

Lanner

Embedded Computing Platform

Hardware Platforms for Intelligent Edge Computing

EAI-I133 User Manual

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About this Document

This manual describes the overview of the various functionalities of this product, and the information you need to get it ready for operation. It is intended for those who are:

- responsible for installing, administering and troubleshooting this system or Information Technology professionals.
- assumed to be qualified in the servicing of computer equipment, such as professional system integrators, or service personnel and technicians.

The latest version of this document can be found on Lanner's official website, available either through the product page or through the [Lanner Download Center](#) page with a login account and password.

Icons Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:



Note: This mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.



Warning: This mark indicates that there is a caution or warning and it is something that could damage your property or product.

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Technical Support

In addition to contacting your distributor or sales representative, you could submit a request to our **Lanner Technical Support** at <http://www.lannerinc.com/technical-support> where you can fill in a support ticket to our technical support department.

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Federal Communication Commission Interference Statement

CE

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. To protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of 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, 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 help.

FCC Caution

- ▶ Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
- ▶ This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



Note

1. An unshielded-type power cord is required in order to meet FCC emission limits and also to prevent interference to the nearby radio and television reception. It is essential that only the supplied power cord be used.
2. Use only shielded cables to connect I/O devices to this equipment.
3. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



Important

1. Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
2. This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

Safety Guidelines

Follow these guidelines to ensure general safety:

- ▶ Keep the chassis area clear and dust-free during and after installation.
- ▶ Do not wear loose clothing or jewelry that could get caught in the chassis. Fasten your tie or scarf and roll up your sleeves.
- ▶ Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.
- ▶ Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- ▶ Turn off and unplug the power before installing or removing a chassis or working near power supplies.
- ▶ Do not work alone if potentially hazardous conditions exist.
- ▶ Never assume that power is disconnected from a circuit; always check the circuit.
- ▶ This product is intended to be supplied by an UL Listed Power Adapter rated 12 Vdc, min. 3.33A, min. 40-degree C, 5000 m.

Consignes de sécurité

Suivez ces consignes pour assurer la sécurité générale :

- ▶ Laissez la zone du châssis propre et sans poussière pendant et après l'installation.
- ▶ Ne portez pas de vêtements amples ou de bijoux qui pourraient être pris dans le châssis. Attachez votre cravate ou écharpe et remontez vos manches.
- ▶ Portez des lunettes de sécurité pour protéger vos yeux.
- ▶ N'effectuez aucune action qui pourrait créer un danger pour d'autres ou rendre l'équipement dangereux.
- ▶ Coupez complètement l'alimentation en éteignant l'alimentation et en débranchant le cordon d'alimentation avant d'installer ou de retirer un châssis ou de travailler à proximité de sources d'alimentation.
- ▶ Ne travaillez pas seul si des conditions dangereuses sont présentes.
- ▶ Ne considérez jamais que l'alimentation est coupée d'un circuit, vérifiez toujours le circuit. Cet appareil génère, utilise et émet une énergie radiofréquence et, s'il n'est pas installé et utilisé conformément aux instructions des fournisseurs de composants sans fil, il risque de provoquer des interférences dans les communications radio.

Lithium Battery Caution

- ▶ There is risk of explosion if Battery is replaced by an incorrect type.
- ▶ Dispose of used batteries according to the instructions.
- ▶ Installation only by a skilled person who knows all Installation and Device Specifications which are to be applied.
- ▶ Do not carry the handle of power supplies when moving to another place.
- ▶ Please conform to your local laws and regulations regarding safe disposal of lithium BATTERY.
- ▶ Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery can result in an explosion.
- ▶ Leaving a battery in extremely high temperatures can cause it to explode or leak flammable liquid or gas.
- ▶ A battery exposed to very low air pressure may explode or leak flammable liquid or gas.

Avertissement concernant la pile au lithium

- ▶ Risque d'explosion si la pile est remplacée par une autre d'un mauvais type.
- ▶ Jetez les piles usagées conformément aux instructions.
- ▶ L'installation doit être effectuée par un électricien formé ou une personne formée à l'électricité connaissant toutes les spécifications d'installation et d'appareil du produit.
- ▶ Ne transportez pas l'unité en la tenant par le câble d'alimentation lorsque vous déplacez l'appareil.

Operating Safety

- ▶ Electrical equipment generates heat. Ambient air temperature may not be adequate to cool equipment to acceptable operating temperatures without adequate circulation. Be sure that the room in which you choose to operate your system has adequate air circulation.
- ▶ Ensure that the chassis cover is secure. The chassis design allows cooling air to circulate effectively. An open chassis permits air leaks, which may interrupt and redirect the flow of cooling air from internal components.
- ▶ Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD damage occurs when electronic components are improperly handled and can result in complete or intermittent failures. Be sure to follow ESD-prevention procedures when removing and replacing components to avoid these problems.
- ▶ Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. If no wrist strap is available, ground yourself by touching the metal part of the chassis.
- ▶ Periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms (Mohms).

Sécurité de fonctionnement

- ▶ L'équipement électrique génère de la chaleur. La température ambiante peut ne pas être adéquate pour refroidir l'équipement à une température de fonctionnement acceptable sans circulation adaptée. Vérifiez que votre site propose une circulation d'air adéquate.
- ▶ Vérifiez que le couvercle du châssis est bien fixé. La conception du châssis permet à l'air de refroidissement de bien circuler. Un châssis ouvert laisse l'air s'échapper, ce qui peut interrompre et rediriger le flux d'air frais destiné aux composants internes.
- ▶ Les décharges électrostatiques (ESD) peuvent endommager l'équipement et gêner les circuits électriques. Des dégâts d'ESD surviennent lorsque des composants électroniques sont mal manipulés et peuvent causer des pannes totales ou intermittentes. Suivez les procédures de prévention d'ESD lors du retrait et du remplacement de composants.
- ▶ Portez un bracelet anti-ESD et veillez à ce qu'il soit bien au contact de la peau. Si aucun bracelet n'est disponible, reliez votre corps à la terre en touchant la partie métallique du châssis.
- ▶ Vérifiez régulièrement la valeur de résistance du bracelet antistatique, qui doit être comprise entre 1 et 10 mégohms (Mohms).

Mounting Installation Precaution

The following should be put into consideration for rack-mount or similar mounting installations:

- ▶ Do not install and/or operate this unit in any place that flammable objects are stored or used in.
- ▶ The installation of this product must be performed by trained specialists; otherwise, a non-specialist might create the risk of the system's falling to the ground or other damages.
- ▶ Lanner Electronics Inc. shall not be held liable for any losses resulting from insufficient strength for supporting the system or use of inappropriate installation components.
- ▶ Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- ▶ Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- ▶ Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- ▶ Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- ▶ Reliable Grounding - Reliable grounding of rack mounted equipment should be maintained. Attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Installation & Operation:

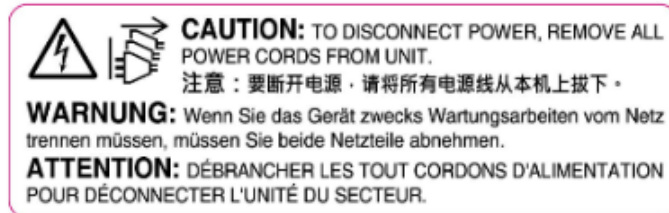
- ▶ This equipment must be grounded. The power cord for product should be connected to a socket-outlet with earthing connection.
Cet équipement doit être mis à la terre. La fiche d'alimentation doit être connectée à une prise de terre correctement câblée
- ▶ Suitable for installation in Information Technology Rooms in accordance with Article 645 of the National Electrical Code and NFPA 75.
Peut être installé dans des salles de matériel de traitement de l'information conformément à l'article 645 du National Electrical Code et à la NFPA 75.
- ▶ The machine can only be used in a restricted access location and must be installed by a skilled person.
Les matériels sont destinés à être installés dans des EMPLACEMENTS À ACCÈS RESTREINT.

Warning

- ▶ This equipment must be grounded. The power cord for product should be connected to a socket-outlet with Class I Equipment. This equipment must be earthed. The power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.
- ▶ Product shall be used with Class 1 Laser device modules.

Avertissement

- ▶ Équipement de classe I. Ce matériel doit être relié à la terre. La fiche d'alimentation doit être raccordée à une prise de terre correctement câblée. Une prise de courant mal câblée pourrait induire des tensions dangereuses sur des parties métalliques accessibles.
- ▶ Le produit doit être utilisé avec des modules de dispositifs laser de classe 1.



This equipment is for INDOOR USE ONLY

Electrical Safety Instructions

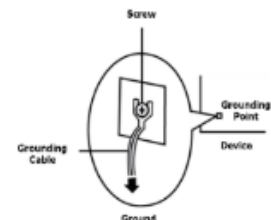
Before turning on the device, ground the grounding cable of the equipment. Proper grounding (grounding) is very important to protect the equipment against the harmful effects of external noise and to reduce the risk of electrocution in the event of a lightning strike. To uninstall the equipment, disconnect the ground wire after turning off the power. A ground wire is required and the part connecting the conductor must be greater than 4 mm² or 10 AWG.

