High Performance & Scalable Computer

cincoze

MD-3000 Series

User Manual

High Performance & Scalable Computer

14/13/12th Generation Intel Core Series Processors, High Performance and Scalable DIN-Rail Computer

Version: V1.00

Contents

Preface

Revision

Revision	Description	Date
1.00	First Release	2025/12/01

Copyright Notice

Acknowledgement

Disclaimer

This manual is intended to be used as a practical and informative guide only and is subject to change without notice. It does not represent a commitment on the part of Cincoze. This product might include unintentional technical or typographical errors. Changes are periodically made to the information herein to correct such errors, and these changes are incorporated into new editions of the publication.

Declaration of Conformity

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the

instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

The product(s) described in this manual complies with all application European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

Product Warranty Statement

Warranty

Cincoze products are warranted by Cincoze Co., Ltd. to be free from defect in materials and workmanship for 2 years from the date of purchase by the original purchaser. During the warranty period, we shall, at our option, either repair or replace any product that proves to be defective under normal operation. Defects, malfunctions, or failures of the warranted product caused by damage resulting from natural disasters (such as by lightening, flood, earthquake, etc.), environmental and atmospheric disturbances, other external forces such as power line disturbances, plugging the board in under power, or incorrect cabling, and damage caused by misuse, abuse, and unauthorized alteration or repair, and the product in question is either software, or an expendable item (such as a fuse, battery, etc.), are not warranted.

RMA

Before sending your product in, you will need to fill in Cincoze RMA Request Form and obtain a RMA number from us. Our staff is available at any time to provide you with the most friendly and immediate service.

- **RMA Instruction**
  - Customers must fill in Cincoze Return Merchandise Authorization (RMA) Request Form and obtain an RMA number prior to returning a defective product to Cincoze for service.
  - Customers must collect all the information about the problems encountered, note anything abnormal, and describe the problems on the “Cincoze Service Form” for the RMA number application process.
  - Charges may be incurred for certain repairs. Cincoze will charge for repairs to products whose warranty period has expired. Cincoze will also charge for repairs to products if the damage resulted from acts of God, environmental or atmospheric disturbances, or other external forces through misuse, abuse, or unauthorized alteration or repair. If charges will be incurred for a repair, Cincoze lists all charges and will wait for the customer’s approval before performing the repair.

- Customers agree to ensure the product or assume the risk of loss or damage during transit, to prepay shipping charges, and to use the original shipping container or equivalent.
- Customers can be sent back the faulty products with or without accessories (manuals, cables, etc.) and any components from the system. If the components were suspected of being part of the problems, please note clearly which components are included. Otherwise, Cincoze is not responsible for the devices/parts.
- Repaired items will be shipped along with a "Repair Report" detailing the findings and actions taken.

Limitation of Liability

Cincoze' liability arising out of the manufacture, sale, or supplying of the product and its use, whether based on warranty, contract, negligence, product liability, or otherwise, shall not exceed the original selling price of the product. The remedies provided herein are the customer's sole and exclusive remedies. In no event shall Cincoze be liable for direct, indirect, special or consequential damages whether based on contract of any other legal theory.

Technical Support and Assistance

1. Visit the Cincoze website at www.cincoze.com where you can find the latest information about the product.
2. Contact your distributor or our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Conventions Used in this Manual

WARNING (AVERTIR)

This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.

(Cette indication avertit les opérateurs d'une opération qui, si elle n'est pas strictement observée, peut entraîner des blessures graves.)

CAUTION (ATTENTION)

This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.
(Cette indication avertit les opérateurs d'une opération qui, si elle n'est pas strictement observée, peut entraîner des risques pour la sécurité du personnel ou des dommages à l'équipement.)

NOTE (NOTE)

This indication provides additional information to complete a task easily.
(Cette indication fournit des informations supplémentaires pour effectuer facilement une tâche.)

Safety Precautions

Before installing and using this device, please note the following precautions.

1. Read these safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Disconnect this equipment from any AC outlet before cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
8. Use a power cord that has been approved for use with the product and that matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
    If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's

manual.

- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

14. CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.
    ATTENTION: Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions.
15. Equipment intended only for use in a RESTRICTED ACCESS AREA.
16. Output of the external power source shall comply with ES1, PS3 requirements, with an output rating between 9-48 VDC, rated to a maximum ambient temperature of 70°C at a minimum, and has to be evaluated according to IEC/EN 60950-1 and/or IEC/EN 62368-1. If you need more information, please contact Cincoze.
17. Ensure to connect the power cord of the power adapter to a socket-outlet with an earth connection.
18. Dispose of used batteries promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

Package Checklist

Item	Description	Q'ty
1	MD-3000 DIN-Rail Computer	1
2	CPU Heatsink Kit	1
3	Screw Pack	1
4	Power Terminal Block Connector	1
5	Remote Function Terminal Block Connector	1

Note: Notify your sales representative if any of the above items are missing or damaged.

Ordering Information

Model No.	Product Description
MD-3000	14/13/12th Generation Intel Core Series Processors, High Performance and Scalable DIN-Rail Computer

Chapter 1
Product Introductions

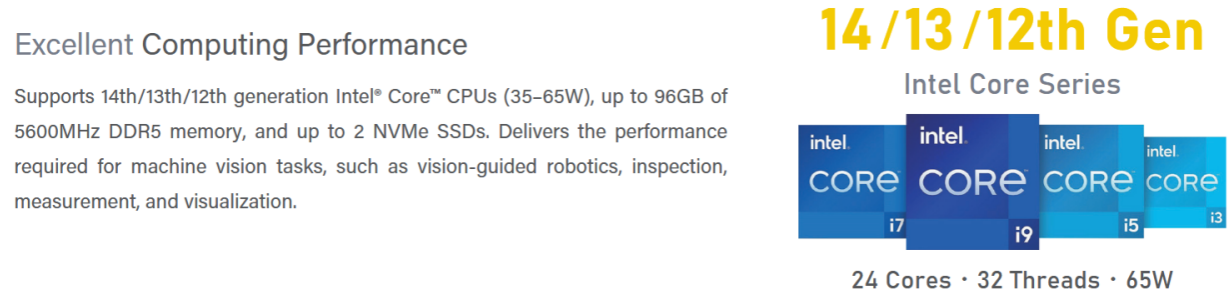
1.1. Overview

Designed for workstations and machinery in machine vision and smart manufacturing, the Cincoze MD-3000 series is a unique DIN-Rail embedded computer with compact size, excellent performance, broad expandability, and high reliability.

- Small and powerful: The body is only 150mm high but supports a desktop-grade Intel® Core™ CPU. This easily copes with high-speed image processing and AI applications.
- Small and expandable: Includes multiple native high-speed and industrial I/O and M.2 expansion slots. Supports up to a six-slot Scalable Expansion Deck (SED), allowing flexible installation of Scalable Expansion Modules (SEMs) for additional I/O, storage, and wireless transmission functions.
- Small and reliable: Consistent rugged design that passes multiple industrial standards (vibration resistant, shock resistant, EMC, safety, etc.) to ensure long-term stable operation in harsh environments. This makes it the best computing platform for machine vision applications at smart manufacturing sites.

Key Features

- Intel® 14/13/12th Gen Raptor Lake-S Refresh/ Raptor Lake-S / Alder Lake-S Core™ i9/i7/i5/i3 Processor
- Scalable Design with Optional Scalable Expansion Deck for I/O Modules Expansion
- Compact Size with DIN-Rail Mount Support
- Supports Dual PCIex4 NVMe SSD with RAID Function



Key Heat Dissipation Technology

Two thermal designs ensure sustained performance: the patented Dynamic Thermal Mechanism design, ensuring tight fit between the CPU heatsink and top cover, an external fan provides dust-free cooling, and the patented Smart OTP monitors fan status and system/CPU temperature.
(Patent No. I893729, I870277)

Comprehensive Expansion Options

2-, 4-, and 6-slot SEDs support various SEMs for I/O, PoE, M.2 expansion, 2.5" storage, and more. enabling wireless transmission and expanding storage capacity to meet diverse application needs.

Scalable Expansion Module (SEMs)

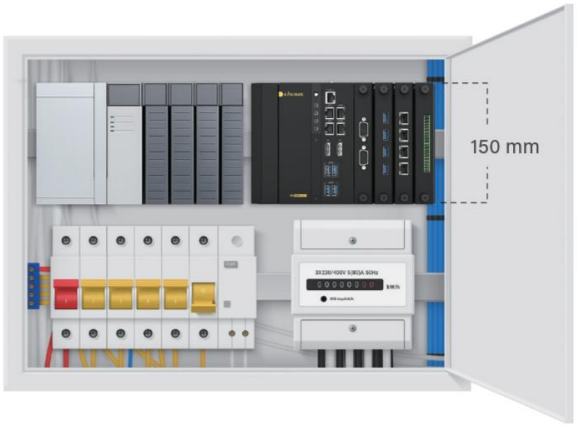
Scalable Expansion Deck (SEDs)

Easy to Configure & Plug and Play

Cincoze's SEM modules are flexible and hot-swappable. They feature Guiding Rail Alignment design for easier and faster installation.

Thoughtful Installation Design

With a compact 150 mm high design, DIN-rail mounting, and all operation interfaces and maintenance areas accessible from the front, it is ideal for cabinet or enclosure installations.



-40 – 65°C
-40 – 149°F

9 - 48VDC

EN 61000-6-2

EN 61000-6-4

Robust and Reliable

Supports wide temperature (-40°C to 65°C) and voltage (9–48 VDC) ranges, and complies with industrial EMC standards (EN 61000-6-2/4), ensuring reliable and stable operation in harsh environments.

1.2. Specifications

Model Name	MD-3000
System	
Processor	• 14th Generation Intel® Raptor Lake-S Refresh Series CPU: - Intel® Core™ i9-14900 24 Cores Up to 5.8 GHz, TDP 65W - Intel® Core™ i7-14700 20 Cores Up to 5.4 GHz, TDP 65W - Intel® Core™ i5-14500 14 Cores Up to 5.0 GHz, TDP 65W - Intel® Core™ i5-14400 10 Cores Up to 4.7 GHz, TDP 65W - Intel® Core™ i3-14100 4 Cores Up to 4.7 GHz, TDP 60W - Intel® Core™ i9-14901E 8 Cores Up to 5.6 GHz, TDP 65W - Intel® Core™ i7-14701E 8 Cores Up to 5.4 GHz, TDP 65W - Intel® Core™ i5-14501E 6 Cores Up to 5.2 GHz, TDP 65W - Intel® Core™ i5-14401E 6 Cores Up to 4.7 GHz, TDP 65W - Intel® Core™ i9-14900T 24 Cores Up to 5.5 GHz, TDP 35W - Intel® Core™ i7-14700T 20 Cores Up to 5.2 GHz, TDP 35W - Intel® Core™ i5-14500T 14 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i5-14400T 10 Cores Up to 4.5 GHz, TDP 35W - Intel® Core™ i3-14100T 4 Cores Up to 4.4 GHz, TDP 35W - Intel® Core™ i9-14901TE 8 Cores Up to 5.5 GHz, TDP 45W - Intel® Core™ i7-14701TE 8 Cores Up to 5.2 GHz, TDP 45W - Intel® Core™ i5-14501TE 6 Cores Up to 5.1 GHz, TDP 45W - Intel® Core™ i5-14401TE 6 Cores Up to 4.5 GHz, TDP 45W - Intel® Processor 300 2 Cores Up to 3.9 GHz, TDP 46W - Intel® Processor 300T 2 Cores Up to 3.4 GHz, TDP 35W • 13th Generation Intel® Raptor Lake-S Series CPU: - Intel® Core™ i9-13900E 24 Cores Up to 5.2 GHz, TDP 65W - Intel® Core™ i7-13700E 16 Cores Up to 5.1 GHz, TDP 65W - Intel® Core™ i5-13500E 14 Cores Up to 4.6 GHz, TDP 65W - Intel® Core™ i5-13400E 10 Cores Up to 4.6 GHz, TDP 65W - Intel® Core™ i3-13100E 4 Cores Up to 4.4 GHz, TDP 65W - Intel® Core™ i9-13900TE 24 Cores Up to 5.0 GHz, TDP 35W - Intel® Core™ i7-13700TE 16 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i5-13500TE 14 Cores Up to 4.5 GHz, TDP 35W - Intel® Core™ i3-13100TE 4 Cores Up to 4.1 GHz, TDP 35W • 12th Generation Intel® Alder Lake-S Series CPU: - Intel® Core™ i9-12900E 16 Cores Up to 5.0 GHz, TDP 65W - Intel® Core™ i7-12700E 12 Cores Up to 4.8 GHz, TDP 65W - Intel® Core™ i5-12500E 6 Cores Up to 4.5 GHz, TDP 65W

	- Intel® Core™ i3-12100E 4 Cores Up to 4.2 GHz, TDP 60W - Intel® Core™ i9-12900TE 16 Cores Up to 4.8 GHz, TDP 35W - Intel® Core™ i7-12700TE 12 Cores Up to 4.7 GHz, TDP 35W - Intel® Core™ i5-12500TE 6 Cores Up to 4.3 GHz, TDP 35W - Intel® Core™ i3-12100TE 4 Cores Up to 4.0 GHz, TDP 35W - Intel® Pentium® G7400E 2 Cores Up to 3.6 GHz, TDP 46W - Intel® Pentium® G7400TE 2 Cores Up to 3.0 GHz, TDP 35W - Intel® Celeron® G6900E 2 Cores Up to 3.0 GHz, TDP 46W - Intel® Celeron® G6900TE 2 Cores Up to 2.4 GHz, TDP 35W
Chipset	• Intel R680E Chipset
Memory	• 2x DDR5 SO-DIMM sockets, support Un-buffered and ECC Type memory, up to 96GB. - Core™ i9/i7: Support 5600/4800 MHz with Single Rank memory and 5200/4800 MHz with Dual Rank memory. - Core™ i5/i3/Pentium®/Celeron®/Intel® Processor: Support 4800 MHz.
BIOS	• AMI BIOS
Graphics	
Graphics Engine	• Integrated Intel® UHD Graphics 770: Core™ i9/i7/i5 • Integrated Intel® UHD Graphics 730: Core™ i3 • Integrated Intel® UHD Graphics 710: Pentium®/Celeron®/ Intel® Processor
Maximum Display Output	• Supports Dual Independent Display
Display Port	• 2x DisplayPort Connector (4096 x 2304 @60Hz) *Verified maximum resolution: 3840 x 2160 @60Hz
I/O	
LAN	• 5x GbE LAN, RJ45 - GbE1: Intel® I219 - GbE2~5: Intel® I210
COM	• 1x RS-232/422/485 with Auto Flow Control (Supports 5V/12V), DB9
USB	• 4x USB 3.2 Gen 1x1 (5Gbps), Type A
Storage/ Expansion	
M.2 M Key Socket	• 1x M.2 Key M Type 2280 Socket (PCIe Gen 3x4), Support Storage/ Add-on Card Expansion • 1x M.2 Key M Type 2280 Socket (PCIe Gen 3x4 / SATA 3.0), Support Storage/ Add-on Card Expansion
Expansion Deck	• 1x PCIex16 interface for Optional Scalable Expansion Deck
Other Function	
RAID	• Support RAID 0/1/5/10
External FAN Connector	• 1x External FAN Connector (Support Smart Fan by BIOS)
Clear CMOS Switch	• 1x Clear CMOS Switch
Reset Button	• 1x Reset Button

