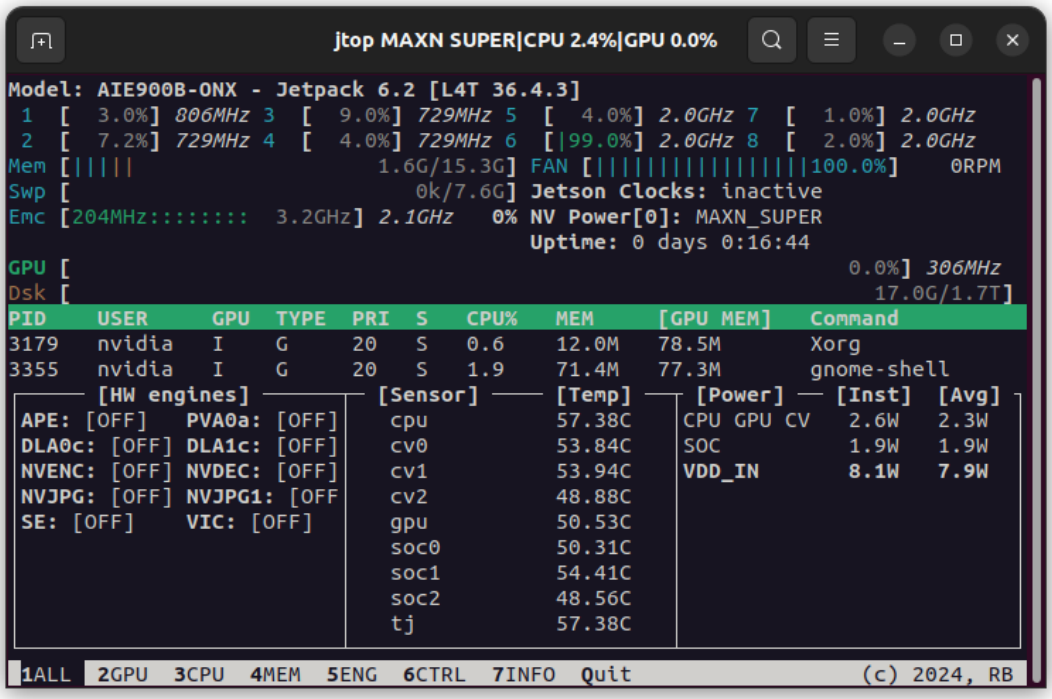
```
nvidia@nvidia-desktop:~$ axiomtek.sh
BUILD_MODEL=PSB908 + Jetson-ORIN_NX
BUILD_VERSION=JetPack-6.2_Linux
BSP_BUILD_VERSION=V1.0.0
BSP_BUILD_COMMIT_ID=main_a76bb6aaf
BUILD_DATE=2025/06/13 11:50:28
BUILD_ID=axio
L4T_VERSION=R36-4.3
LINUX_KERNEL_VERSION=5.15.148
UBUNTU_VERSION=Ubuntu 22.04.5 LTS
CUSTOMER_ID=Axiomtek
Libraries:
 CUDA: 12.6.68
 cuDNN: 9.3.0.75
 TensorRT: 10.3.0.30
 VPI: 3.2.4
 Vulkan: 1.3.204
 OpenCV: 4.8.0
 DEEPSTREAM: 7.1.0-1
nvidia@nvidia-desktop:~$
```

4.3 JTOP-Third-party Jetson Platform Monitor Tool

JTOP is a third-party system monitoring utility that runs on the terminal and see and control realtime the status of the AIE Series Platform. CPU, RAM, GPU status, power mode management, toolkits version and more.

JTOP is pre-installed in AIE900B-ONX. To launch JTOP, please enter the following command in the terminal:

```
$ sudo jtop
```