Consignes de sécurité électrique

- ▶ Avant d'allumer l'appareil, reliez le câble de mise à la terre de l'équipement à la terre.
- ▶ Une bonne mise à la terre (connexion à la terre) est très importante pour protéger l'équipement contre les effets néfastes du bruit externe et réduire les risques d'électrocution en cas de foudre.
- ▶ Pour désinstaller l'équipement, débranchez le câble de mise à la terre après avoir éteint l'appareil.
- ▶ Un câble de mise à la terre est requis et la zone reliant les sections du conducteur doit faire plus de 4 mm² ou 10 AWG.

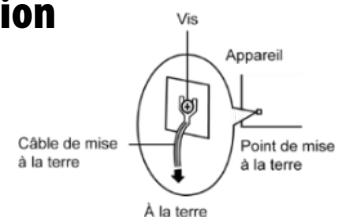
Grounding Procedure for Power Source

- ▶ Loosen the screw of the earthing point.
- ▶ Connect the grounding cable to the ground.
- ▶ The protection device for the power source must provide 30 A current.
- ▶ This protection device must be connected to the power source before power.
- ▶ The cable should be 16 AWG



Procédure de mise à la terre pour source d'alimentation

- ▶ Desserrez la vis du terminal de mise à la terre.
- ▶ Branchez le câble de mise à la terre à la terre.
- ▶ L'appareil de protection pour la source d'alimentation doit fournir 30 A de courant.
- ▶ Cet appareil de protection doit être branché à la source d'alimentation avant l'alimentation.
- ▶ Le câble doit être 16 AWG



Important

Output of the external power source shall comply with ES1, PS2 requirements, output rating between 12 V d.c., minimum 3.33 A, with minimum 40 degree C, 5000 m, and evaluated in accordance with UL 60950-1 and/or UL 62368-1.

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CHAPTER 1: PRODUCT OVERVIEW

The EAI-I133 represents a cutting-edge solution in the realm of industrial-grade AI inference systems tailored for 5G edge computing environments. Developed utilizing the advanced capabilities of the NVIDIA® Jetson Orin NX/Nano platform, this system boasts exceptional performance, offering up to 100 TOPS of AI processing power. With a potent configuration featuring a maximum of 1024-core NVIDIA CUDA GPU equipped with 32 Tensor Cores, it delivers unparalleled computational capabilities. Designed with compact dimensions and cost-efficiency in mind, the EAI-I133 serves as an ideal choice for a wide range of commercial and light industrial applications, offering seamless integration into diverse operational landscapes.

Key Features

- ▶ NVIDIA® Jetson Orin NX/Nano
- ▶ AI Performance up to 100 TOPS
- ▶ Up to 1024-core NVIDIA CUDA GPU with 16~32 Tensor Cores
- ▶ Support for 4G LTE/5G Sub 6 & Wi-Fi
- ▶ 3x GbE RJ45, 2x USB 3.0 Gen1, 2x USB 2.0, 1x HDMI, 2x RS232
- ▶ Onboard TPM 2.0 & 1x M.2 2280 NVMe SSD

Package Content

Your package contains the following items:

- ▶ 1x EAI-I133 AI Inference System
- ▶ 1x Power Adapter
- ▶ 4x Rubber foot caps

Additional Accessories

Model	Description
Wi-Fi Antenna Kit	Antenna kit with cables, antennas, washer/nuts (without Wi-Fi Module)
5G Antenna Kit	Antenna kit with cables, antennas, washer/nuts (without 5G Module)
Wallmount Kit	Wallmount Bracket Kit with screw pack

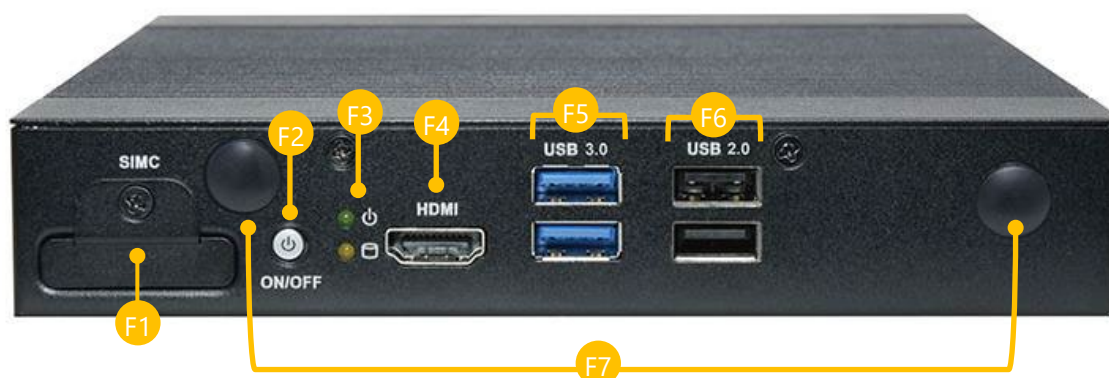
Ordering Information

SKU	CPU	Storage	Default Port	Expansion	Power
EAI-I133A	NVIDIA Jetson Orin NX (100 TOPS) with 16GB LPDDR5 Memory	1x M.2 2280 M-Key (PCIe 3x4)	3x GbE RJ45 Ports; 2x COM Ports; 4x USB Ports	1x M.2 304(5)2 B-Key for LTE/5G Sub6; 1x M.2 2230 E-Key for Wi-Fi	Rating DC+12V, By AC/DC Adapter
EAI-I133B	NVIDIA Jetson Orin NX (70 TOPS) with 8GB LPDDR5 Memory				
EAI-I133C	NVIDIA Jetson Orin Nano (40 TOPS) with 8GB LPDDR5 Memory				
EAI-I133D	NVIDIA Jetson Orin Nano (20 TOPS) with 4GB LPDDR5 Memory				

Specifications

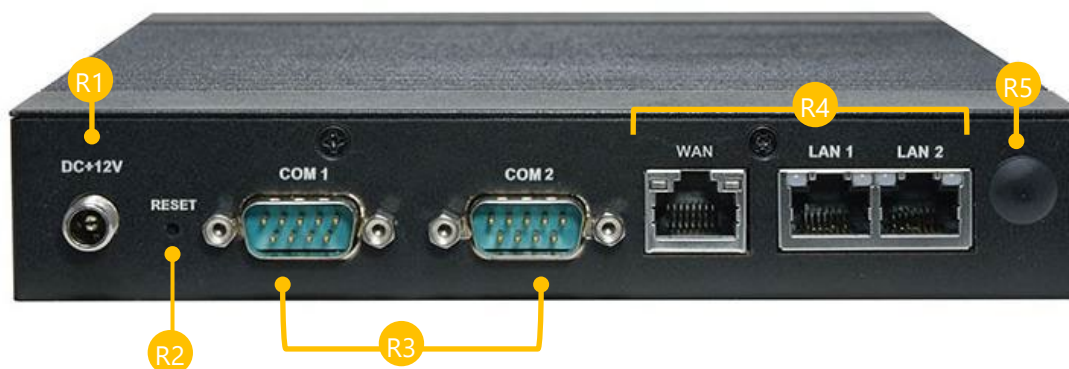
Processor System	CPU & Frequency	SKU A: Jetson Orin NX, 8-core NVIDIA ARM® Cortex A78, 25W, 16GB SKU B: Jetson Orin NX, 6-core NVIDIA ARM® Cortex A78, 20W, 8GB SKU C: Jetson Orin Nano, 6-core NVIDIA ARM® Cortex A78, 15W, 8GB SKU D: Jetson Orin Nano, 6-core NVIDIA ARM® Cortex A78, 10W, 4GB
	GPU	SKU A: Up to 1024 CUDA Core, 32 Tensor Cores, 918 MHz SKU B: Up to 1024 CUDA Core, 32 Tensor Cores, 765 MHz SKU C: Up to 1024 CUDA Core, 32 Tensor Cores, 625 MHz SKU D: Up to 512 CUDA Core, 16 Tensor Cores, 625 MHz
System Memory	Technology	LPDDR5
	Max. Capacity	SKU A: 16GB SKU B/C: 8GB SKU D: 4GB
Ethernet	Interface	1x 1GbE RJ45 from SOM (LAN 1); 2x 1GbE RJ45 from Intel i210IT (LAN 2/3)
	Speed	10/100/1000 Mbps
I/O Interface	Reset Button	1x Reset Button
	Power Button	1x Power Button
	LED Indicator	Power / Storage LED Indicator, refer to Appendix A
	Serial Port	2x DB9 RS232 (TX/RX/CTS/RTS)
	USB Port	2x USB 3.0 Gen1 Ports; 2x USB 2.0 Type A Ports
	Display	1x HDMI Port
	Antenna	6x Antenna holes for LTE/5G Sub 6 & Wi-Fi
Storage	Type	1x M.2 2280 M-Key (PCIe*4 Gen3) for NVMe with default 128G
Expansion	M.2	1x M.2 3042/50/52 B-Key for LTE/5G Sub6; 1x M.2 2230 E-Key for Wi-Fi
	SIM	1x Nano-SIM
Miscellaneous	Watchdog	Yes
	Internal RTC w/ Li Battery	Yes
	TPM	Onboard TPM 2.0
Cooling	Processor	Passive Heatsink
	System	Fanless
Environment	Operating Temperature	0°C~40°C
	Storage Temperature	-40°C~70°C
	Humidity	Operating: 5%~90%, Non-Condensing Non-Operating: 5%~95%, Non-Condensing
System Dimensions	Dimension (WxDxH)	167 x 179.5 x 30mm
	Weight	1 KG
	Mounting	Wall-mount (Optional)
Package Dimensions	Dimension (WxDxH)	318 x 294 x 153mm
	Weight	1.5KG
Power	Type/Watts	40W
	Input	AC, 100-240V @50-60Hz
	Output	12V
Software Support	Linux OS	Linux Open Source on NVIDIA SDK, Ubuntu 20/22
Security	TrustZone Security Boot	TPM 2.0
Certification	CE/FCC Class A, UL	