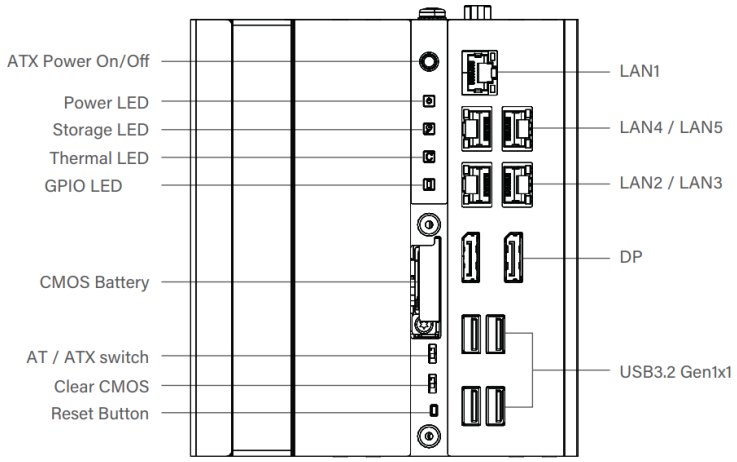
Watchdog Timer	• Software Programmable Supports 256 Levels System Reset
Status LED Indicator	• Power LED • Storage LED • Thermal LED • GPIO LED
Power	
Power Button	• 1x ATX Power On/Off Button
Power Mode Switch	• 1x AT/ATX Mode Switch
Power Input	• 9-48 VDC, 3-pin Terminal Block
Remote Power On/Off	• 1x Remote Power On/Off, 2-pin Terminal Block
Remote Power LED	• 1x Remote Power LED, 2-pin Terminal Block
Max. Power Consumption	• 35W CPU: 195.2W • 65W CPU: 279.4W - Test conducted with CPU, 1x RAM, and 1x storage - 100% load during burn-in testing
Inrush Current (Peak)	• 35W CPU: 9.0A@24V • 65W CPU: 9.026A@24V
Physical	
Dimension (W x D x H)	• 135.5 x 132 x 152.2 mm
Weight Information	• 3.03 kg
Mechanical Construction	• Extruded Aluminum with Heavy Duty Metal
Mounting	• Wall / DIN-RAIL Mount
Physical Design	• Cableless Design • Jumper-less Design
Reliability & Protection	
Reverse Power Input Protection	• Yes
Over Voltage Protection	• Protection Range: 51-58V • Protection Type: shut down operating voltage, re-power on at the present level to recover
Over Current Protection	• 15A
CMOS Battery Backup	• SuperCap Integrated for CMOS Battery Maintenance-free Operation
MTBF	• 356,683 Hours - Database: Telcordia SR-332 Issue3, Method 1, Case 3
Operating System	
Windows	• Windows®10, Windows®11
Linux	• Ubuntu 22.04
Environment	
Operating Temperature	• 35W TDP Processor: -40°C to 65°C (-40 °F to 149°F) • 45W TDP Processor: -40°C to 55°C (-40 °F to 131°F)

	• 65W TDP Processor: -40°C to 45°C (-40 °F to 113°F) * PassMark BurnInTest: 100% CPU, 2D/3D Graphics (without thermal throttling) * With external fan, extended temperature peripherals; Ambient with air flow * According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14
Storage Temperature	• -40°C to 85°C (-40 °F to 185°F)
Relative Humidity	• 95%RH @ 65°C
Shock	• Operating, 30 Grms, Half-sine 11 ms Duration (w/ External Fan & SSD, according to IEC60068-2-27)
Vibration	• Random Vibration: Operating, 3 Grms, 5-500 Hz, 3 Axes (w/SSD, according to IEC60068-2-64) • Sinusoidal Vibration: Operating, 1 Grms, 10-500 Hz, 3 Axes (w/ External Fan & SSD, according to IEC60068-2-6)
EMC	• CE, UKCA, FCC, ICES-003 Class A
EMI	• CISPR 32 Conducted & Radiated: Class A • EN/BS EN 55032 Conducted & Radiated: Class A • EN/BS EN IEC 61000-3-2 Harmonic current emissions: Class A • EN/BS EN 61000-3-3 Voltage fluctuations & flicker • FCC 47 CFR Part 15B, ICES-003 Conducted & Radiated: Class A
EMS	• EN/IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV • EN/IEC 61000-4-3 RS: 80 MHz to 1000 MHz: 10 V/m • EN/IEC 61000-4-4 EFT: AC Power: 2 kV; DC Power: 1 kV; Signal: 1 kV • EN/IEC 61000-4-5 Surges: AC Power: 2 kV; Signal: 1 kV • EN/IEC 61000-4-6 CS: 10V • EN/IEC 61000-4-8 PFMF: 50 Hz, 30A/m • EN/IEC 61000-4-11 Voltage Dips & Voltage Interruptions: 1 cycle at 60 Hz
Industrial Environment	• EMC - EN/BS/IEC 61000-6-4 : 2019 Class A - EN/BS/IEC 61000-6-2 : 2019

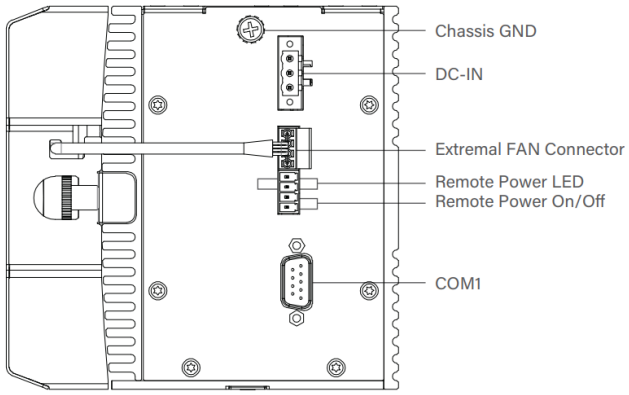
** Product Specifications and features are for reference only and are subject to change without prior notice. For more information, please refer to the latest product datasheet from Cincoze's website.*

1.3. External Layout

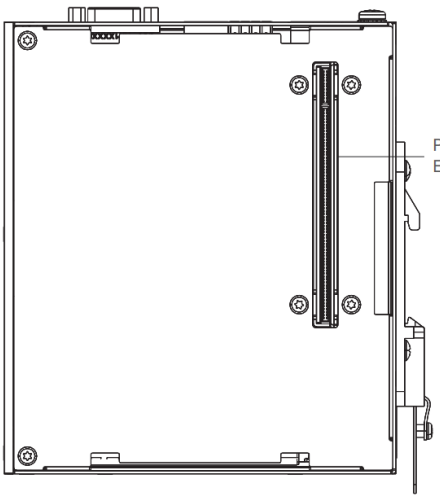
1.3.1. Front I/O



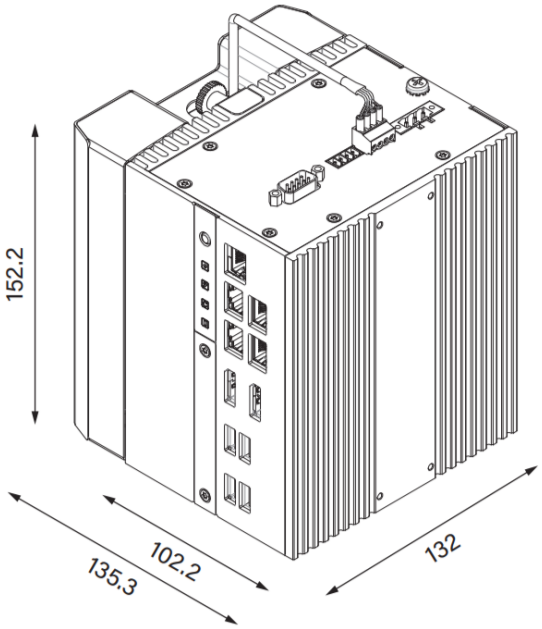
1.3.2. Top I/O



1.3.3. R-Side I/O



1.4. Dimensions

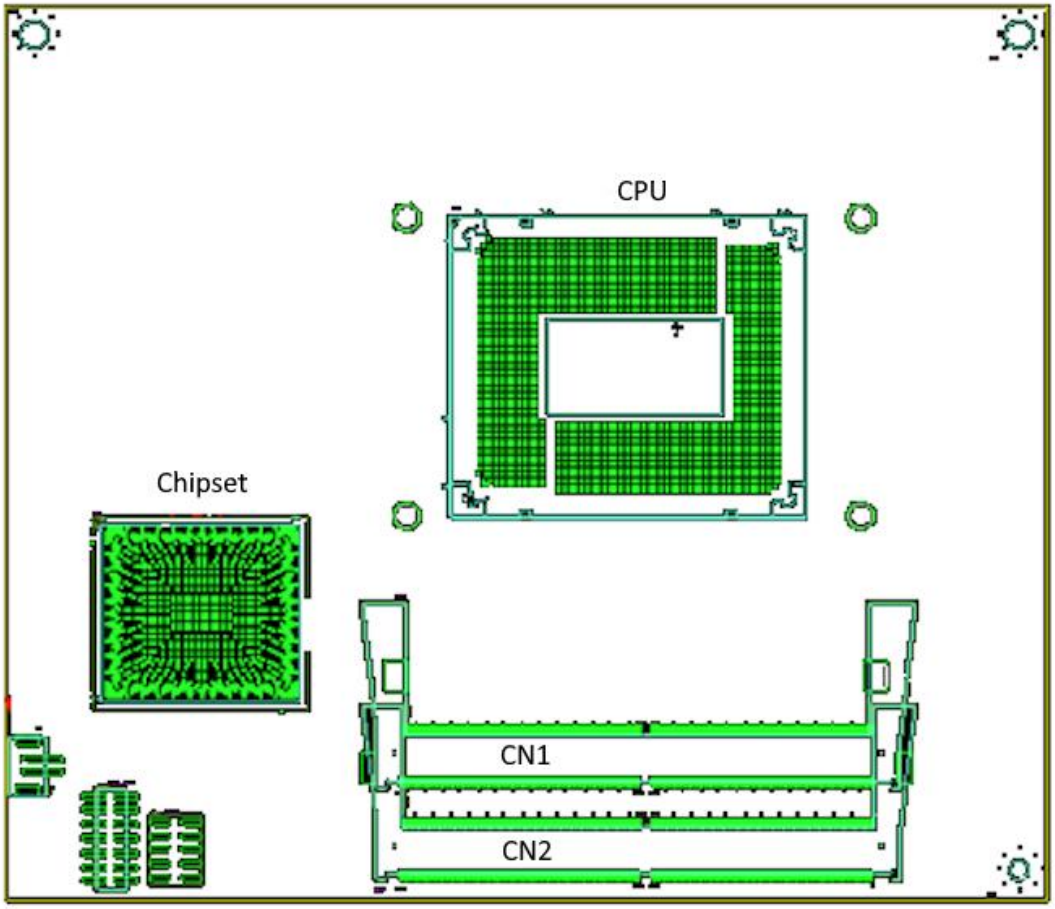


Unit: mm

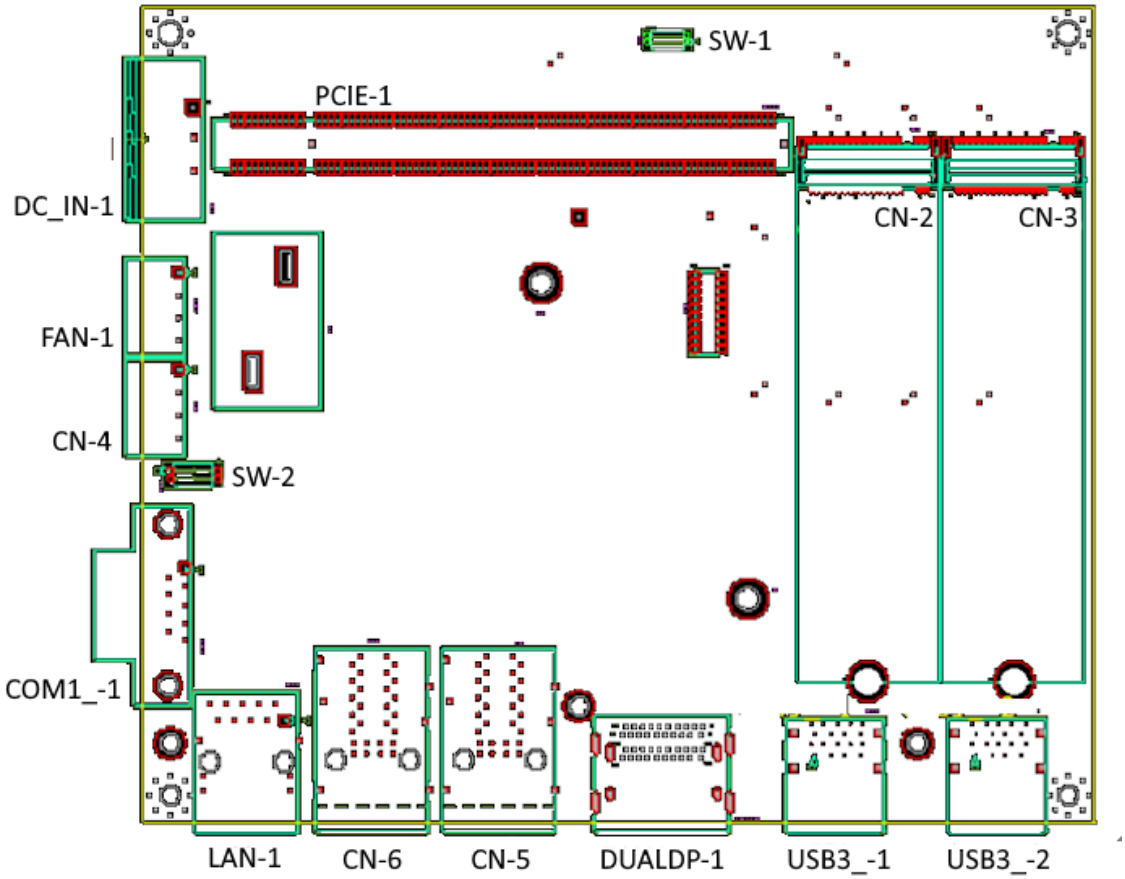
Chapter 2
Introduction to Switches and Connectors

2.1. Location of Switches and Connectors

2.1.1. Left View



2.1.2. Right View



2.2. Location of Switches and Connectors

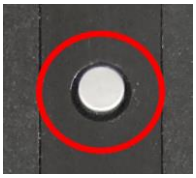
List of Switches & Connectors

Connector	Definition
CN1, CN2	DDR5 SO-DIMM socket
CN-2	PCIE Gen3 Key M socket
CN-3	PCIE Gen3 /SATA Key M socket
PCIE-1	CMI Bus to BP board Slot
SW-1	Super CAP VBAT PWR control switch
SW-2	COM1_-1 Power or RI Select
DC_IN-1	3PIN DC 9~48V Power input
FAN-1	Smart Fan connector
CN-4	Remote power and LED connector
COM1_-1	RS232/RS422/RS485 connector
LAN-1	I219 LAN connector
CN-5, CN-6	I210 dual LAN connector
DUALDP-1	Dual DP connector
USB3_-1, USB3_-2	Dual USB3.1 connector
PWR_SW1	Power Button
AT_ATX1	AT/ATX power mode switch
CLR_CMOS1	Clear CMOS switch
Reset1	Reset Button

2.3. Definition of Switches

PWR_SW1: Power Button

Location	Definition
PWR_SW1	On/Off



LEDs: Power, Storage, Thermal, GPIO LEDs

LED Type	Status	LED Color
Power LED	Off	No light
	On	Green
	Standby	Blinking (Green)
Storage LED	No activity	No light
	SATA/M.2 SSD activity	Yellow
Thermal LED	System Temp ≤ 60°C	No light
	60°C < System Temp ≤ 87°C	Blue
	87°C < System Temp	Red
GPIO LED	No activity	No light
	GPIO activity	Green

AT_ATX1: AT / ATX Power Mode Switch

Pin	Definition
1-2 (Top)	AT Power Mode
2-3 (Bottom)	ATX Power Mode (Default)

CLR_CMOS1: Clear CMOS Switch

Pin	Definition
1-2 (Top)	Normal (Default)
2-3 (Bottom)	Clear BIOS

WARNING (AVERTIR)

After performing Clear CMOS, the system will take several minutes to start. This is normal. During this process, the system will POST three times, and the system's Power LED will alternate between on (green) and off.

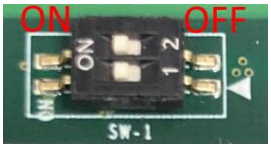
(Après l'exécution d'un Clear CMOS, le système peut nécessiter plusieurs minutes pour démarrer. Ce comportement est normal. Durant cette phase, le système effectuera trois séquences de POST, et la LED d'alimentation s'alternera entre l'état allumé (vert) et éteint.)