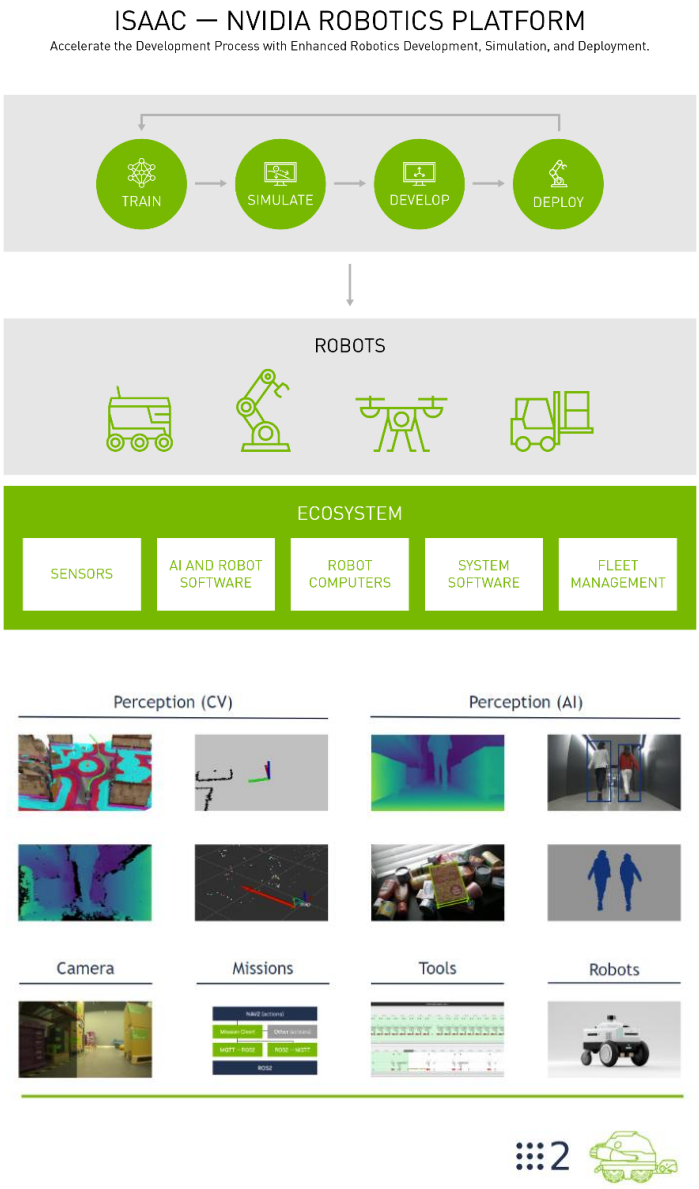


4.4 ISAAC — NVIDIA ROBOTICS PLATFORM

From smart automation in manufacturing to last-mile delivery, robots are becoming more ubiquitous in everyday life. However, industrial and commercial robotics development can be complex, time consuming, immensely challenging, and expensive. Unstructured environments across many use cases and scenarios are also common. The NVIDIA Isaac™ robotics platform addresses these challenges with an end-to-end solution to help decrease costs, simplify development, and accelerate time to market.

Installation Guide:

Please refer to the following link:
https://github.com/Axiomtek-AIE-SW/AIE900B/tree/main/isaac



*Source: https://www.nvidia.com/en-us/deep-learning-ai/industries/robotics/

APPENDIX A
PROGRAMMABLE DIGITAL I/O

A.1 Default Setting & Command Format

THE DEFAULT SETTING:

- DIO1 ~ 8 are all **INPUT**

Note: The DIO protocol will reset to the default setting after a cold boot.

Please refer to the below link for more information:
https://github.com/Axiomtek-AIE-SW/AIE900B/tree/main/dio

COMMAND FORMAT:

```
# i2cset -f -y <i2c_num> <device_addr> <reg_addr> <value>
# i2cget -f -y <i2c_num> <device_addr> <reg_addr>
```

[For Example]

<i2c_num>: 7

<device_adrr>: 0x24 or 0x25

<reg_addr>: 0x00~0x03 (as below Register Table)

<value>:

- Bit0 -> DIO1, Low: 0 High: 1
- Bit1 -> DIO2, Low: 0 High: 1
- ...
- Bit7 -> DIO8, Low: 0 High: 1

A.2 Register Table

Register 0 - Input Port Register Bit Description

Bit	Symbol	Access	Value	Description
7	I7	read only	X	Determined by externally applied logic level
6	I6	read only	X	
5	I5	read only	X	
4	I4	read only	X	
3	I3	read only	X	
2	I2	read only	X	
1	I1	read only	X	
0	I0	read only	X	

Register 1 - Output Port Register Bit Description
This register reflects the outgoing logic levels of the pins defined as outputs by Register 3. Bit values in this register have no effect on pins defined as inputs. Reads from this register return the value that is in the flip-flop controlling the output selection, **not** the actual pin value.
Legend: * default value

Bit	Symbol	Access	Value	Description
7	O7	R	1*	Reflects outgoing logic levels of pins defined as outputs by Register 3
6	O6	R	1*	
5	O5	R	1*	
4	O4	R	1*	
3	O3	R	1*	
2	O2	R	1*	
1	O1	R	1*	
0	O0	R	1*	

Register 3 - Configuration Register Bit Description

This register configures the directions of the I/O pins. If a bit in this register is set, the corresponding port pin is enabled as an input with high-impedance output driver. If a bit in this register is cleared, the corresponding port pin is enabled as an output. At reset, the I/Os are configured as inputs with a weak pull-up to V_{DD}.