Front Panel



No.	Description	
F1	SIM Card Cover	1x Nano SIM card slot
F2	Power Button	1x ON/OFF Power Button
F3	LED Indicators	Storage/Power Status LED Indicators
F4	Display Port	1x HDMI Port
F5	USB Port	2x USB 3.0 Type A Port
F6	USB Port	2x USB 2.0 Type A Port
F7	Antenna	2x Antennas Holes

Rear Panel

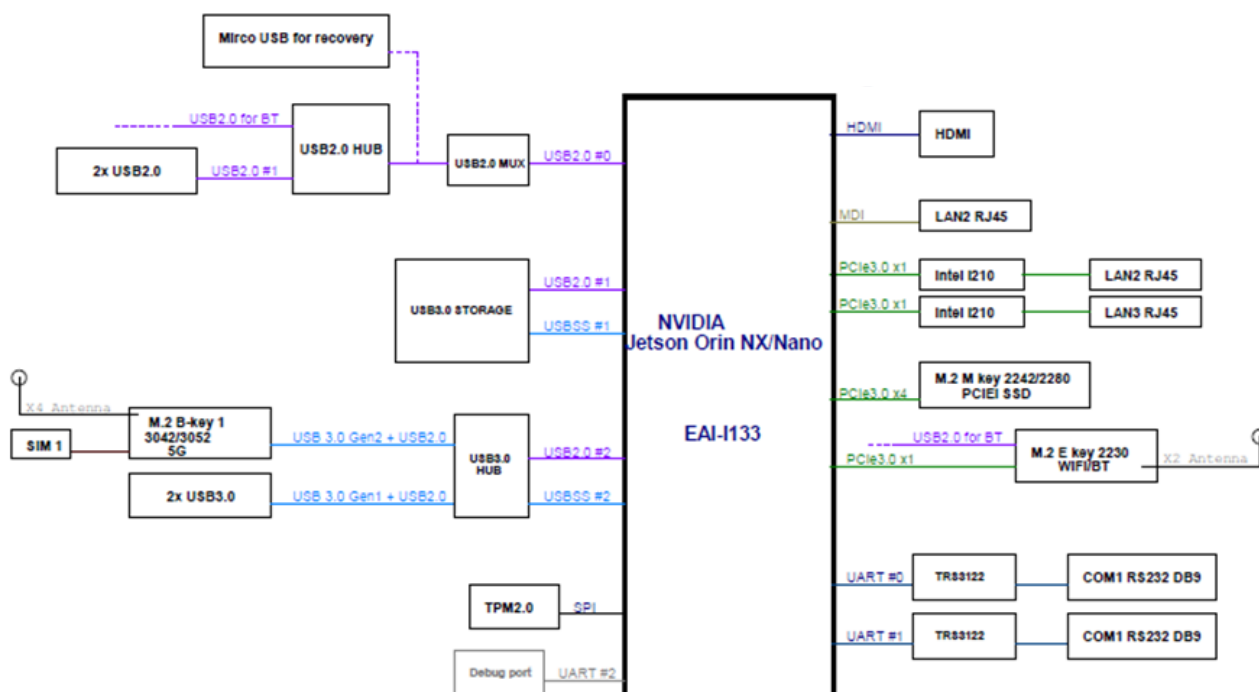


No.	Description	
R1	Power Input	+ 12Vdc Power Input
R2	Reset Button	1x Reset Button
R3	COM Port	2x DB9 RS-232 COM Ports
R4	LAN Port	3x 1GbE RJ45 LAN Port
R5	Antenna Hole	1x Antennas Hole

Motherboard Information

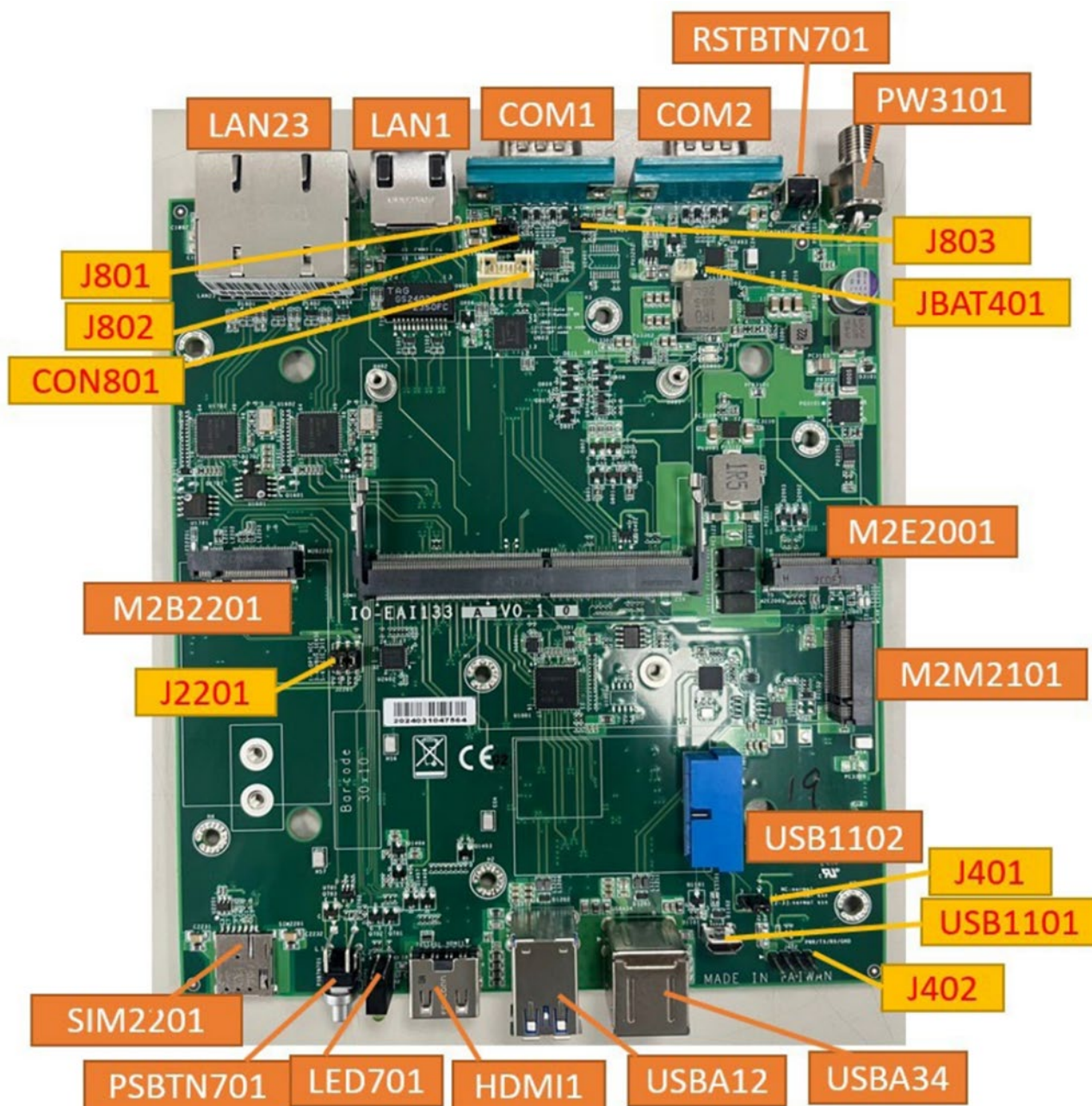
Block Diagram

The block diagram indicates how data flows among components on the motherboard.



Internal Jumpers and Connector

The pin headers on the motherboard are often associated with important functions. With the shunt (Jumper) pushed down on the designated pins (the pin numbers are printed on the circuit board, surrounding the pin header), certain feature can be enabled or disabled. When changing the jumpers, make sure your system is completely turned off.