RESET1: Reset Button

Location	Definition
RESET1	Reset System

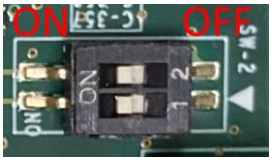
SW-1: Super CAP VBAT PWR Control Switch

Location	Enabled	Disabled
SW1-1	ON (Default)	OFF
SW1-2	ON (Default)	ON



SW-2: COM1_1 Power Select

Location	RI (Default)	PWR +5V	PWR +12V
SW-2-1	ON	ON	OFF
SW-2-2	ON	OFF	OFF

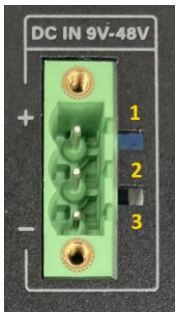


2.4. Definition of Connectors

DC_IN-1: DC Power Input Connector (9~48V)

Connector Type: 3-pin Terminal Block, 5.0mm pitch

Pin	Definition
1	+VCC 9~48V
2	NC
3	GND



CAUTION (ATTENTION)

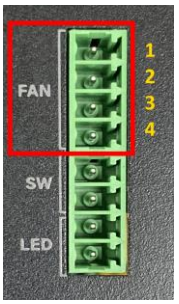
Please disconnect the power source before mounting the DC power cables or connecting the DC power connector to system.

(Veuillez débrancher la source d'alimentation avant de monter les câbles d'alimentation CC ou de connecter le connecteur d'alimentation CC au système.)

FAN-1: Fan Connector

Connector Type: Terminal Block 1x4 4-pin, 3.5mm pitch

Pin	Definition
1	GND
2	+12V
3	FAN_IN
4	FAN_PWM

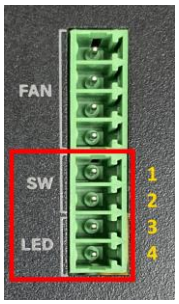


CN-4: Remote Power and LED Connector

Remote Power LED connector can only supply up to 10mA @ 3.3V.

Connector Type: Terminal Block 1x4 4-pin, 3.5mm pitch

Pin	Definition
1	PWR_SW
2	GND
3	LED+
4	LED-



WARNING (AVERTIR)

Do not apply power to the switch!

(Ne branchez pas l'alimentation au commutateur!)

COM1_-1: COM Port Connector

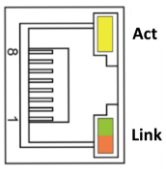
Connector Type: 9-pin D-Sub

Pin	RS232 Definition	RS422 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA -
2	RXD	TX+	DATA +
3	TXD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

LAN-1: LAN1 (I219)

LAN1 LED Status Definition

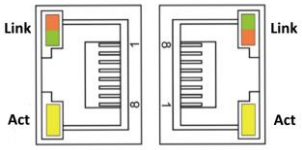
Link Speed LED Status	Definition
Steady Green	1 Gbps Network Link
Steady Orange	100 Mbps Network Link
Off	10 Mbps Network Link
Link Act LED Status	**Definition**
Blinking Yellow	Link and Data Activity
Off	No Link



CN-5, CN-6: LAN2~5 (I210)

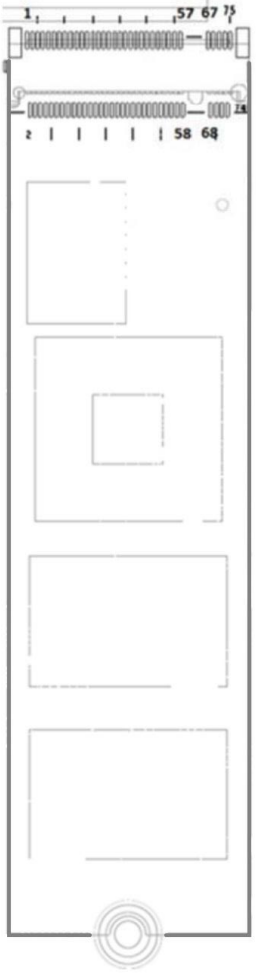
LAN2~5 LED Status Definition

Link Speed LED Status	Definition
Steady Green	1 Gbps Network Link
Steady Orange	100 Mbps Network Link
Off	10 Mbps Network Link
Link Act LED Status	**Definition**
Blinking Yellow	Link and Data Activity
Off	No Link



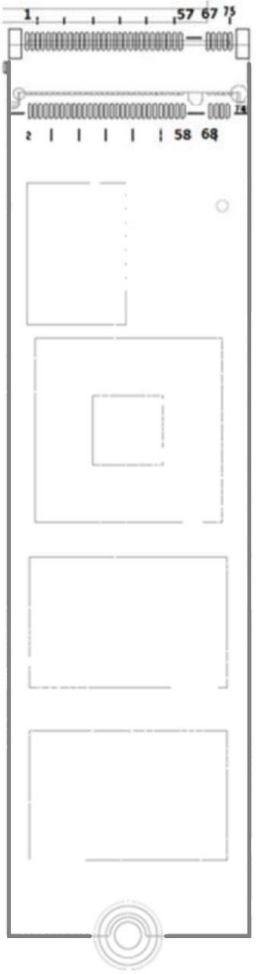
CN-3: M.2 Key M Type 2280 Connector (Supports PCIE/SATA)

Pin No.	Pin Name	Pin No.	Pin Name
1	CFG3	2	+3.3V
3	GND	4	+3.3V
5	PERN3	6	NC
7	PERP3	8	NC
9	GND	10	DAS/DSS*
11	PETN3	12	+3.3V
13	PETP3	14	+3.3V
15	GND	16	+3.3V
17	PERN2	18	+3.3V
19	PERP2	20	NC
21	CFG0	22	NC
23	PETN2	24	NC
25	PETP2	26	NC
27	GND	28	NC
29	PERN1	30	NC
31	PERP1	32	NC
33	GND	34	NC
35	PETN1	36	NC
37	PETP1	38	DEVSLP
39	GND	40	SMB_CLK
41	PERN0/SATARP0	42	SMD_DATA
43	PERP0/SATARN0-	44	ALERT#
45	GND	46	NC
47	PETN0/SATATN0	48	NC
49	PETP0/SATATP0	50	RESET#
51	GND	52	NC
53	REFCLKN	54	PEWAKE#
55	REFCLKP	56	NC
57	GND	58	NC
Key M			
67	NC	68	SUSCLK
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CFG2		



CN-2: M.2 Key M Type 2280 Connector (Supports PCIE)

Pin No.	Pin Name	Pin No.	Pin Name
1	CFG3	2	+3.3V
3	GND	4	+3.3V
5	PERN3	6	NC
7	PERP3	8	NC
9	GND	10	DAS/DSS*
11	PETN3	12	+3.3V
13	PETP3	14	+3.3V
15	GND	16	+3.3V
17	PERN2	18	+3.3V
19	PERP2	20	NC
21	CFG0	22	NC
23	PETN2	24	NC
25	PETP2	26	NC
27	GND	28	NC
29	PERN1	30	NC
31	PERP1	32	NC
33	GND	34	NC
35	PETN1	36	NC
37	PETP1	38	DEVSLP
39	GND	40	SMB_CLK
41	PERN0/SATARP0	42	SMD_DATA
43	PERP0/SATARN0-	44	ALERT#
45	GND	46	NC
47	PETN0/SATATN0	48	NC
49	PETP0/SATATP0	50	RESET#
51	GND	52	NC
53	REFCLKN	54	PEWAKE#
55	REFCLKP	56	NC
57	GND	58	NC
Key M			
67	NC	68	SUSCLK
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CFG2		



2.5. Optional Modules Switches and Connectors

2.5.1. SEM-COM101-R10

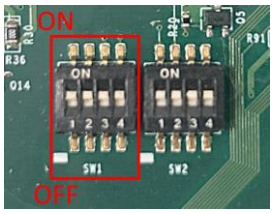
COM Port Connector

Connector Type: 9-pin D-Sub

Pin	RS232 Definition	RS422 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA -
2	RXD	TX+	DATA +
3	TXD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

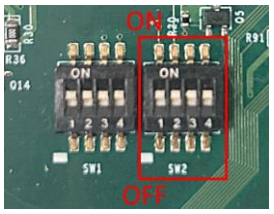
SW1: Mode Select

Port	Location	RS232	RS422	RS485
COM1_1	SW-1-1	ON (Default)	OFF	OFF
	SW-1-2	ON (Default)	ON	OFF
COM2_2	SW-1-3	ON (Default)	OFF	OFF
	SW-1-4	ON (Default)	ON	OFF



SW2: Power Select

Port	Location	RI	+5V	+12V
COM1_1	SW-2-1	ON (Default)	ON	OFF
	SW-2-2	ON (Default)	OFF	OFF
COM2_2	SW-2-3	ON (Default)	ON	OFF
	SW-2-4	ON (Default)	OFF	OFF



LED Status Definition

COM Mode	Status	LED Color
RS232	Standby, not connected	Green
	Standby, connected	Orange + Green
	Transfer	Orange + Green
	Receive	Orange + Green
RS422	Standby	Off
	Transfer	Orange
	Receive	Green
RS485	Standby	Off
	Transfer	Orange + Green
	Receive	Orange + Green

2.5.2. SEM-ICOM101-R10

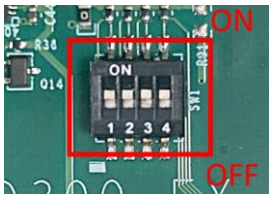
COM Port Connector

Connector Type: 9-pin D-Sub

Pin	RS232 Definition	RS422 Full Duplex Definition	RS485 Half Duplex Definition
1	DCD	TX-	DATA -
2	RXD	TX+	DATA +
3	TXD	RX+	
4	DTR	RX-	
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		

SW1: Mode Select

Port	Location	RS232	RS422	RS485
COM1_1	SW-1-1	ON (Default)	OFF	OFF
	SW-1-2	ON (Default)	ON	OFF
COM2_2	SW-1-3	ON (Default)	OFF	OFF
	SW-1-4	ON (Default)	ON	OFF



LED Status Definition

COM Mode	Status	LED Color
RS232	Standby, not connected	Green
	Standby, connected	Orange + Green
	Transfer	Orange + Green
	Receive	Orange + Green
RS422	Standby	Off
	Transfer	Orange
	Receive	Green
RS485	Standby	Off
	Transfer	Orange + Green
	Receive	Orange + Green

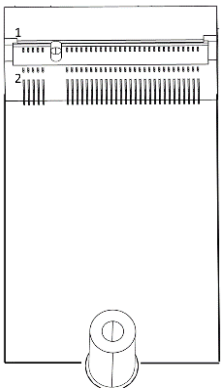
2.5.3. SEM-M2B101-R10

LED Status Definition

LED	Status	Light
M.2 SSD	No activity	Off
	Activity	Blinking Green

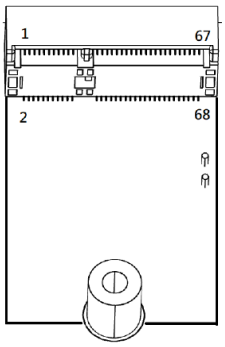
M.2 Key B Socket (2242/3052/2260/2280)

Pin No.	Pin Name	Pin No.	Pin Name
1	CFG3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	NC
7	USB2_D+	8	NC
9	USB2_D-	10	LED#1
11	GND		
Key B			
21	CFG0	20	NC
23	NC	22	NC
25	NC	24	NC
27	GND	26	NC
29	PERN1	28	NC
31	PERP1	30	NC
33	GND	32	NC
35	PETN1	34	NC
37	PETP1	36	NC
39	GND	38	DEVSLP
41	PERN0/SATA_RXP	40	NC
43	PERP0/SATA_RXN	42	NC
45	GND	44	NC
47	PETN0/SATA_TXN	46	NC
49	PETP0/SATA_TXP	48	NC
51	GND	50	PERST#
53	REFCLKN	52	CLKREQ#
55	REFCLKP	54	WAKE#
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	RESET2#	66	NC
69	CFG1	68	SUSCLK
71	GND	70	+3.3V
73	GND	72	+3.3V
75	CFG2	74	+3.3V



2.5.4. SEM-M2E101-R10

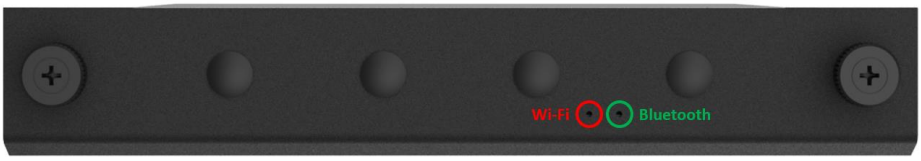
M.2 Key E Socket (2230)



Pin No.	Pin Name	Pin No.	Pin Name
1	GND	2	3.3V
3	USB_D+	4	3.3V
5	USB_D-	6	NC
7	GND	8	PCM_CLK
9	WGR_D1N	10	PCM_SYNC
11	WGR_D1P	12	PCM_IN
13	GND	14	PCM_OUT
15	WGR_D0N	16	NC
17	WGR_D0P	18	GND
19	GND	20	UART_WAKE
21	WGR_CLKN	22	BRI_RSP
23	WGR_CLKP		
Key E			
31	GND	32	RGI_DT
33	PETP0	34	RGI_RSP
35	PETN0	36	BRI_DT
37	GND	38	CLINK_REST
39	PERP0	40	CLINK_DATA
41	PERN0	42	CLINK_CLK
43	GND	44	COEX3
45	REFCLKP0	46	COEX_TXD
47	REFCLKN0	48	COEX_RXD
49	GND	50	SUSCLK
51	NC	52	PERST0#
53	PEWAKE0#	54	NC
55	GND	56	W_DISABLE1#
57	WTD1N/PETP1	58	I2C_DATA
59	WTD1P/PETN1	60	I2C_CLK
61	GND	62	NC
63	WT_D0N/PERP1	64	NC
65	WT_D0P/PERN1	66	NC

67	GND	68	NC
69	WTCLKN/REFCLKP1	70	PEWAKE1#
71	WTCLKP/REFCLKN1	72	3.3V
73	GND	74	3.3V

LED Status Definition

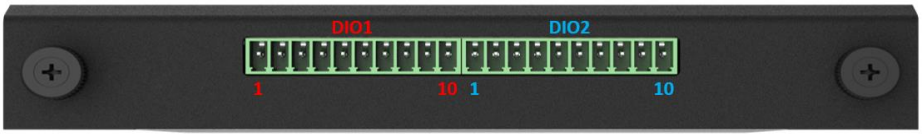


LED	Status	Light
Wi-Fi	Enabled	Green
	Disabled/No module	Off
Bluetooth	Enabled	Green
	Disabled/No module	Off

2.5.5. SEM-DIO101-R10

Digital Input / Output

Connector Type: Terminal Block 2x10 20-pin, 3.5mm pitch



DIO1		DIO2	
Pin No.	Pin Name	Pin No.	Pin Name
1	XCOM+	1	XCOM+
2	DI1	2	DO1
3	DI2	3	DO2
4	DI3	4	DO3
5	DI4	5	DO4
6	DI5	6	DO5
7	DI6	7	DO6
8	DI7	8	DO7
9	DI8	9	DO8
10	XCOM-	10	XCOM-

2.5.6. SEM-MLAN101-R10/ SEM-MPOE201-R10

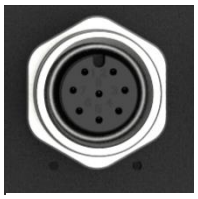
LAN Port Pin Definitions

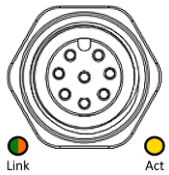
Connector Type: M12 A coded 8pin connector

Pin	Definition	Pin	Definition
1	2_LAN1_0+	2	2_LAN1_0-
3	2_LAN1_1+	4	2_LAN1_2+
5	2_LAN1_2-	6	2_LAN1_1-
7	2_LAN1_3+	8	2_LAN1_3-

LED Status Definition

Link Speed LED Status	Definition
Steady Green	1 Gbps Network Link
Steady Orange	100 Mbps Network Link
Off	10 Mbps Network Link
Link Act LED Status	**Definition**
Blinking Yellow	Link and Data Activity
Off	No Link