Legend: * default value

Bit	Symbol	Access	Value	Description
7	C7	R / W	1*	Configures the directions of the I/O pins 0 = corresponding port pin enabled as an output 1 = corresponding port pin configured as input (default value)
6	C6	R / W	1*	
5	C5	R / W	1*	
4	C4	R / W	1*	
3	C3	R / W	1*	
2	C2	R / W	1*	
1	C1	R / W	1*	
0	C0	R / W	1*	

This page is intentionally left blank.

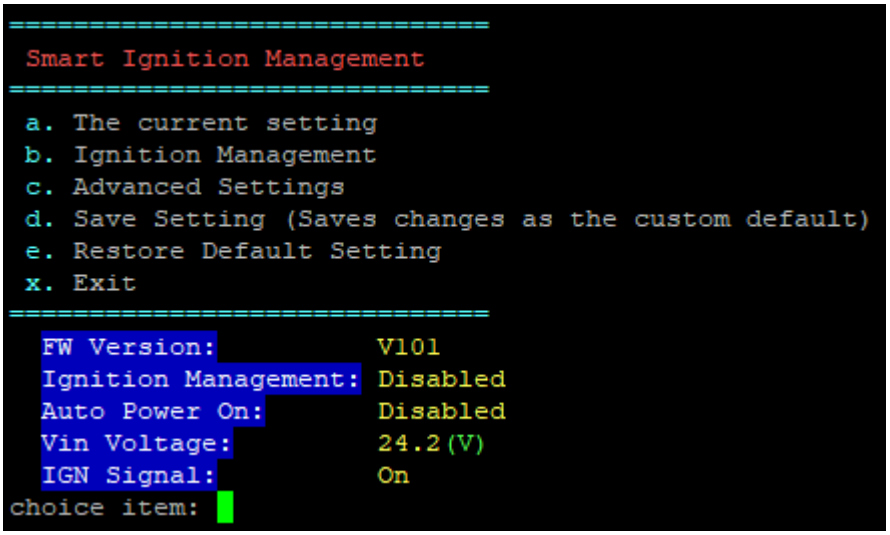
APPENDIX B
SMART IGNITION CONTROL

About Ignition Power Control
Please refer to the link below for more information:
https://github.com/Axiomtek-AIE-SW/AIE900B/tree/main/ignition

Smart Ignition Management
To access the Smart Ignition Management main menu, please enter the following command in the terminal:
$ psu2_axiomtek.sh

Brief information about the current settings will be displayed at the bottom of the main menu.

- Current FW Version
- Ignition Management status
- Auto Power On setting
- Current Vin Voltage value
- Ignition Signal setting



The Smart Ignition Management menu enables users to configure settings related to the vehicle ignition switch. The relevant ignition status setting values are displayed below:

a. The current setting

To view the detailed current settings of Smart Ignition, including the following items.

- Power-on Voltage (System powers on when voltage reaches this level)
- Undervoltage (System shuts down if voltage drops below this level)
- Undervoltage shutdown delay timer (if low voltage continues for the period)
- Ignition power-on delay timer (a delay when the ignition signal is detected)
- Ignition shutdown delay timer (a delay when the ignition signal is lost)

b. Ignition Management

To enable or disable the function of Ignition Power Management. To return to the main menu, select "Cancel".

c. Advanced Settings

1) Auto Power On Mode

To enable or disable Auto Power On Mode

2) Power-On/Undervoltage Detection

2-1) Power-On and undervoltage voltage threshold configuration

To adjust the voltage value of undervoltage voltage threshold value (Range from 9.0 to 23.0V) and power-on voltage threshold value (Range from 9.0 to 24.0V)

2-2) Undervoltage shutdown delay timer

To adjust the undervoltage shutdown delay EndTime value (Range from 60 to 10800 seconds)

3) Ignition Power Delay

3-1) Power-On Delay Timer

To adjust Power-On delay EndTime value (Range from 2 to 1800 seconds)

3-2) Shutdown Delay Timer

To adjust shutdown delay EndTime value (Range from 1 to 21600 seconds)

4) Cancel

To return to the main menu, select "Cancel".

d. Save Setting (Saves changes as the custom default)

To immediately save changes as the custom default, select "d" from the main menu. "Save Settings …[OK]" will be displayed once the saving process is complete.

e. Restore Default Setting

To restore custom default or factory default from the eeprom. "Restore Custom Default …[OK]" or "Restore Factory Default…[OK]" will be displayed once the restoration process is complete.
To return to the main menu, select "Cancel".

x. Exit

To exit the Smart Ignition Management main menu, select "x".