PW3101

Pin	Description
1	DC_in 12V
2	GND
3	GND

RSTBTN701

Pin	Description
1	SYS_RST_N
2	GND
3	NC
4	GND

COM1

Pin	Description
1	NC
2	RXD
3	TXD
4	NC
5	GND
6	NC
7	RTS
8	CTS
9	NC

COM2

Pin	Description
1	NC
2	RXD
3	TXD
4	NC
5	GND
6	NC
7	RTS
8	CTS
9	NC

USBA12

Pin	Description
1	VBUS
2	USB2_DN
3	USB2_DP
4	GND
5	USB3_RXN
6	USB3_RXP
7	GND
8	USB3_TXN
9	USB3_TXP
10	VBUS
11	USB2_DN
12	USB2_DP
13	GND
14	USB3_RXN
15	USB3_RXP
16	GND
17	USB3_TXN
18	USB3_TXP

USBA34

Pin	Description
1	VBUS
2	USB2_DN
3	USB2_DP
4	GND
5	VBUS
6	USB2_DN
7	USB2_DP
8	GND

HDMI1

Pin	Description
1	DATA2_P
2	GND
3	DATA2_N
4	DATA1_P
5	GND

6	DATA1_N
7	DATA0_P
8	GND
9	DATA0_N
10	CLKP
11	GND
12	CLKN
13	CEC
14	NC
15	DDC CLK
16	DDC DAT
17	GND
18	PWR
19	HPD

LED701

Pin	Description
A1	GREEN_LED_+
C1	GREEN_LED_-
A2	YELLOW_LED_+
C2	YELLOW_LED_-

PSBTN701

Pin	Description
1	GND
2	GND
3	PWR_BTN
4	PWR_BTN
L1	RED_LED
L2	GREEN_LED

JBAT401

Pin	Description
1	VBAT
2	GND

J801

(1-2) or Open: Auto ON

(2-3): Manual ON

Pin	Description
1	NC
2	MCU_ACOK
3	GND

J802

1-2: Normal Use

2-3: ISP Mode

Pin	Description
1	PWR
2	MCU_ISP_MODE
3	GND

J803

Pin	Description
1	JTAG_SWDIO
2	JTAG_SWCLK
3	GND

CON801

Pin	Description
1	PWR
2	UART_RX
3	GND
4	UART_TX

J2201

	OPT_PWR	VBUS_SENSE	PCIE_DIS
	1~2	3~4	5~6
Others	X	X	X
EM9191/EM9291	V	V	V

Pin	Description
1	OPT_VCC
2	3V3
3	VBUS_SENSE
4	3V3
5	PCIE_DIS
6	2V

J401

Open or (1-2): Normal Use

(2-3): Force Recovery Mode

Pin	Description
1	NC
2	FORCE_RECOVERY
3	GND

J402

Pin	Description
1	NC
2	UART_TXD
3	UART_RXD
4	GND

USB1101

Pin	Description
1	VBUS_SENSE
2	USB2_DN
3	USB2_DP
4	NC
5	GND

NOTE: The USB1101 Micro-USB port is intended for firmware upgrade and debugging purposes. During firmware upgrade, the System-on-Module (SOM) may generate excessive heat. To ensure stable operation, use an additional fan for direct cooling on the SOM.

USB1102

Pin	Description
1	5V
2	USB3_RXN
3	USB3_RXP
4	GND
5	USB3_TXN
6	USB3_TXP
7	GND
8	USB2_DN
9	USB2_DP
10	GND

11	NC
12	NC
13	GND
14	NC
15	NC
16	GND
17	NC
18	NC
19	5V

M2B2201

Pin	Description	Pin	Description
1	NC	38	M2B2_P38
2	3V3	39	GND
3	GND	40	NC
4	3V3	41	NC
5	GND	42	NC
6	F_CARD_POWER_OFF_N (default:1V8)	43	NC
7	USB2_TXP	44	NC
8	NC	45	GND
9	USB2_TXN	46	NC
10	NC	47	NC
11	GND	48	NC
12	LATCH	49	NC
13	LATCH	50	NC
14	LATCH	51	GND
15	LATCH	52	NC
16	LATCH	53	NC
17	LATCH	54	NC
18	LATCH	55	NC
19	LATCH	56	NC
20	M2B_P20_PCIE_DIS	57	GND
21	NC	58	NC
22	M2B_P22_VBUS_SENSE	59	NC
23	NC	60	NC
24	M2B2_P24	61	NC
25	NC	62	NC

26	GND	63	NC
27	GND	64	NC
28	NC	65	NC
29	USB3_RXN	66	SIM_DETECT (default:NC)
30	SIM_RST	67	RESET
31	USB3_RXP	68	M2B_P68
32	SIM_CLK	69	NC
33	GND	70	3V3
34	SIM_DAT	71	GND
35	USB3_TXN	72	3V3
36	SIM_VCC	73	GND
37	USB3_TXP	74	3V3
		75	NC

SIM2201

Pin	Description
1	VCC
2	RST
3	CLK
4	GND
5	3V3
6	DATA
7	NC
CD	VCC

M2E2001

Pin	Description	Pin	Description
1	GND	38	NC
2	3V3	39	GND
3	USB_DP	40	NC
4	3V3	41	PCIE_RXP
5	USB_DN	42	NC
6	LED_WIFI_N	43	PCIE_RXN
7	GND	44	NC
8	NC	45	GND
9	NC	46	NC
10	NC	47	PCIE_CLKP

11	NC	48	NC
12	NC	49	PCIE_CLKN
13	NC	50	SUSCLK_32KHz
14	NC	51	GND
15	NC	52	PCIE_RST
16	LED_BT_N	53	PCIE_CLKREQ_N
17	NC	54	BT_DIS
18	GND	55	PEWAKE
19	NC	56	WIFI_DIS
20	NC	57	GND
21	NC	58	NC
22	NC	59	NC
23	NC	60	NC
24	LATCH	61	NC
25	LATCH	62	NC
26	LATCH	63	GND
27	LATCH	64	NC
28	LATCH	65	NC
29	LATCH	66	NC
30	LATCH	67	NC
31	LATCH	68	NC
32	NC	69	GND
33	GND	70	NC
34	NC	71	NC
35	PCIE_TXP	72	3V3
36	NC	73	NC
37	PCIE_TXN	74	3V3
		75	GND

M2M2102

Pin	Description	Pin	Description
1	GND	39	GND
2	3V3	40	NC
3	GND	41	PCIE_RXN0
4	3V3	42	NC
5	PCIE_RXN3	43	PCIE_RXP0
6	NC	44	NC

7	PCIE_RXP3	45	GND
8	NC	46	NC
9	GND	47	PCIE_TXN0
10	SATA_LED	48	NC
11	PCIE_TXN3	49	PCIE_TXP0
12	3V3	50	PCIE_RST
13	PCIE_TXP3	51	GND
14	3V3	52	PCIE_CLKREQ_N
15	GND	53	PCIE_CLKN
16	3V3	54	PCIE_WAKE_N
17	PCIE_RXN2	55	PCIE_CLKP
18	3V3	56	NC
19	PCIE_RXP2	57	GND
20	NC	58	NC
21	GND	59	LATCH
22	NC	60	LATCH
23	PCIE_TXN2	61	LATCH
24	NC	62	LATCH
25	PCIE_TXP2	63	LATCH
26	NC	64	LATCH
27	GND	65	LATCH
28	NC	66	LATCH
29	PCIE_RXN1	67	NC
30	NC	68	NC
31	PCIE_RXP1	69	NC
32	NC	70	3V3
33	GND	71	GND
34	NC	72	3V3
35	PCIE_TXN1	73	GND
36	NC	74	3V3
37	PCIE_TXP1	75	GND
38	NC	76	NC
		77	NC

CHAPTER 2: HARDWARE SETUP

To reduce the risk of personal injury, electric shock, or damage to the unit, please remove all power connections to completely shut down the device and wear ESD protection gloves when handling the installation steps.

Open the Chassis

1. Power off the system and disconnect the power cord. Unscrew the two (2) screws on the front panel.
2. Then loosen the two (2) screws on rear panel, and the one (1) screw on the right and left side.
3. Lift and open the bottom chassis cover.



Rear Panel



Right Side



Left Side



Installing M.2 Storage

The system supports one M.2 M-Key slot for additional storage. Default with one NVMe 128G storage onboard.