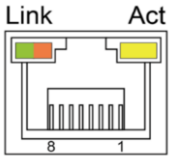




2.5.7. SEM-LAN101-R10/ SEM-POE201R10

LED Status Definition

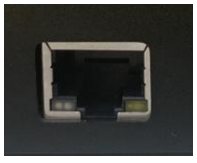
Link Speed LED Status	Definition
Steady Green	1 Gbps Network Link
Steady Orange	100 Mbps Network Link
Off	10 Mbps Network Link
Link Act LED Status	**Definition**
Blinking Yellow	Link and Data Activity
Off	No Link

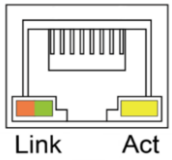


2.5.8. SEM-10GLAN101-R10/ SEM-10GPOE201-R10

LED Status Definition

Link Speed LED Status	Definition
Steady Green	10 Gbps Network Link
Steady Orange	1 Gbps Network Link
Off	100 Mbps Network Link
Off	10 Mbps Network Link
Link Act LED Status	**Definition**
Blinking Yellow	Link and Data Activity
Off	No Link





Chapter 3
System Setup

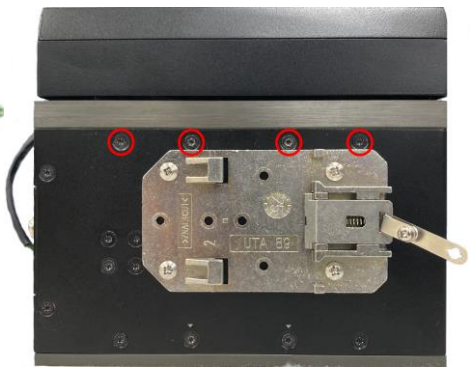
3.1. Removing Left Cover

WARNING (AVERTIR)

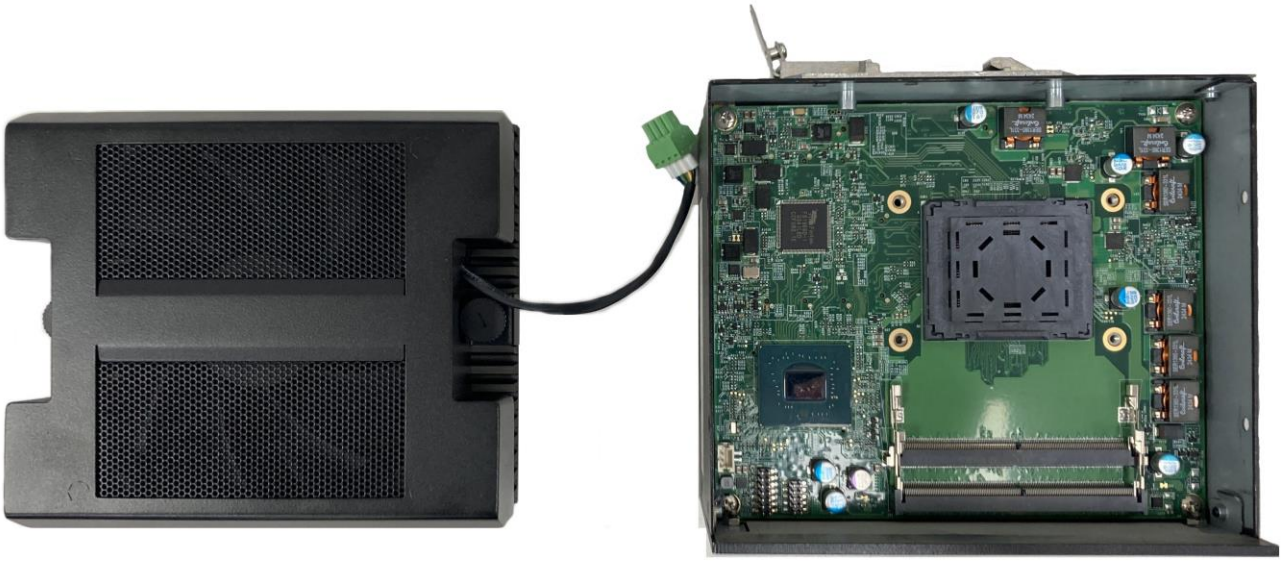
To prevent electrical shock or system damage, the power must be turned off and the unit must be disconnected from all power sources before removing the top cover.
(Pour éviter tout choc électrique ou dommage au système, l'alimentation doit être coupée et l'appareil déconnecté de toutes les sources d'alimentation avant de retirer le capot supérieur.)

Step 1. Set the system down on its right side so that the fan is facing up. Next, unplug the fan cable.


Step 2. Remove the 8 screws on the left cover.


Step 3. Lift the left cover from the chassis and set it aside.



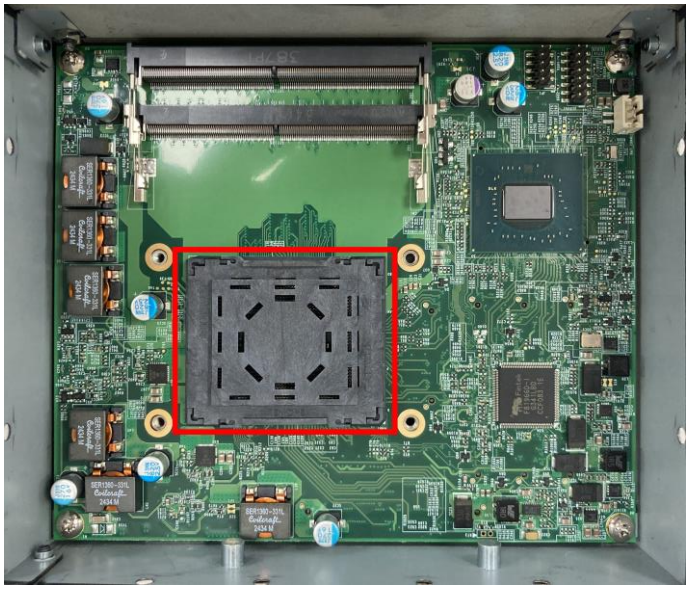
3.2. Installing CPU

WARNING (AVERTIR)

After replacing the CPU, please perform a Clear CMOS before powering on. According to Intel documentation (Clear CMOS after Hardware Configuration Change, Document Number: 337986-001), if you do not perform a Clear CMOS, the BIOS will apply settings from the old CPU to the new CPU, which may cause performance issues or startup failures. Therefore, Cincoze performs a Clear CMOS procedure before shipping. When customers power on the system for the first time, it will take several minutes to start. This is normal. During this process, the system will POST three times, and the Power LED will alternate between on (green) and off.

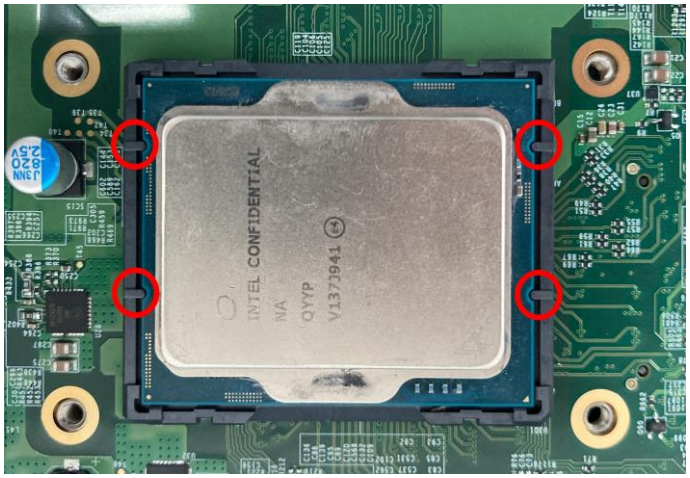
(Après avoir remplacé le CPU, veuillez effectuer un Clear CMOS avant de mettre sous tension. Selon la documentation Intel (Clear CMOS after Hardware Configuration Change, Document Number: 337986-001), si vous n'effectuez pas un Clear CMOS, le BIOS appliquera les paramètres de l'ancien CPU au nouveau CPU, ce qui peut entraîner des problèmes de performance ou des échecs de démarrage. Par conséquent, Cincoze effectue une procédure de Clear CMOS avant l'expédition. Lorsque les clients mettent le système sous tension pour la première fois, il faudra plusieurs minutes pour démarrer. Cela est normal. Durant cette phase, le système effectuera trois séquences de POST, et la LED d'alimentation s'alternera entre l'état allumé (vert) et éteint.)

Step 1. Locate the CPU socket.



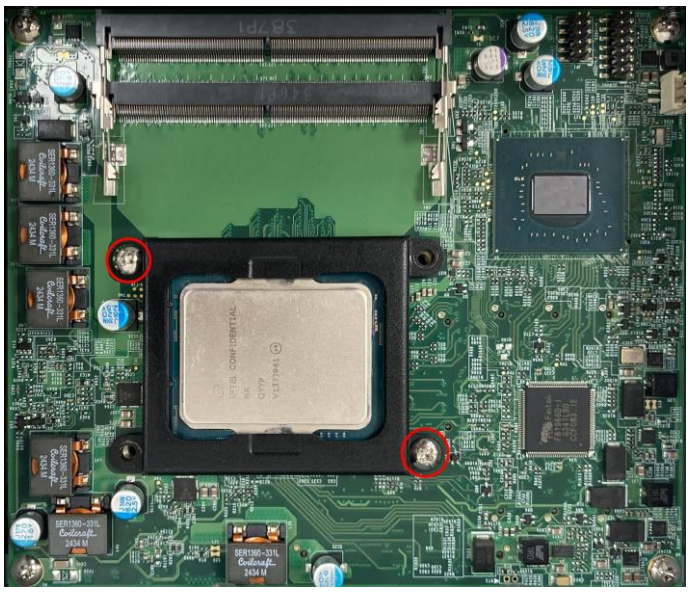
Step 2. Remove the CPU socket cover and set it aside for future use.

Step 4. Align the CPU with the foolproof protrusions on the socket and gently seat the processor.

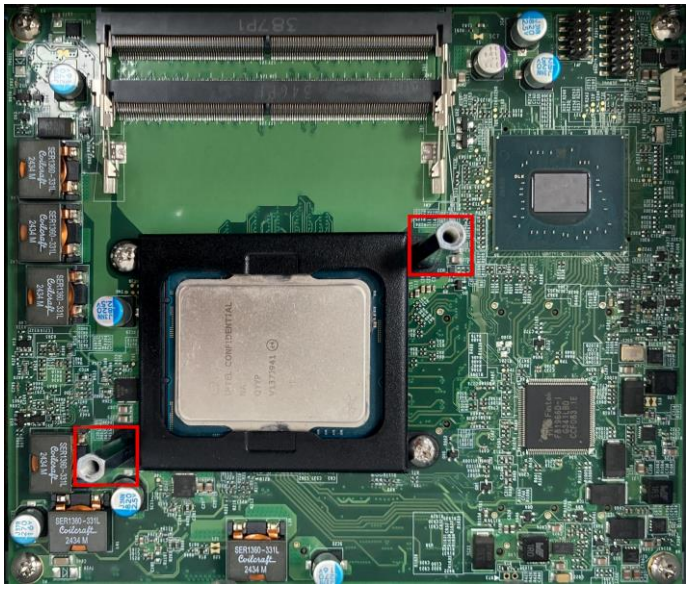


Step 5. Place the CPU holder over the CPU as indicated below. Ensure the mounting holes align with the screw holes on the motherboard.

Step 6. Secure the CPU holder to the motherboard using two screws, one in the top left corner and the other in the bottom right corner, as indicated below.

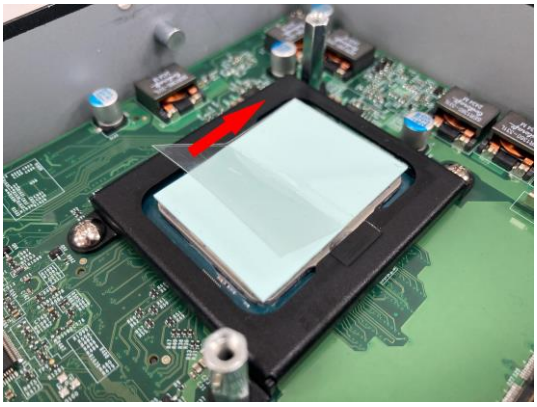


Step 7. Install the two standoffs, one in the bottom left corner and the other in the top right corner, as indicated below.



Step 8. Peel off the protective film from one side of the thermal pad (included in the package).

Step 9. Place the thermal pad onto the CPU, peeled side down. Then, remove the transparent protective film from the other side of the thermal pad.



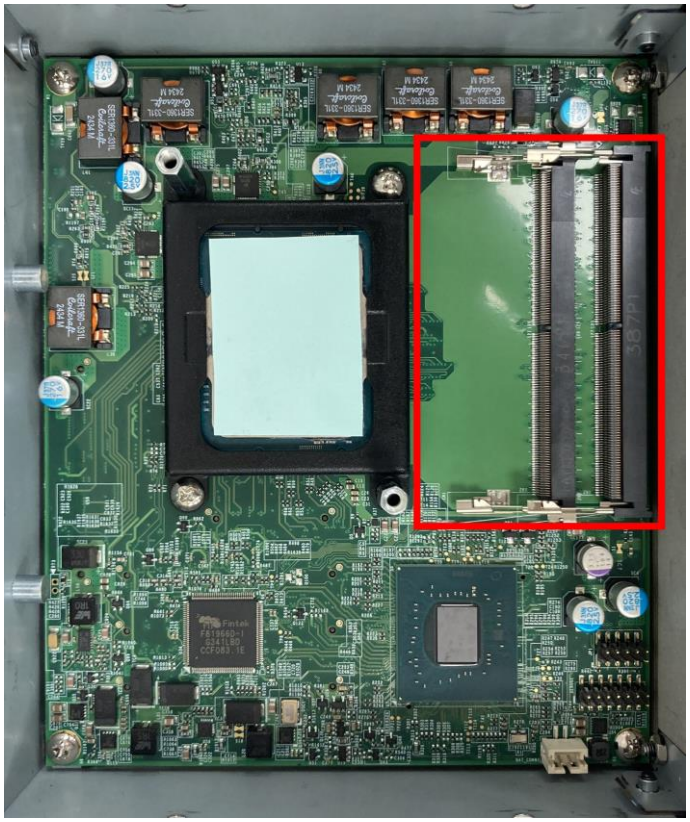
CAUTION (ATTENTION)

Before installing the CPU thermal block, please make sure the protective films on the thermal pad have been removed!

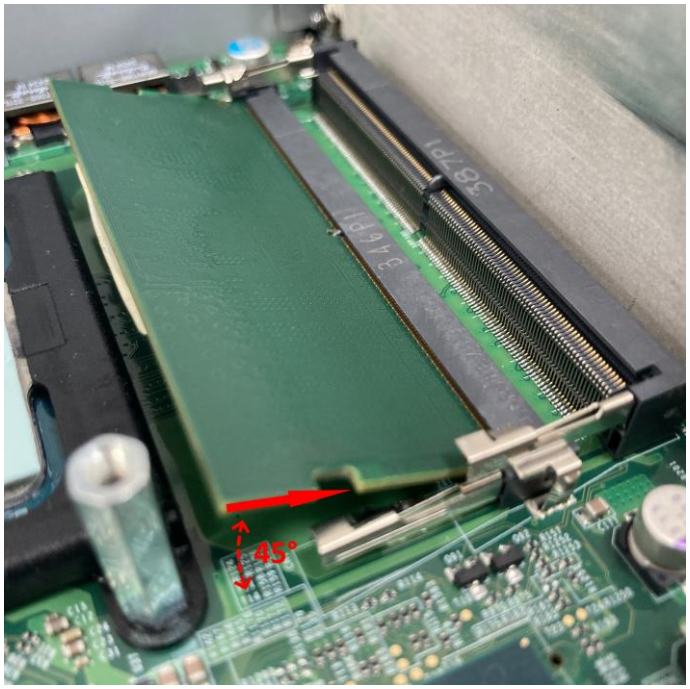
(Avant d'installer le bloc thermique du processeur, veuillez vous assurer que les films de protection sur le tampon thermique ont été retires!)

3.3. Installing SO-DIMM

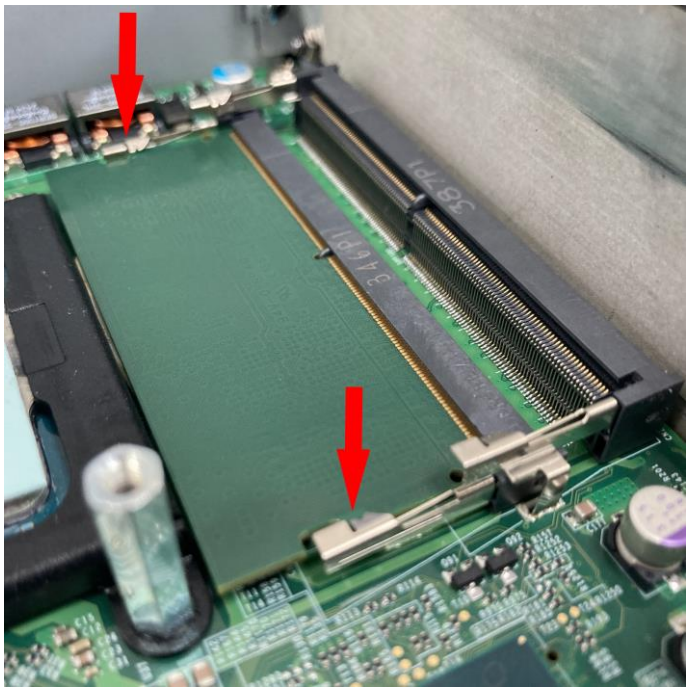
Step 1. Locate the two SO-DIMM sockets.



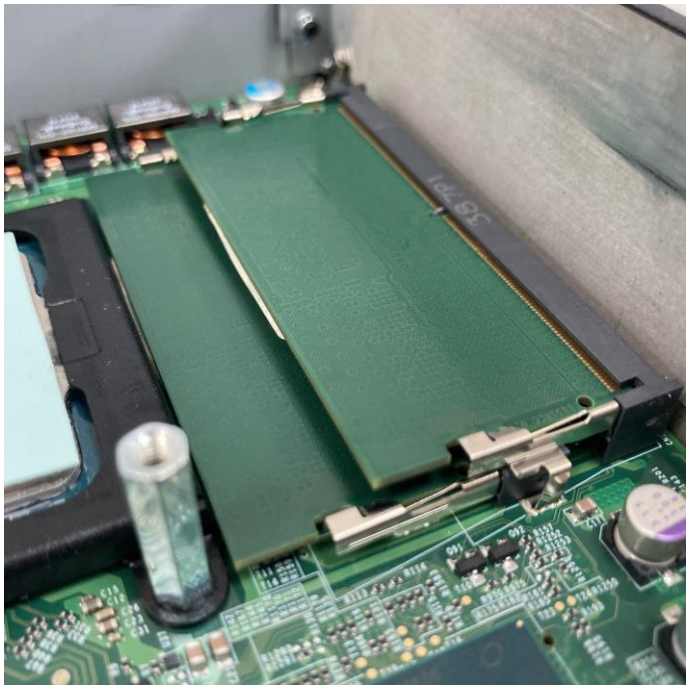
Step 2. Insert a SO-DIMM module at a 45-degree angle until it is firmly seated in the socket.



Step 3. Press down on the module until the retaining clips snap back in place.

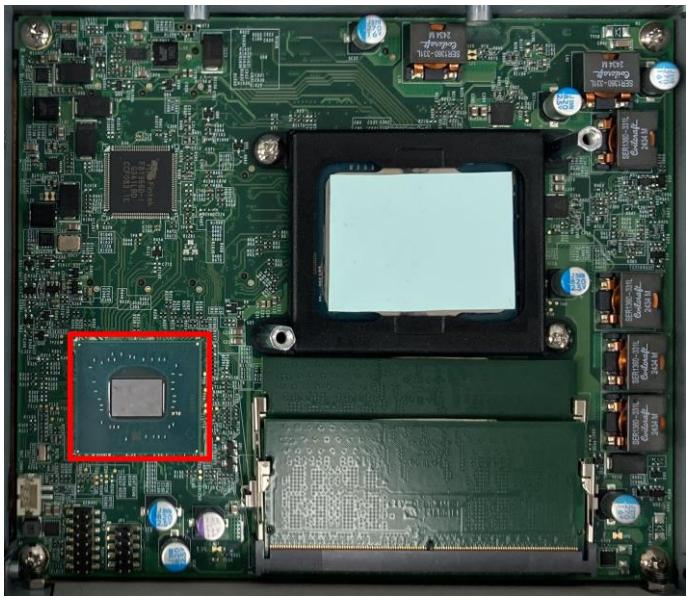


Step 4. (Optional) Repeat steps 2 and 3 for the other SO-DIMM socket.

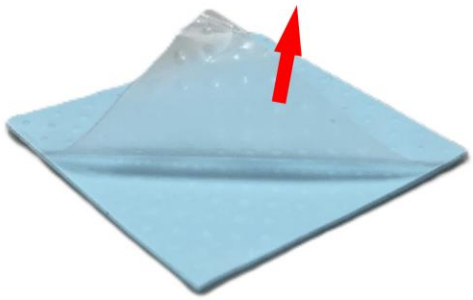


3.4. Installing CPU Thermal Block

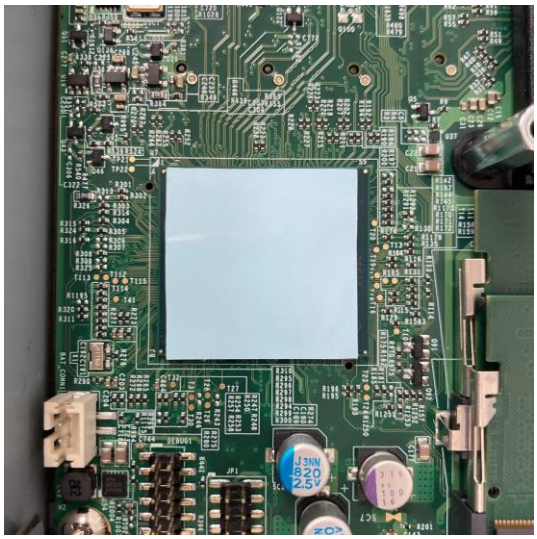
Step 1. Locate the chipset.

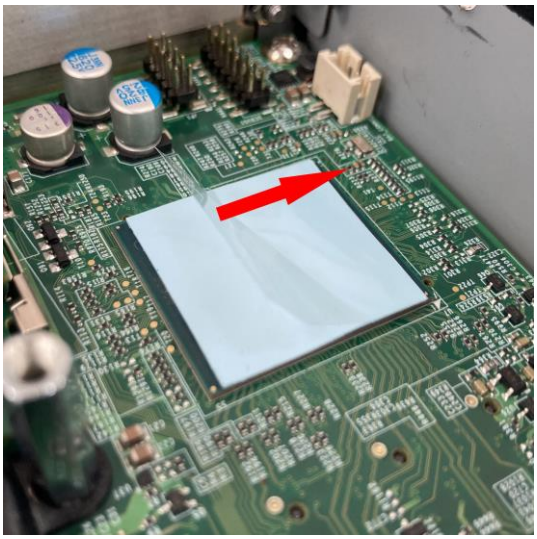


Step 2. Peel off the protective film from one side of the thermal pad (included in the package).



Step 3. Place the thermal pad onto the chipset, peeled side down. Next, remove the transparent protective film from the other side of the thermal pad.



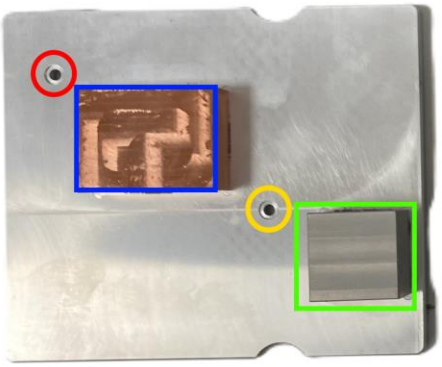


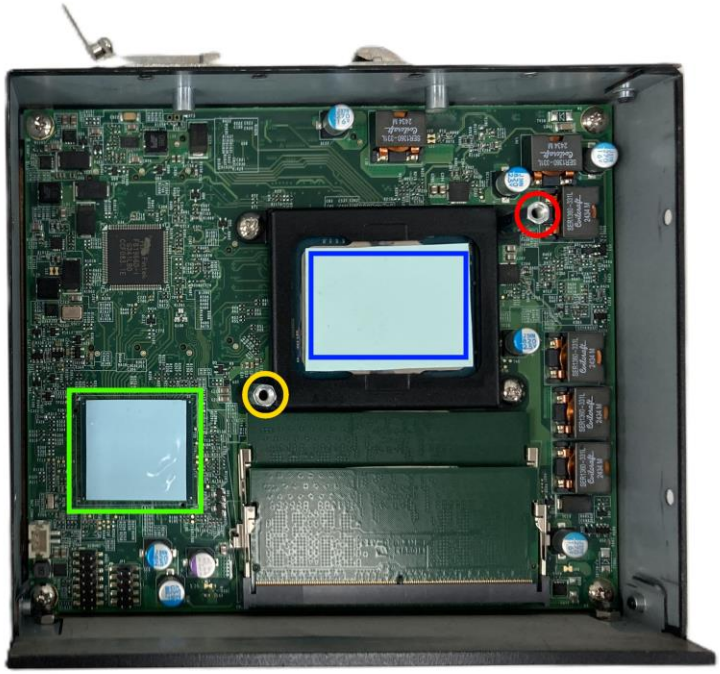
CAUTION (ATTENTION)

Before installing the CPU thermal block, please make sure the protective films on the thermal pad have been removed!

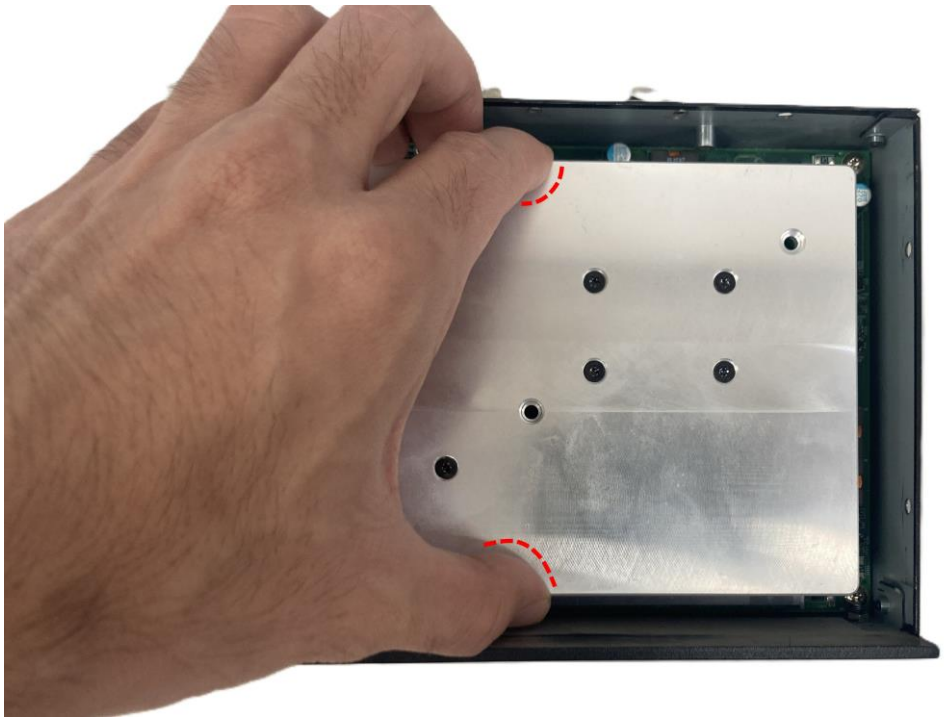
(Avant d'installer le bloc thermique du processeur, veuillez vous assurer que les films de protection sur le tampon thermique ont été retires!)

Step 4. Align the copper block with the CPU and the aluminum block with the chipset, and ensure the screw holes align with the CPU standoffs.

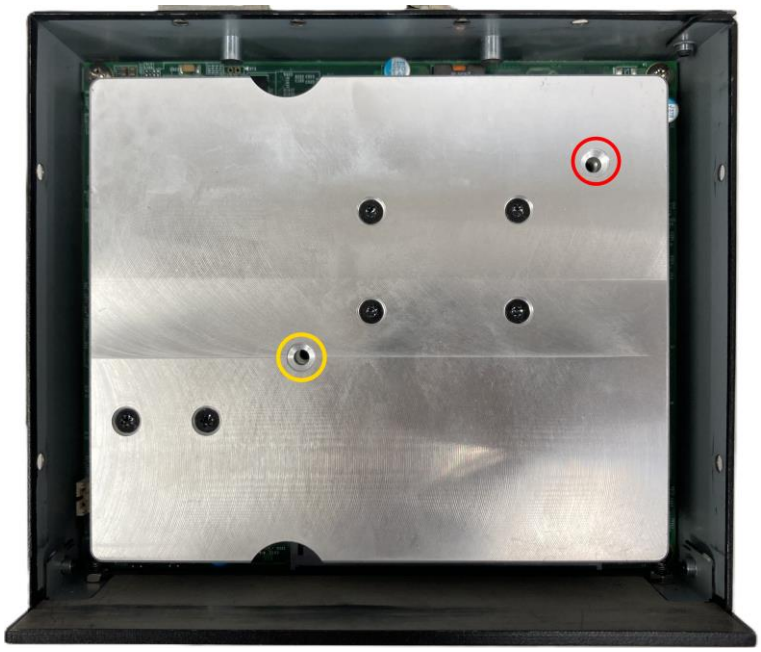




Step 5. Holding the thermal block by the two notches, set it onto the motherboard.

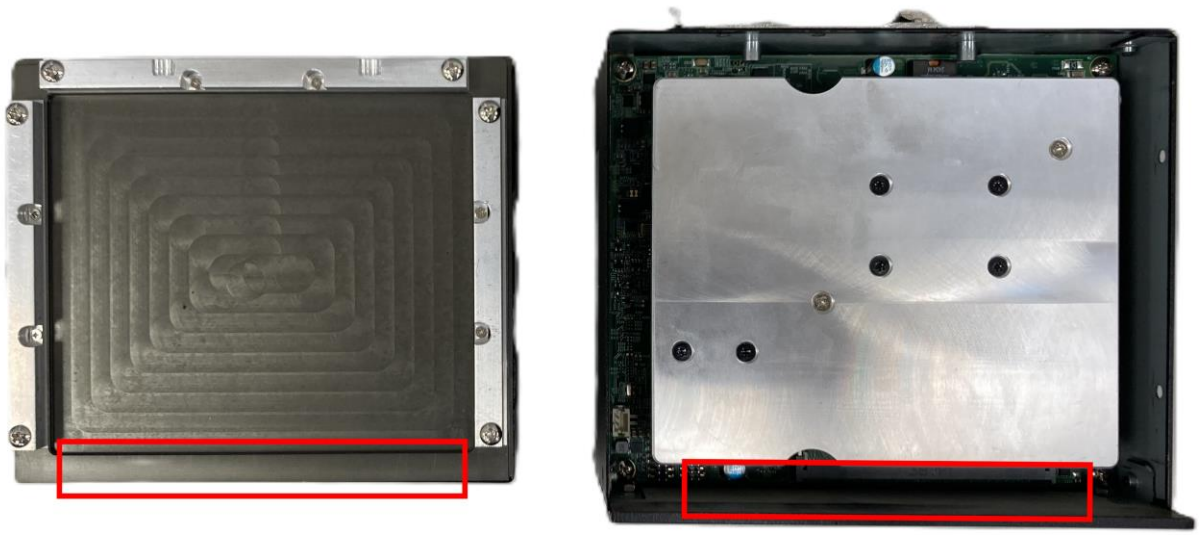


Step 6. Secure the thermal block using two screws as indicated below.