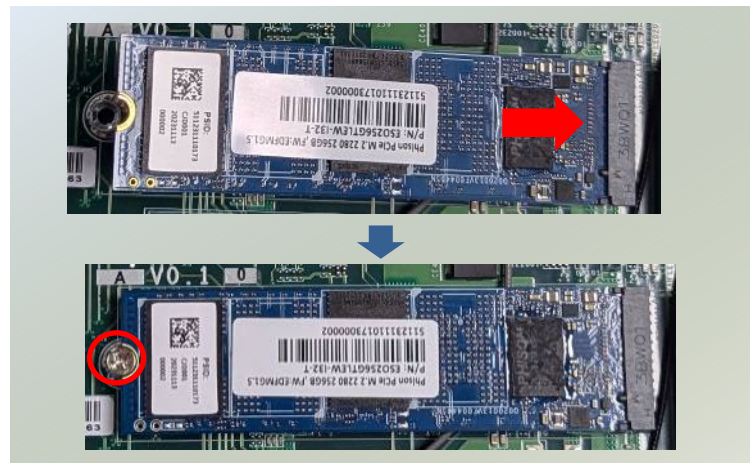
1. Power off the system, and open the top chassis cover.
2. Locate the M.2 slot on the motherboard.



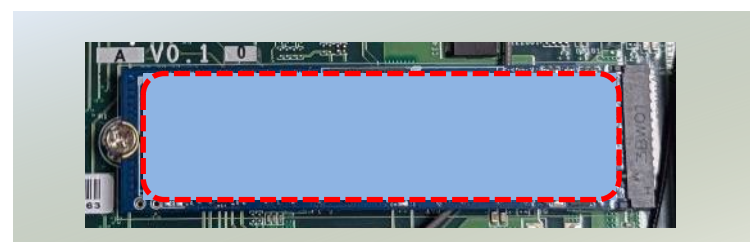
3. Locate the M.2 slot on the motherboard.
4. Align the notch of the M.2 storage module with the socket key in the pin slot.



5. Insert the PCIe module pins at 30 degrees into the socket until it is fully seated.
6. Push down on the module card and secure it with a screw.



7. Lastly, thermal pad placement. Position the thermal pad (included in the accessory pack) gently on the top side of the storage module.

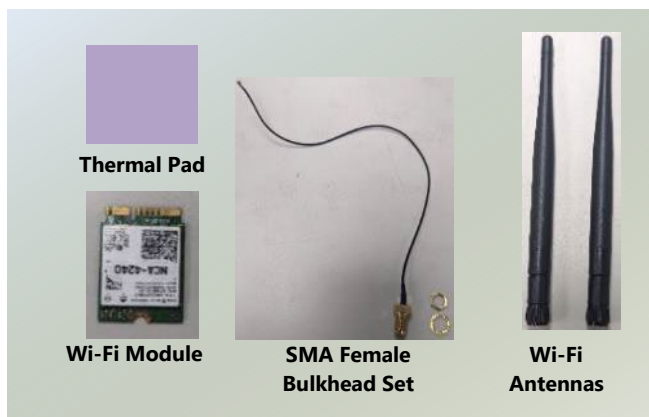


Installing Wi-Fi Module (Optional)

The system supports one M.2 E-key slot for a Wi-Fi module card, which requires two antennas. Please follow these steps to install the Wi-Fi module.

The Wi-Fi Module Kit includes:

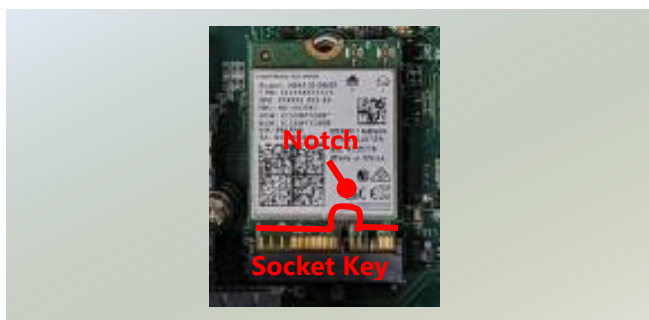
- ▶ 1x Wi-Fi Module Card
- ▶ 2x SMA Female Cable Sets
- ▶ 2x Wi-Fi Antennas



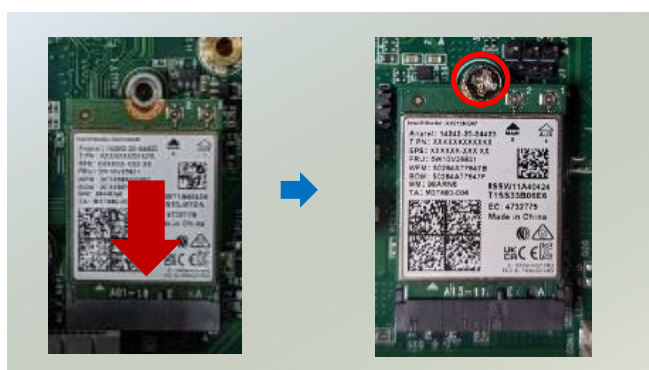
1. Power off the system, and open the top chassis cover.
2. Locate the M.2 E-Key slot on the motherboard.



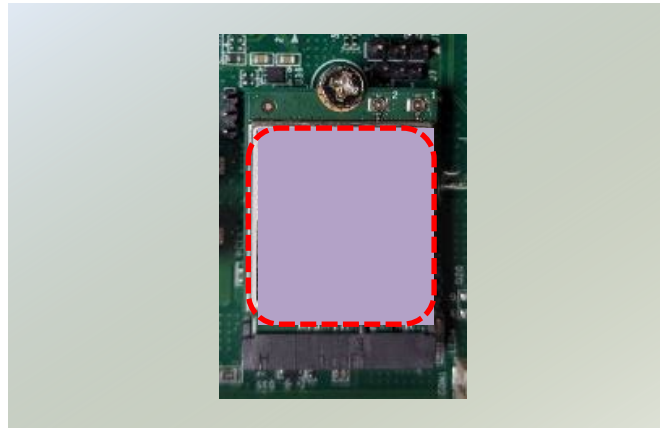
3. Align the notch of the Wi-Fi module with the socket key in the pin slot.



4. Insert the Wi-Fi module pins at 30 degrees into the socket until it is fully seated.
5. Push down on the module card and secure it with a screw.



- Next, thermal pad placement. Position the thermal pad gently on the top side of the Wi-Fi module.



Install Wi-Fi Antennas

Right Side



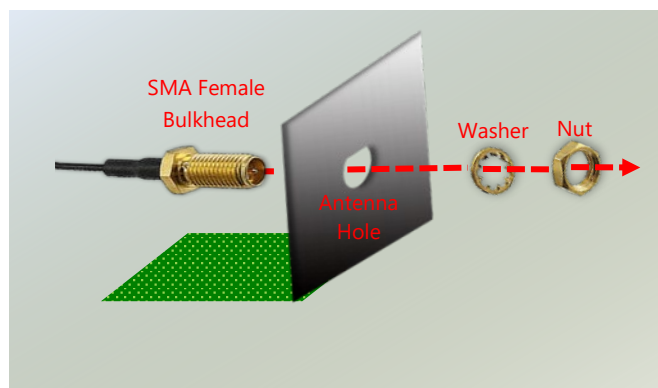
Left Side



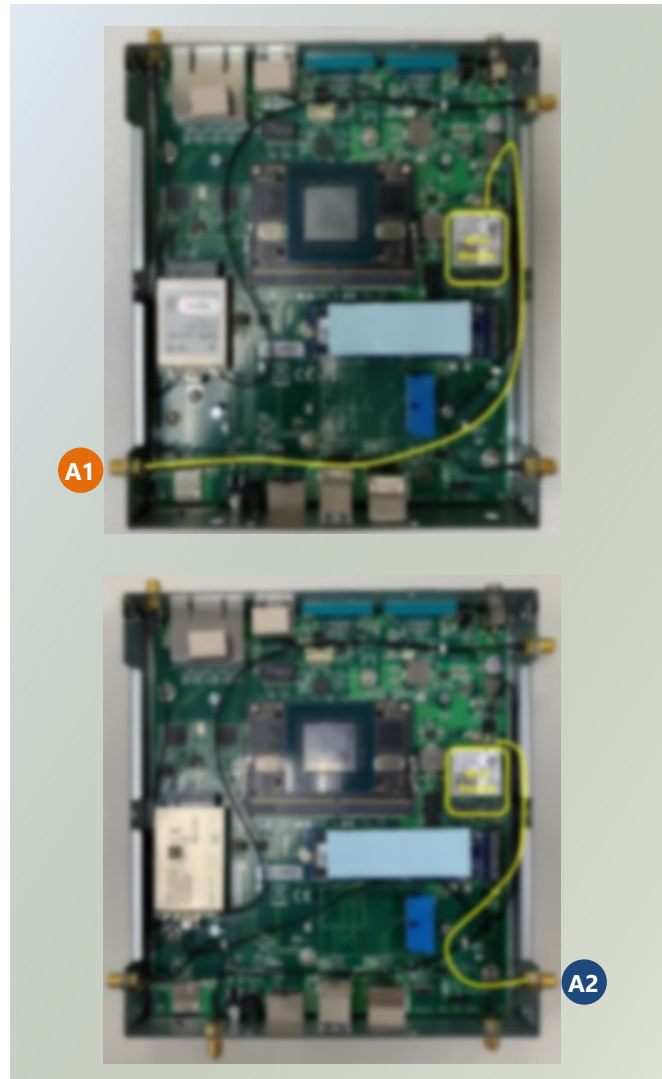
- Locate the two (2) antenna hole placements (A1, A2). Locate the two (2) IPEX connectors on the Wi-Fi module card.