3.5. Assembling Left Cover

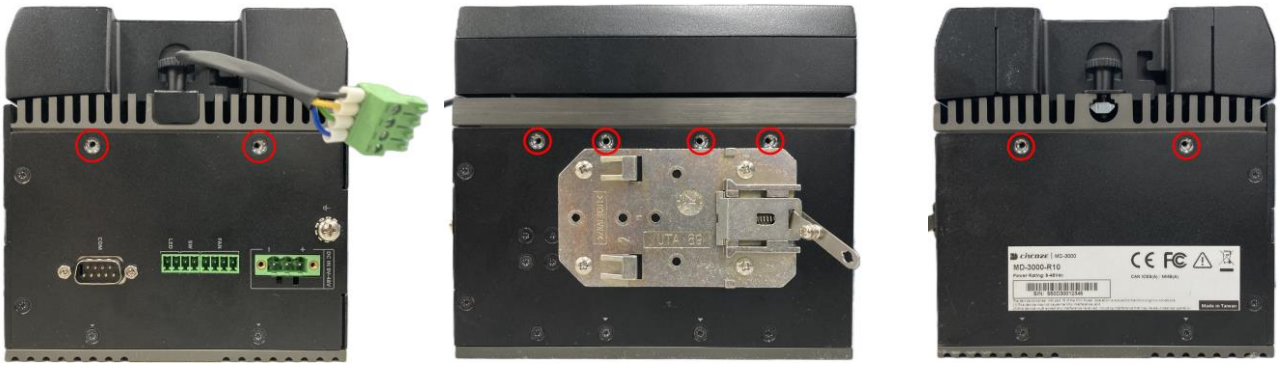
Step 1. Align the left cover with the system chassis. The side without any protrusions should be aligned with the front I/O.



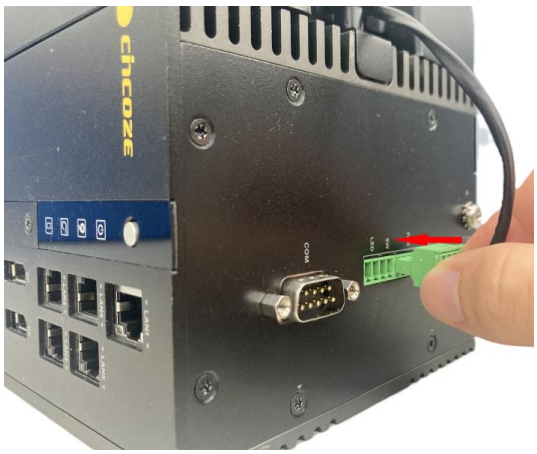
Step 2. Set the left cover onto the system chassis.

Step 3. Press down on the left cover. This will ensure the left cover will maintain firm contact with the CPU thermal block.

Step 4. While pressing down on the left cover, secure it to the system using 8 screws.



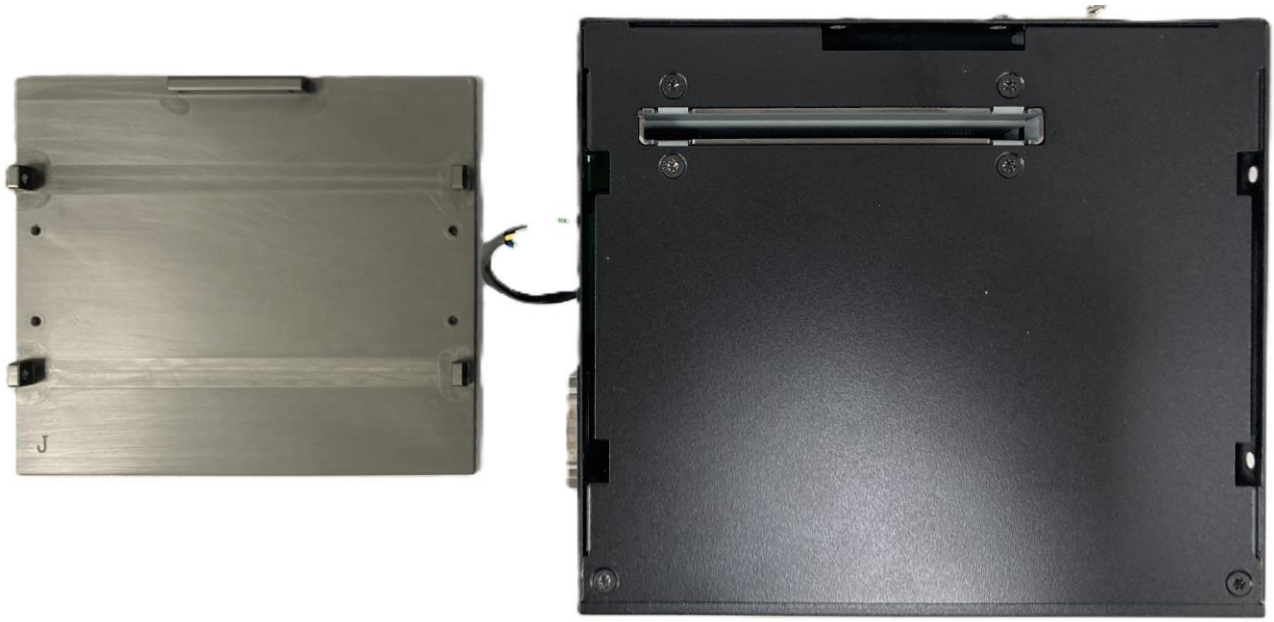
Step 5. Plug in the fan connector.



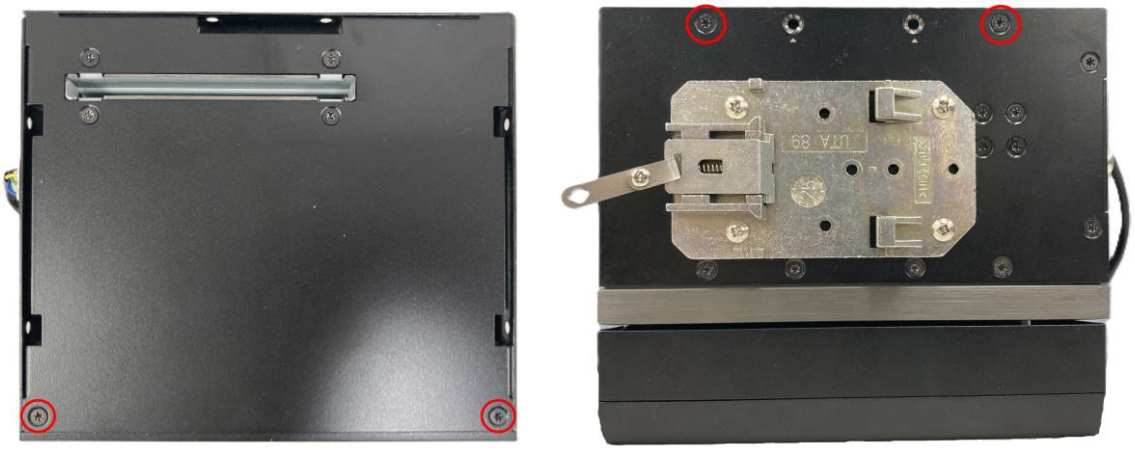
3.6. Removing Right Covers

Step 1. Set the system on its left side so that the fan is facing down. Next, remove the 6 screws on the outer right cover. Arrows indicate the screw locations.

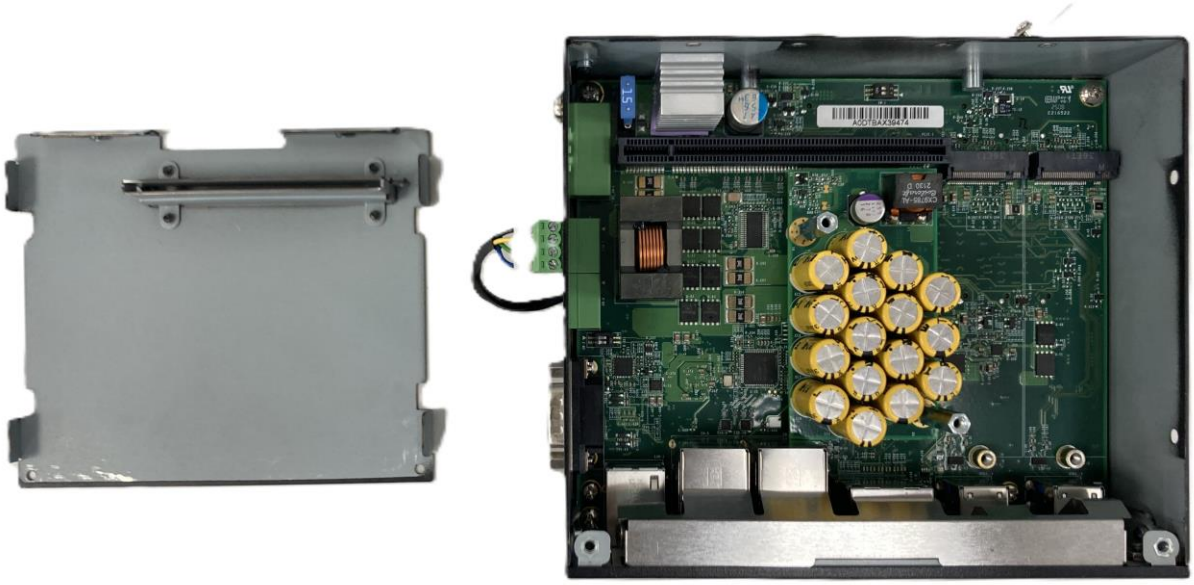
Step 2. Remove the outer right cover and set it aside.



Step 3. Remove the 4 screws on the inner right cover.

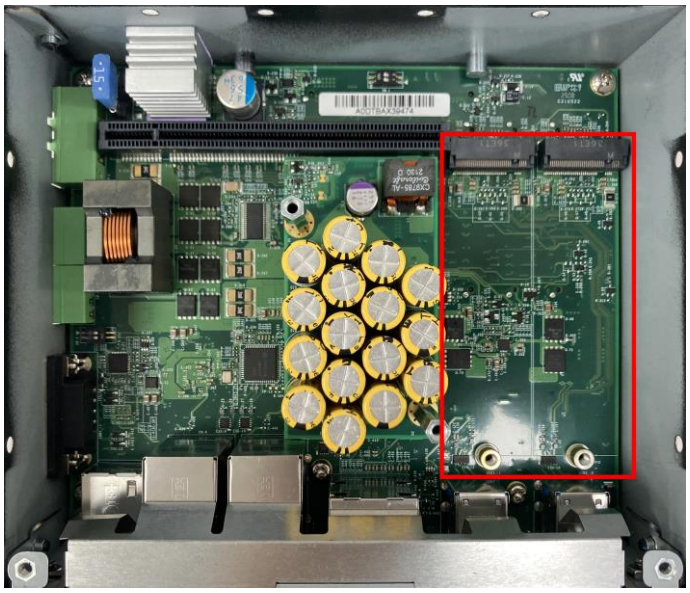


Step 4. Remove the inner right cover and set it aside.



3.7. Installing M.2 Key M Module

Step 1. Locate the M.2 Key M slots (CN-2, CN-3). Please note that only CN-3 (right) supports SATA M.2 Key M modules.



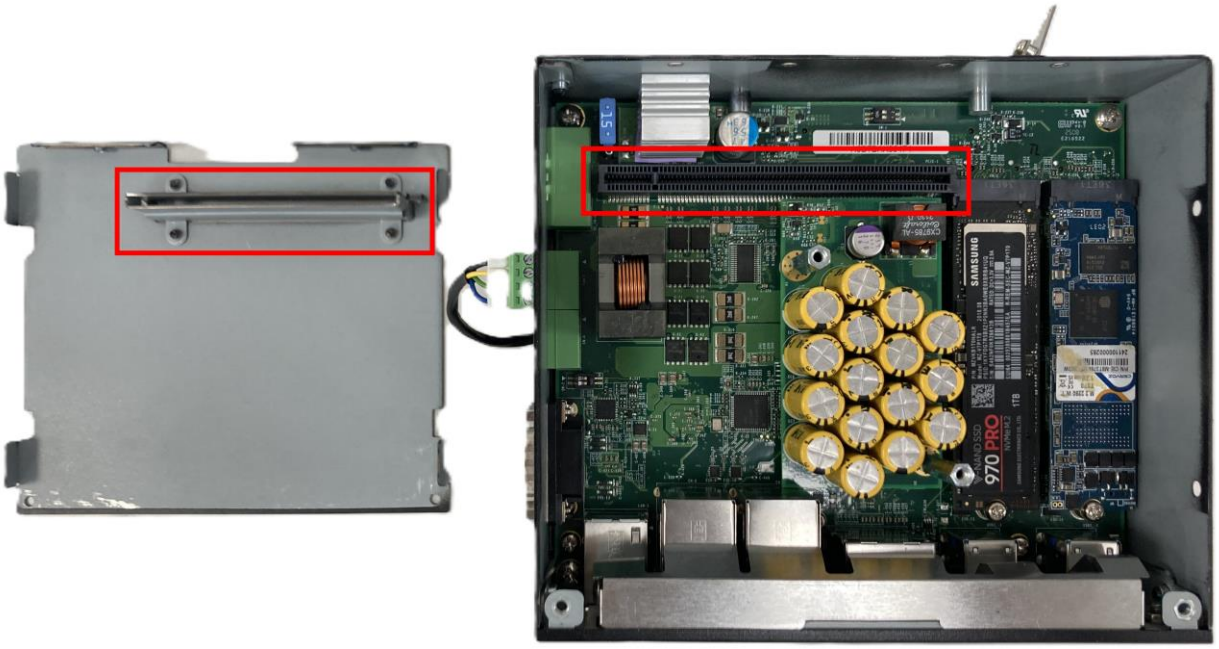
Step 2. Insert the M.2 Key M module at a 45-degree angle until it is firmly seated in the socket.

Step 3. Gently press down on the module and secure it with a screw.

Step 4. (Optional) Repeat steps 2 and 3 for the other slot.

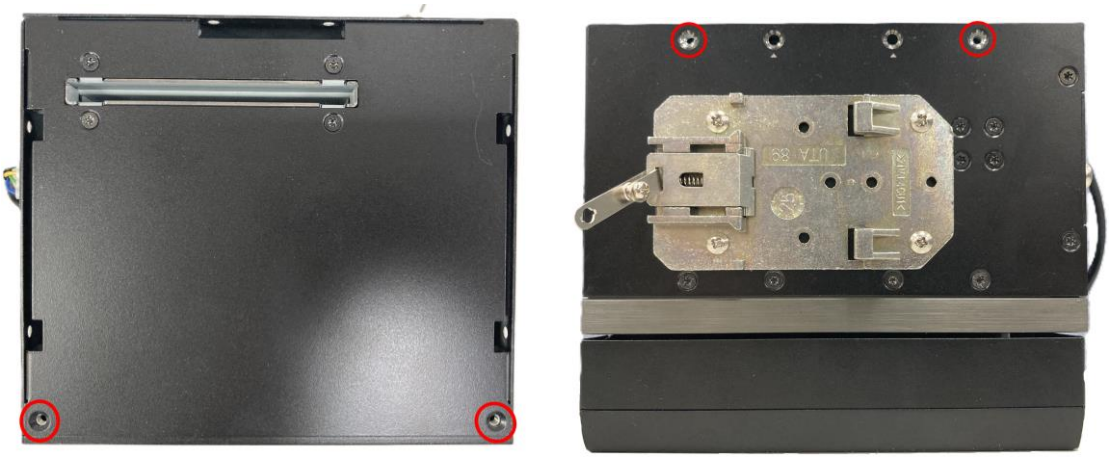
3.8. Assembling Right Covers

Step 1. Align the inner right cover with the system chassis. Ensure the PCIE guide bracket is aligned with the PCIE slot.

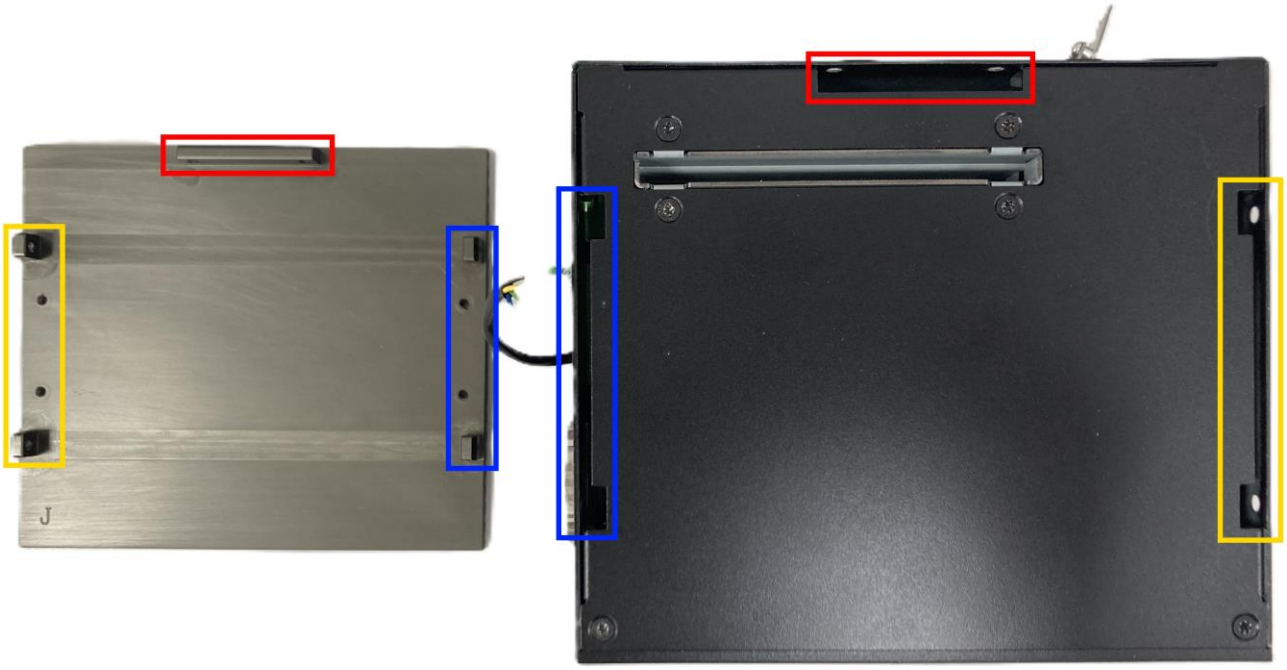


Step 2. Set the inner right cover onto the system.

Step 3. Secure the inner right cover with 4 screws.

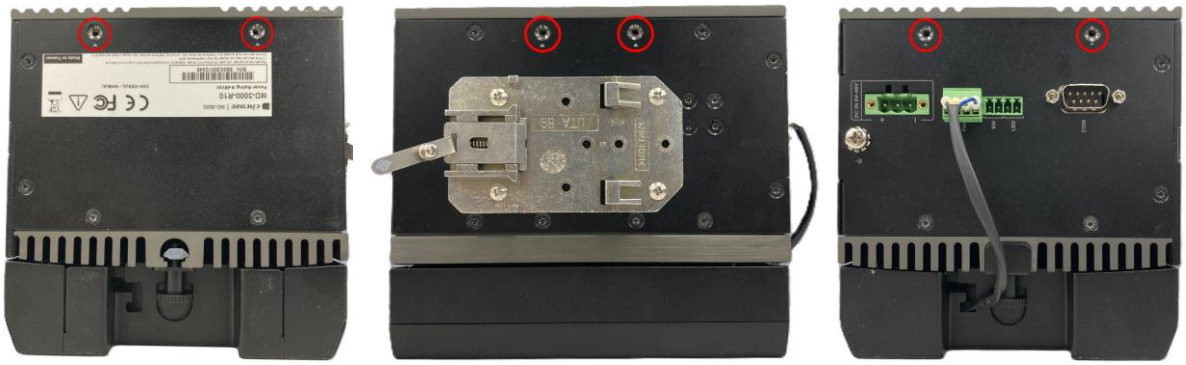


Step 4. Align the outer right cover with the system chassis. Ensure the protrusions are aligned with the cutouts on the inner right cover.



Step 4. Set the outer right cover onto the system chassis.

Step 5. Secure the outer right cover with 6 screws. Arrows indicate the screw locations.



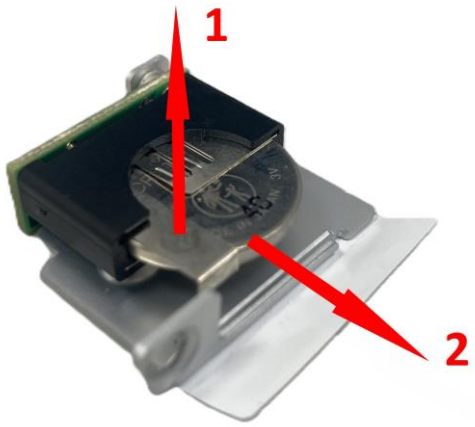
3.9. Replacing the CMOS Battery

Step 1. Loosen the two screws to remove the cover plate of the maintenance zone.

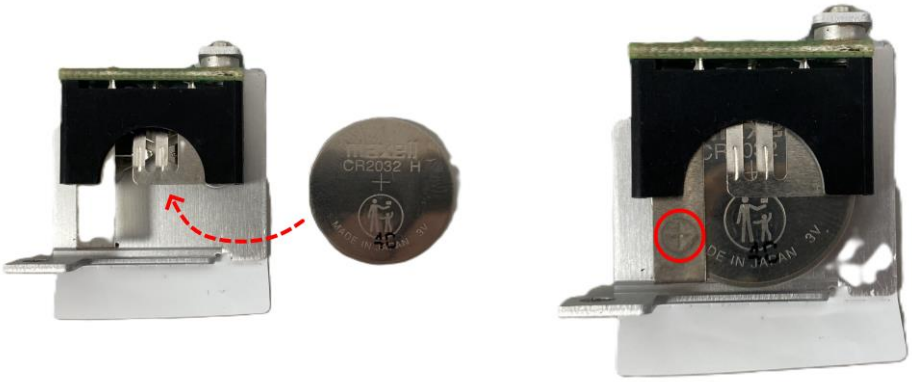
Step 2. Locate the removable CMOS Battery and remove the screw.

Step 3. Pull out the CMOS battery bracket.

Step 4. Gently lift the metal “+” tab and remove the battery by pulling it out with tweezers.



Step 5. Insert a new battery. Ensure the top of the battery makes contact with the metal “+” tab.



Step 6. Insert the CMOS battery bracket and secure it with a screw.

Step 7. Reinstall the maintenance zone cover plate and secure it with two screws.

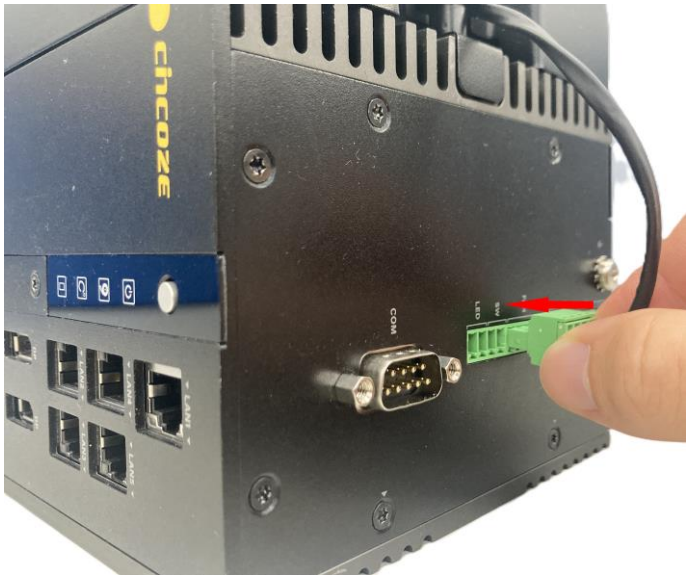
3.10. Installing the External Fan

Step 1. Loosen but do not remove the 2 screws on the mounting bracket.

Step 2. Locate the side of the left cover with a depression. This depression matches the notch on the mounting bracket. Slide the nuts of the mounting bracket screws into the middle groove of the cover from this side.

Step 3. Tighten the 2 screws to secure the fan to the left cover.

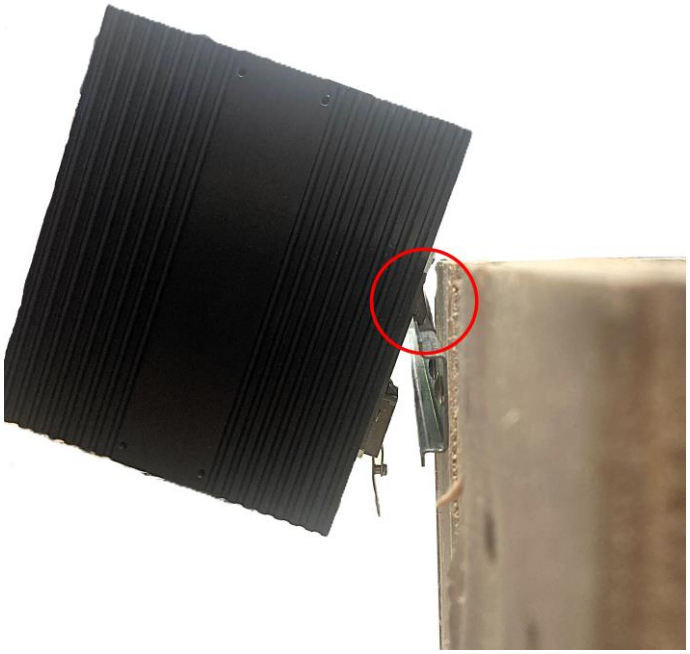
Step 4. Plug the fan cable into the fan connector.



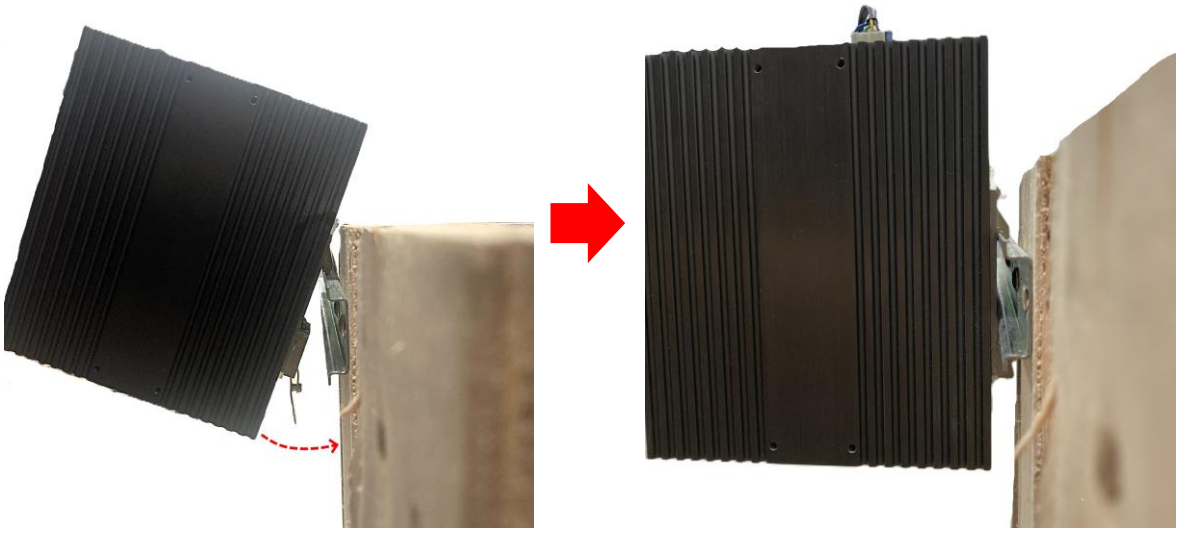
3.11. Mounting onto DIN-Rail

The MD-3000 series is designed to be mounted onto a DIN-Rail.

Step 1. Snap the top mounting clips onto the DIN rail.



Step 2. Press the bottom of the system towards the rail until the bottom clips snap into place.



To remove the system from the DIN rail, pull down on the latch and reverse steps 2 and 1.

3.12. Installing Wall Mount

The MD-3000 series supports wall mounting when used with the optional wall mount kit. The wall mount cannot be used with an expansion deck.

Step 1. Secure the wall mount brackets to the bottom of the system using the 4 screws provided with the kit.

Step 2. Secure the system to the wall by using the bracket mounting holes.

3.13. Installing Scalable Expansion Deck

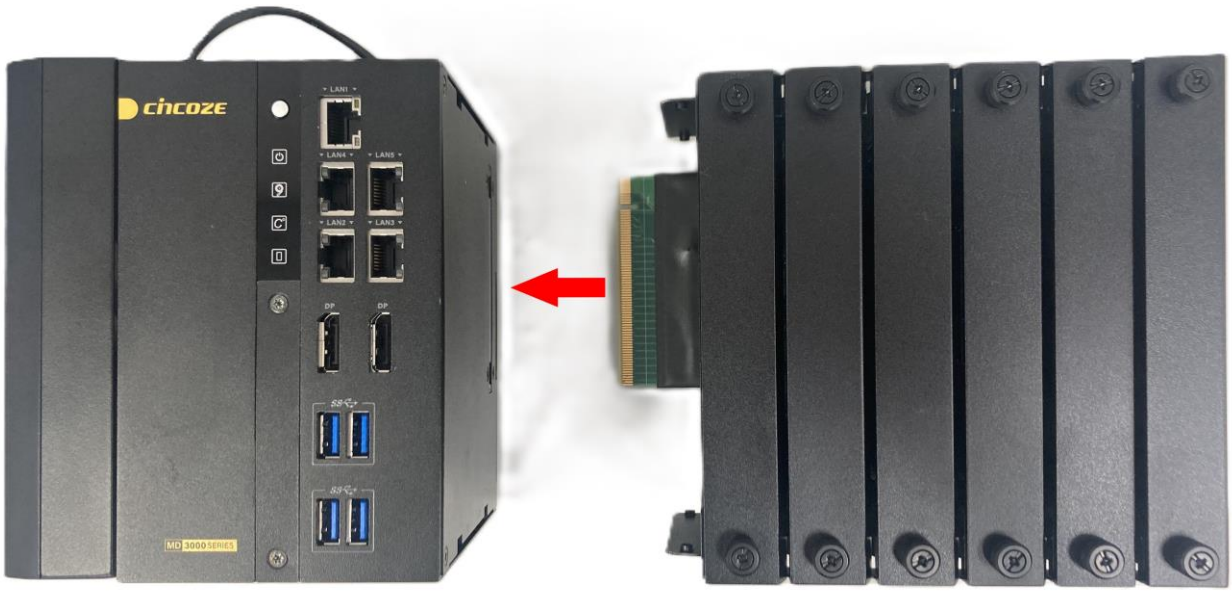
Model No.	Product Description
SED-201-R10	2 Scalable Expansion Deck with 2x I/O Module Expansion
SED-401-R10	4 Scalable Expansion Deck with 4x I/O Module Expansion
SED-402-R10	4 Scalable Expansion Deck with 2x I/O Module Expansion and 2x Storage Module Expansion
SED-601-R10	6 Scalable Expansion Deck with 4x I/O Module Expansion and 2x Storage Module Expansion

The MD-3000 series can be ordered with Scalable Expansion Decks. These decks can be equipped with modules for additional I/O and storage, enabling them to perform a wide variety of functions. Scalable Expansion Decks are also equipped with DIN rail mounts.

For this manual, the 6 Scalable Expansion Deck (SED-601-R10) is used as an example.

Before installing any Scalable Expansion Deck, complete Chapter 3.6, steps 1 and 2, and remove the outer right cover.

Step 1. Align the interface pins of the expansion deck with the PCIE socket of the MD-3000, and insert the pins firmly into the socket.



Step 2. Flip the system until the fan is at the top. Secure the deck to the system using 6 screws. Arrows indicate the screw locations.