- From inside the chassis, insert the SMA Female Bulkhead through the antenna hole on the rear panel.
- From the outside of the system, affix the Washer and Nut, then securely tighten the Nut using an SMA Torque Wrench.



4. Connect the cables to the IPEX connectors on the Wi-Fi module card.



5. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.

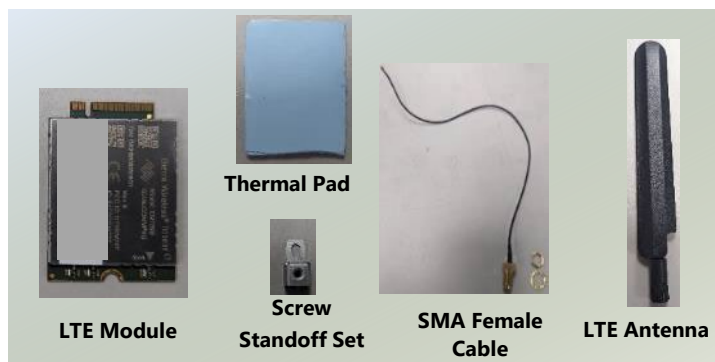


Installing LTE Module (Optional)

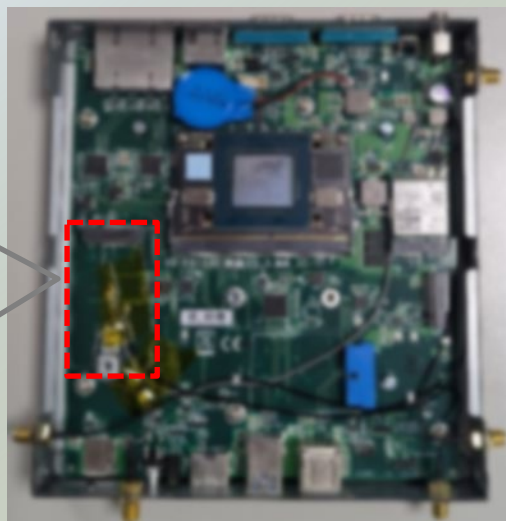
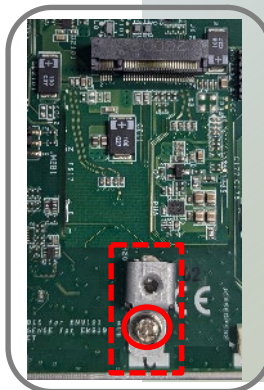
The motherboard provides one M.2 3042/3050/3052 slot for 5G/LTE expansion. LTE module requires two (2) antennas, and 5G module requires four (4) antennas. Therefore, only one LTE module or one 5G module can be installed. Please follow the procedures for LTE module card expansion installation.

The LTE Module Kit includes:

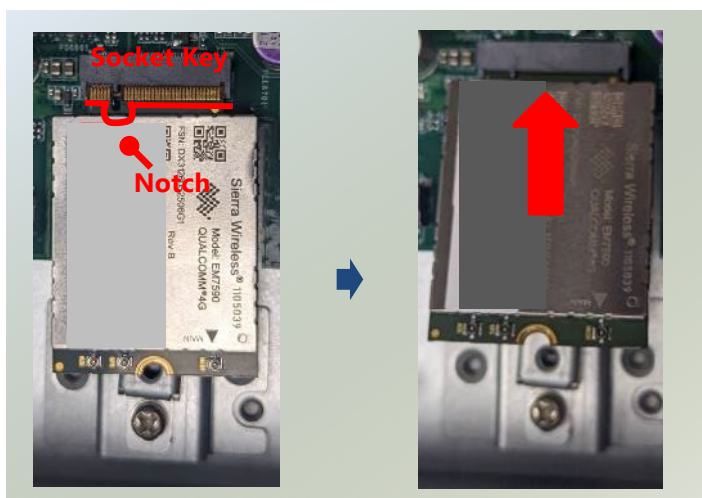
- ▶ 1x LTE Module Card
- ▶ 2x SMA Female Cable Sets
- ▶ 2x LTE Antennas
- ▶ 1x Screw Standoff Set
- ▶ 1x Thermal pad



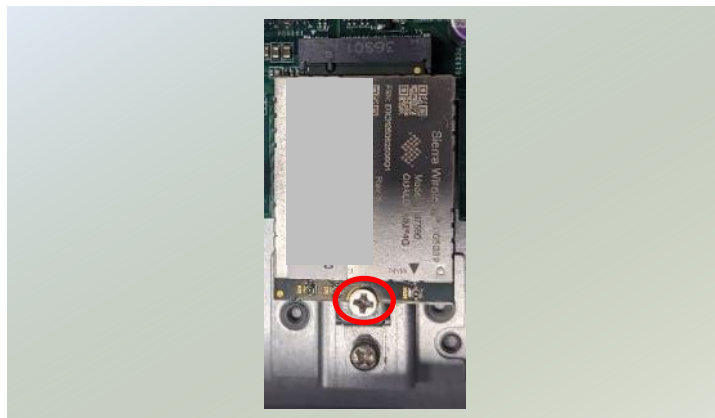
1. Power off the system and open the top chassis cover.
2. Locate the M.2 slot on the motherboard.
Position the Screw Standoff and secure with a screw.



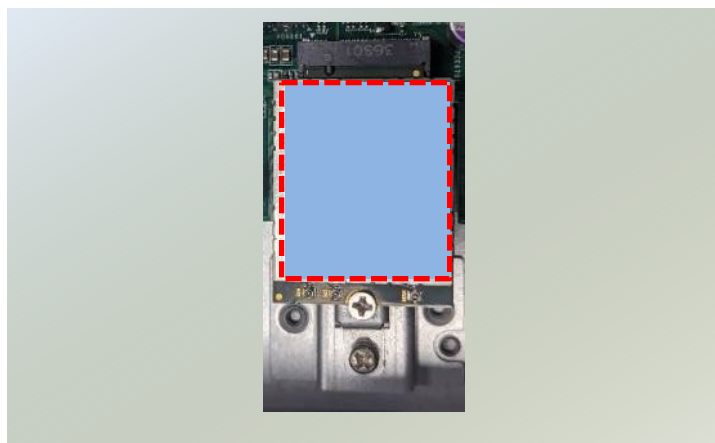
3. Align the notch of the LTE module card with the socket key in the pin slot.
4. Position the LTE module card pins at a 30-degree angle and insert them into the socket until the card is completely seated.



5. Push down on the module card and secure it with a screw.



6. Lastly, thermal pad placement. Position the thermal pad on the top side of the LTE/5G module.



Installing LTE Antennas

Rear Panel



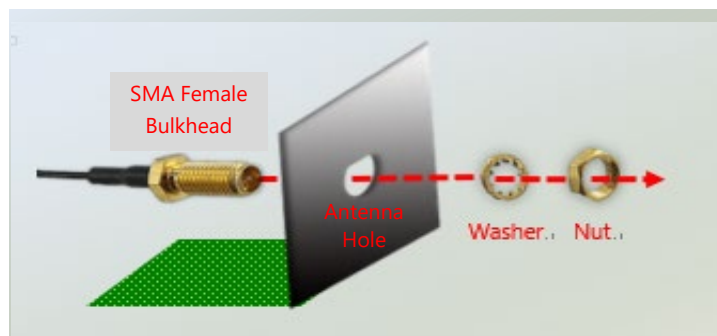
Right Side



1. Locate the two (2) antenna hole placements (A1, A2). Locate the two (2) IPEX connectors on the LTE module card.



2. From inside the chassis, insert the SMA Female Bulkhead through the Antenna holes on the panel.
3. On the outside of the system, attach the Washer and Nut, and tighten the Nut using an SMA Torque Wrench.



4. Connect the antenna cables to the IPEX connectors on the LTE module card.



5. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.

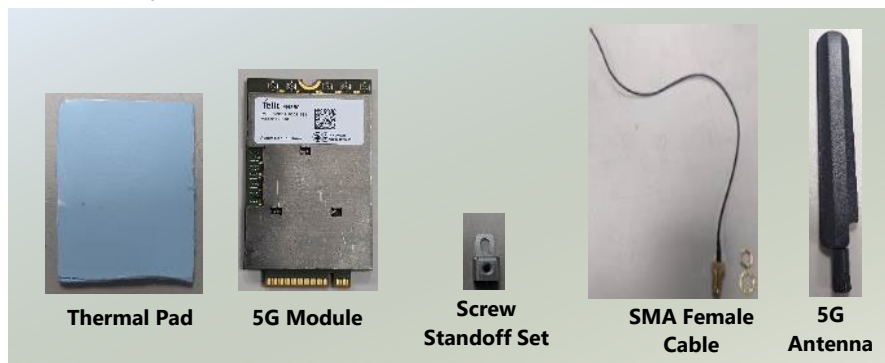


Installing 5G Module (Optional)

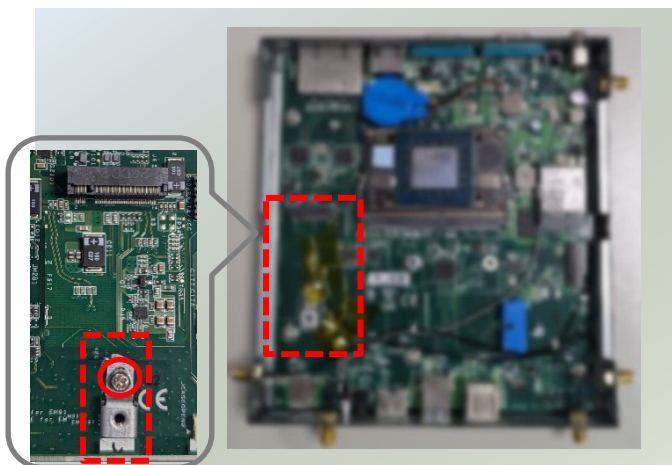
The motherboard provides one M.2 slot for 5G/LTE expansion. LTE module requires two (2) antennas, and 5G module requires four (4) antennas. Therefore, only one LTE module or one 5G module can be installed. Please follow the procedures for 5G module card expansion installation.

The 5G Module Kit includes:

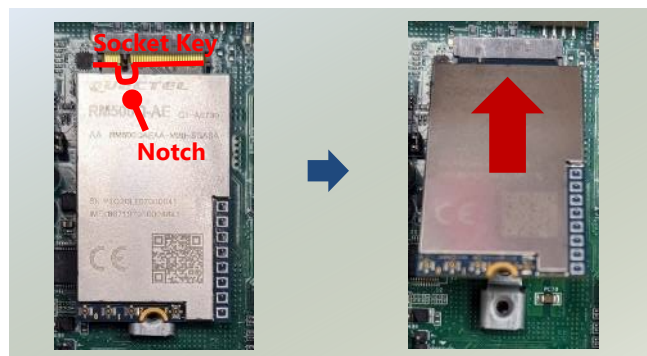
- ▶ 1x 5G Module Card
- ▶ 4x SMA Female Cable Sets
- ▶ 4x 5G Antennas
- ▶ 1x Screw Standoff Set
- ▶ 1x Thermal Pad



1. Power off the system, and open the top chassis cover.
2. Locate the M.2 B-Key slot on the motherboard. Position the Screw Standoff and secure with a screw.



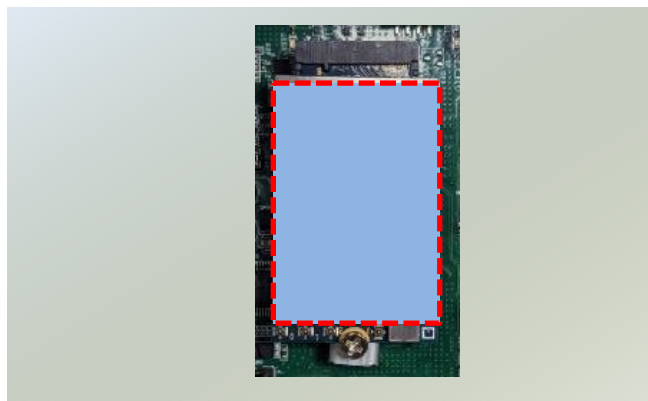
3. Align the notch of the 5G module with the socket key in the pin slot.
4. Insert the 5G module card pins at 30 degrees into the socket until it is fully seated.



5. Push down on the module card and secure it with a screw.



6. Lastly, thermal pad placement. Place the thermal pad on the bottom side of the top chassis cover.



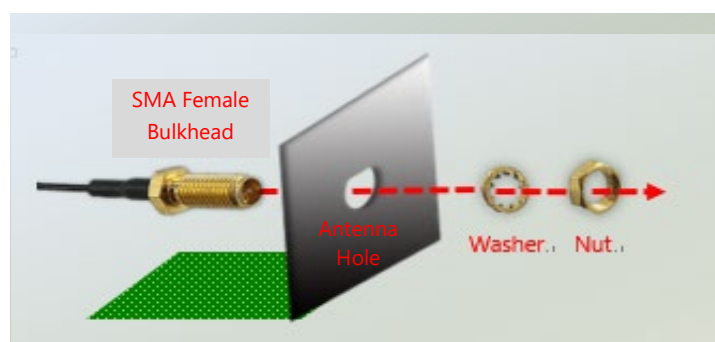
Installing 5G Antennas



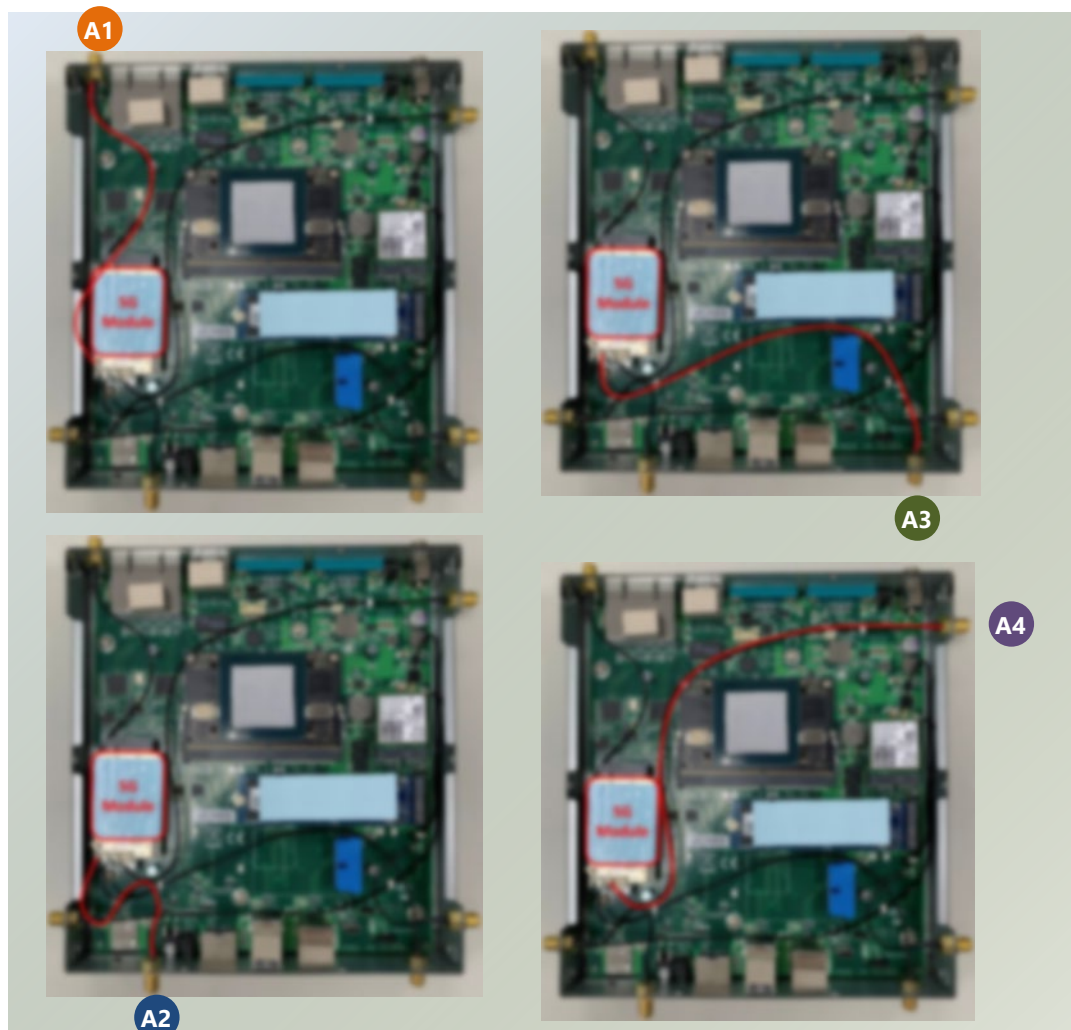
1. Locate the four (4) antenna hole placements (A1, A2, A3, A4). Locate the four (4) IPEX connectors on the 5G module card.



2. From inside the chassis, insert the SMA Female Bulkhead through the antenna hole on the panel.
3. On the outside of the system, attach the Washer and Nut, and tighten the Nut using an SMA Torque Wrench.



4. Connect the antenna cables to the IPEX connectors on the 5G module card.



5. Lastly, fasten the antennas onto the bulkhead located on the system's exterior.



Installing SIM Cards (Optional)

The SIM slot on the side panel supports one Nano SIM card. The SIM socket supports the push-push mechanism, allowing inserting and ejecting the SIM card to be as easy as one push.

1. Locate the SIM card cover on the front panel.
2. Loosen the screw and remove the slot cover.
3. Insert and push a Nano-SIM card, gold contacts facing upwards, all the way until the card clicks into place.



4. To remove the Nano-SIM card, use your fingertips to push it once, to have the card automatically ejected.
5. Place the cover door back and secure with the original screw.

Wall Mounting the System (Optional)

The system can be mounted on a flat surfaced wall. Please take the following into considerations when mounting the system onto the wall.

Note: All pictures shown are for illustration purposes only, actual product may vary due to specific model or enhancement.

The Wallmount Kit includes:

- ▶ 1x pair of Wall Brackets
- ▶ 1x Screw Pack

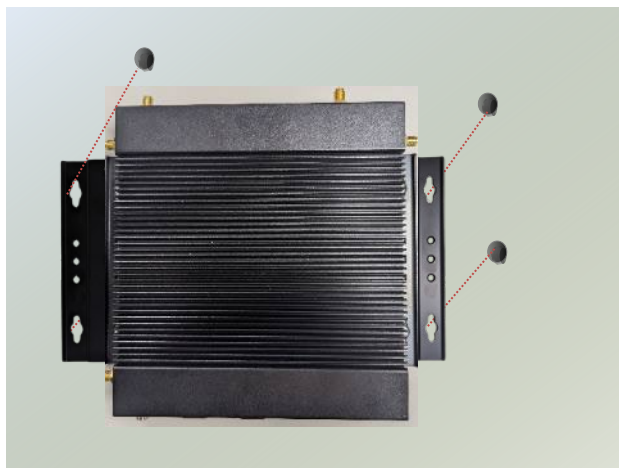


1. Turn the system over, and attach the wall brackets to its underside, fastening them securely using the four provided screws.

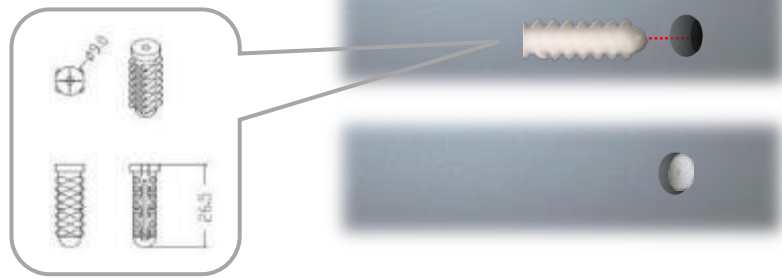


2. Measure and mark the exact location on the wall for the system. Drill four (4) holes to align with the bracket's mounting holes.

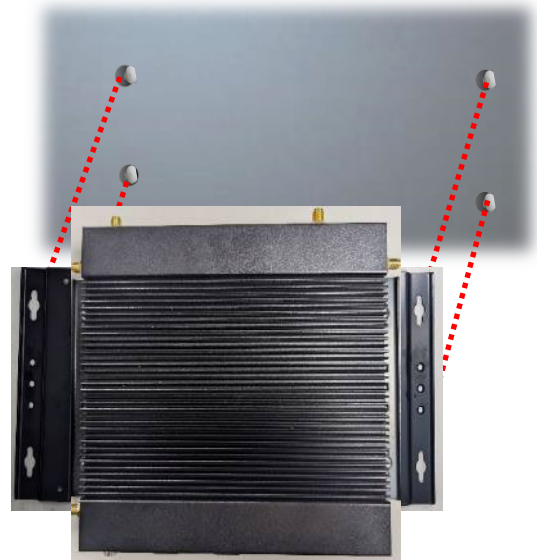
Note: The demonstrated screw type can fit in general drywall or shelves. Please identify the wall type and select a suitable fixing approach to fix this system to the wall and consult qualified trained person if you are unsure.



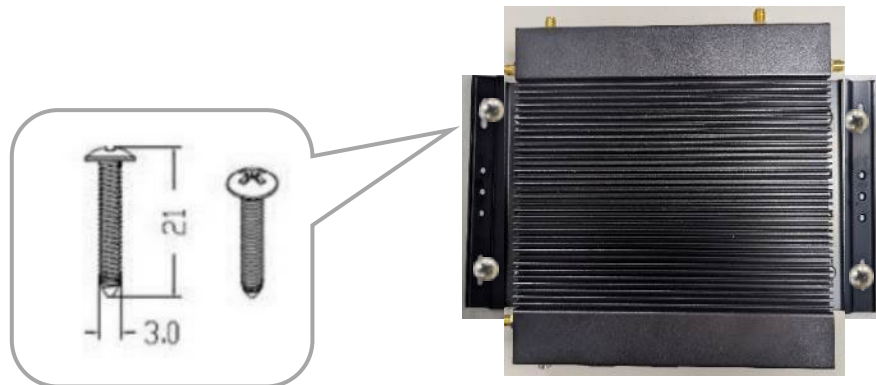
3. Insert four (4) anchoring bolts into the holes.



4. Align the four mounting holes on the system's brackets with the four anchoring bolts you just installed on the wall.



5. Drive four (4) long screws into the anchoring bolts to secure the system.



Installing Rubber Foot Caps (Optional)

The system is designed for desktop placement on a flat surface. Please adhere to the provided procedures for installing the rubber foot caps.

The Accessory packet includes:

- ▶ 4x rubber foot caps



1. Flip the system over and identify the four positions for the rubber foot caps on the chassis. Next, remove the cover from the double-sided tape on the rubber foot caps and firmly attach them to the designated areas on the chassis.



CHAPTER 3: INITIAL SETUP AND PERIPHERAL CONTROL

Initial Setup

EAI-I133 uses NVIDIA® JetPack 6.0.0 version.

Go to [Lanner Patch Driver Link](#) and Download:

EAI_I133_Pinmux_verJP6.0.0.tgz [jp6_rel_133]

Note: This patch is for JetPack 6.0.0 only. For additional versions and or technical support, please contact Lanner Technical Support.

Peripheral Control

The Read and Write control by i2c driver.

MCU Version

MCU FW Version:

CMD: 0x13h

Data Width: 2 Bytes

```
~#i2ctransfer -f -y 2 w1@0x37 0x13 r2
```

```
0x00 0x0a
```

EEPROM Format

I2c bus 7 slave address 0x53

SYSTEM NAME: Register 0~15

SERIAL NUMBER: Register 16~31

```
root@lanner-desktop:~# i2cdump -y 7 0x53
No size specified (using byte-data access)
   0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f      0123456789abcdef
00: 45 41 49 2d 49 31 33 33 58 ff ff ff ff ff ff ff  EAI-I133X.....
10: 4c 52 32 30 32 34 30 37 30 30 36 36 37 35 ff ff  LR202407006675..
20: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff  .....
```



Note

The UUID (Universally Unique Identifier) in the Lanner shipment system is a repeated identifier, intended for customer testing purposes only. To update the UUID, please reinstall the NVIDIA SDK.

APPENDIX A: LED INDICATOR EXPLANATIONS

► System Power / Storage Status

 **Green :Power**
 **Yellow : Storage**

LED	COLOR	LED ACTION	DESCRIPTION
POWER	Green	Steady	When system power ON
	Off	N/A	No power on
STORAGE	Yellow	Blinking	Blinking indicates HDD activity (Include SATA/NVMe)
	Off	N/A	No data access or No power ON

► RJ45 LAN LED



1Gb RJ45 LAN LED Define:

Speed	Amber (Link/Active)	Green (Speed)
10M	ON / Blinking (Data Access)	OFF
100M	ON / Blinking (Data Access)	ON (Green)
1G	ON / Blinking (Data access)	ON (Green)

1. When cable is plugged-in and network is linked. Both LED lights will be bright. The behavior is as defined.
2. Without the cable plugged-in, the LED should be off.
3. If LAN Driver controls the LED, the behavior will follow the driver.

APPENDIX B: TERMS AND CONDITIONS

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after-service freight charges for goods returned to the user.
3. The buyer will pay for the repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:
 - ▶ Improper or inadequate maintenance by the customer
 - ▶ Unauthorized modification, misuse, or reversed engineering of the product
 - ▶ Operation outside of the environmental specifications for the product.

RMA Service

Requesting an RMA#

1. To obtain an RMA number, simply fill out and fax the "RMA Request Form," to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.

Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

RMA No:		Reasons to Return: ☐ Repair(Please include failure details)	
		☐ Testing Purpose	
Company:		Contact Person:	
Phone No.		Purchased Date:	
Fax No.:		Applied Date:	
Return Shipping Address: _____			
Shipping by: ☐ Air Freight ☐ Sea ☐ Express_____			
☐ Others:_____			
Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

Request Party

Confirmed By Supplier

Authorized Signature / Date

Authorized Signature / Date