3.14. Installing Single-slot Scalable Expansion Modules

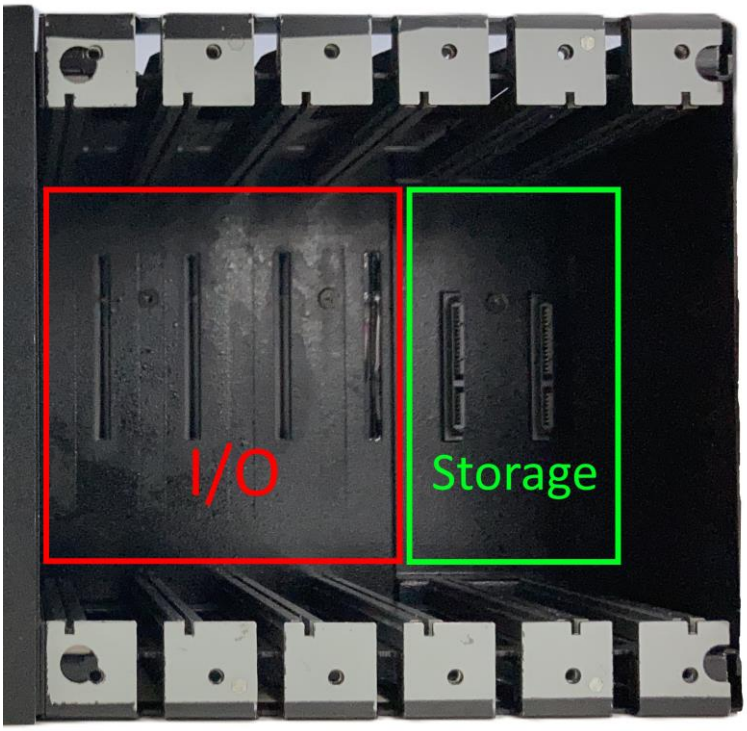
Scalable Expansion Decks are designed to be fitted with Scalable Expansion Modules for additional I/O and storage. The following modules take up one deck slot. Not all Scalable Expansion Decks are compatible with all modules; only SED-402-R10 and SED-601-R10 are compatible with storage modules (SEM-SAT101-R10).

Model No.	Interface	Product Description
SEM-LAN101-R10	I/O	4x 1GbE LAN Ports, RJ45
SEM-MLAN101-R10	I/O	4x 1GbE LAN Ports, M12 A-Coded
SEM-10GLAN101-R10	I/O	2x 10GbE LAN Ports, RJ45
SEM-USB101-R10	I/O	4x USB3.1 Gen 1 (5Gbps), Type A
SEM-COM101-R10	I/O	2x RS-232/422/485, (Supports 5V/12V), DB9
SEM-ICOM101-R10	I/O	2x Isolated RS-232/422/485, DB9
SEM-DIO101-R10	I/O	16x Isolated DIO (8-in/8-out), 20-pin Terminal Block
SEM-M2B101-R10	I/O	1x M.2 Key B Socket Type 2242/3052/2260/2280 Socket
SEM-M2E101-R10	I/O	1x M.2 Key E Socket Type 2230 Socket
SEM-SAT101-R10	Storage	1x 2.5” HDD/SSD SATA Drive Bay

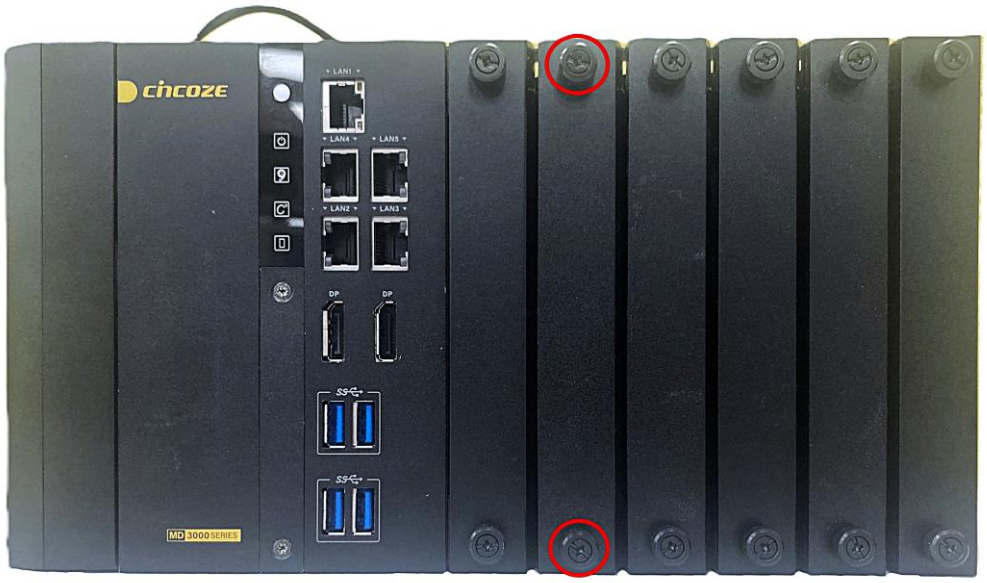
A maximum of one SEM-LAN101-R10 or SEM-MLAN101-R10 module can be installed at a time.

For this section, an SEM-M2E101-R10 module is used as an example.

Before installation, choose a suitable interface slot. The left four slots are for I/O modules, while the right two slots are for storage modules.



Step 1. Loosen the knobs and remove a single module slot cover.



Step 2. Align the rails of the module with the rails of the slot and insert the module firmly.

Step 3. Tighten the knobs of the module to secure it to the deck.

3.15. Installing Dual-slot Scalable Expansion Modules

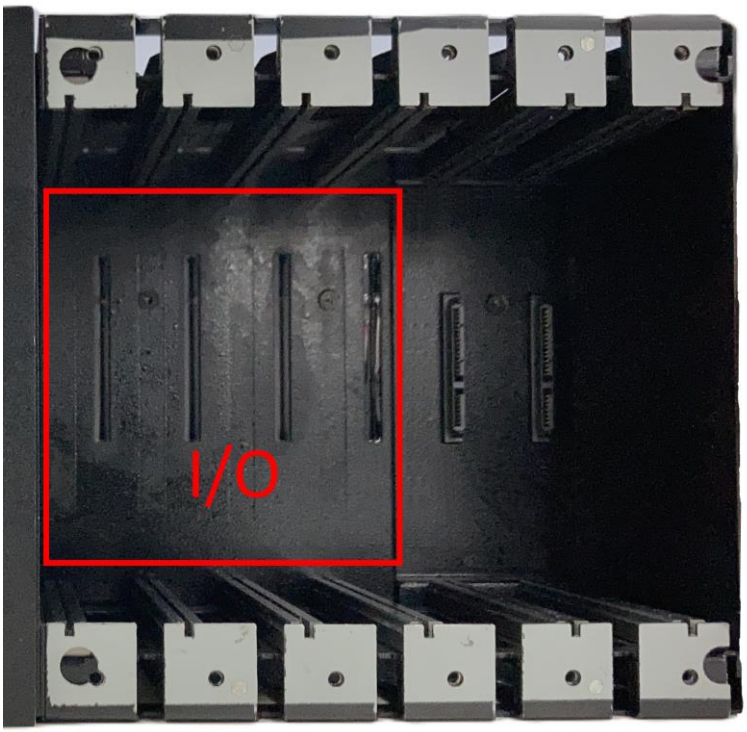
Scalable Expansion Decks are designed to be fitted with Scalable Expansion Modules for additional I/O and storage. The following modules take up two deck slots.

Model No.	Interface	Product Description
SEM-POE201-R10	I/O	4x 1GbE PoE Ports, RJ45
SEM-MPOE201-R10	I/O	4x 1GbE PoE Ports, M12 A-Coded
SEM-10GPOE201-R10	I/O	2x 10GbE PoE Ports, RJ45

A maximum of one SEM-POE201-R10 or SEM-MPOE201-R10 module can be installed at a time.

For this section, an SEM-POE201-R10 module is used as an example.

Before installation, choose two suitable interface slots. The left four slots are for I/O modules.



Step 1. Loosen the knobs and remove two module slot covers.

Step 2. Align the rails of the module with the rails of the slot and insert the module firmly.

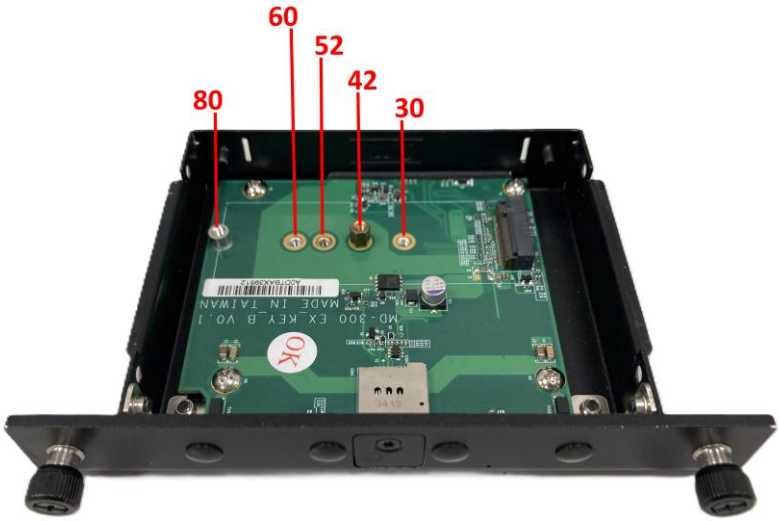
Step 3. Tighten the knobs of the module to secure it to the deck.

3.16. Installing M.2 Key B (SEM-M2B101-R10)

Step 1. Remove the 4 screws indicated below to remove the top cover of the module.

Step 2. Hold the fins of the top cover and lift it from the module.

Step 3. Install a copper standoff in the appropriate location for your M.2 Key B card.



Step 4. Insert an M.2 Key B card at a 45° angle into the Key B socket, ensuring it is firmly seated.

Step 5. Press down on the M.2 Key B card until it rests on top of the copper standoff and secure it with a screw.

Step 6. Install the top cover and secure it with 4 screws as indicated below.

3.17. Installing SIM Card (SEM-M2B101-R10)

Step 1. Locate the SIM slot cover at the front of the module and remove the screw.

Step 2. Tilt the M.2 Key B module forward to remove the SIM slot cover.

Step 3. Prepare an MD-3000 dual Nano SIM card holder and insert a SIM card in the SIM 1 side first, then the SIM 2 side if necessary. The gold contacts should face outward.

Step 4. With the SIM 1 side facing up, insert the SIM card holder into the slot.

Step 5. Install the SIM card slot cover and secure it with a screw.

3.18. Installing Antenna (SEM-M2B101-R10/ SEM-M2E101-R10)

Antenna installation is identical for both modules. An SEM-M2B101-R10 module is used as the example here.

Step 1. Remove antenna covers as necessary.

Step 2. Slot the antenna jacks through their respective cutouts.

Step 3. Thread the washer and the nut onto the antenna jack until they sit flush against the front panel of the module.

Step 4. Assemble the antenna and antenna jack.

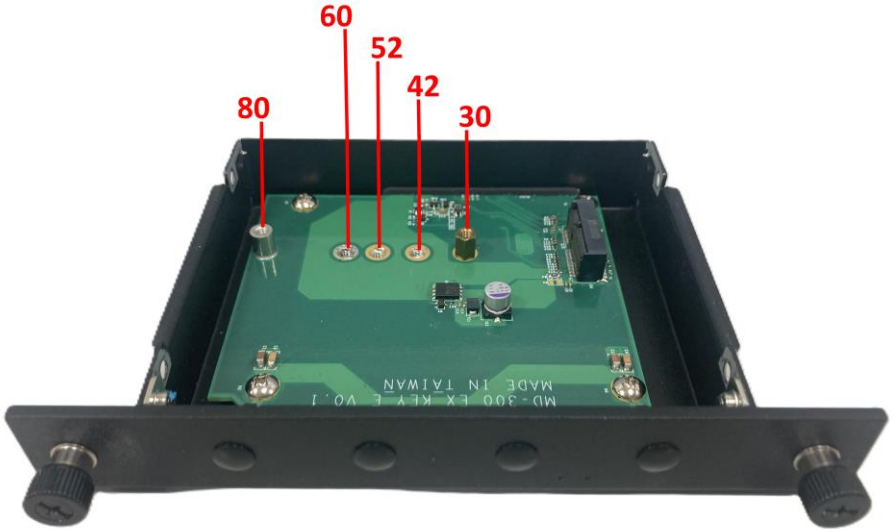
Step 5. Attach the RF connector cable to the Wireless card to complete installation.

3.19. Installing M.2 Key E (SEM-M2E101-R10)

Step 1. Remove the 4 screws indicated below to remove the top cover.

Step 2. Hold the fins of the top cover and lift it from the module.

Step 3. Install a copper standoff in the appropriate location for your M.2 Key E card.



Step 4. Insert an M.2 Key E card at a 45° angle into the Key B socket, ensuring it is firmly seated.

Step 5. Press down on the M.2 Key E card until it rests on top of the copper standoff and secure it with a screw.

Step 6. Install the top cover and secure it with 4 screws as indicated below.

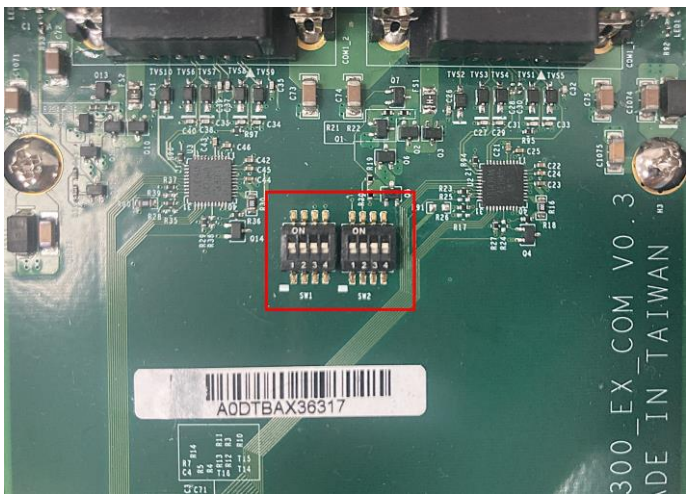
3.20. Adjusting COM Switches (SEM-COM101-R10/ SEM- ICOM101-R10)

Accessing the switches is identical for both modules. An SEM-COM101-R10 module is used as the example here.

Step 1. Remove the 4 screws indicated below to remove the top cover of the module.

Step 2. Hold the fins of the top cover and lift it from the module.

Step 3. Adjust COM switches as needed.



Step 4. Install the top cover and secure it with 4 screws as indicated below.

3.21. Installing 2.5” SATA Drive (SEM-SAT101-R10)

Step 1. Remove the 6 screws indicated below to remove the top cover.

Step 2. Hold the sides of the top cover and lift it from the module.

Step 3. Remove the 2.5” drive mount bracket from the module.

Step 4. With the bottom of the drive facing up, secure the bracket to the drive using 4 screws, as indicated below.

Step 5. Place the assembled drive and bracket into the 2.5” storage module and secure it with screws (indicated by the circles below). Ensure the SATA connector is aligned with the cutout in the back panel (indicated by the rectangle below).

Step 6. Align the interlocking segments of the top cover and rear panel (indicated with the rectangle below). Then, secure the top cover to the module with 6 screws (indicated with the circles below).

Chapter 4
BIOS Setup

4.1. BIOS Introduction

The BIOS (Basic Input/ Output System) is a program stored on the motherboard's flash memory. When the computer is powered on, the BIOS will activate. The BIOS first runs an auto-diagnostic test called POST (Power On Self-Test), which detects and configures all hardware.

BIOS Setup

Setup can be accessed by pressing <Del> immediately after powering on the computer while the startup message is shown on the screen. If the message disappears before you can enter your keyboard input, you can restart the system to try again by pressing <Ctrl> + <Alt> + <Del> simultaneously.

Control Keys	
<←> <→>	Move to select screen
<↑> <↓>	Move to select item
<Esc>	Quit the BIOS Setup
<Enter>	Select item
<Page Up/+>	Increases the numeric value or makes changes
<Page Down/->	Decreases the numeric value or makes changes
<Tab>	Select setup fields
<F1>	General help
<F2>	Previous value
<F3>	Load Optimized defaults
<F10>	Save configuration and Exit

Main Menu

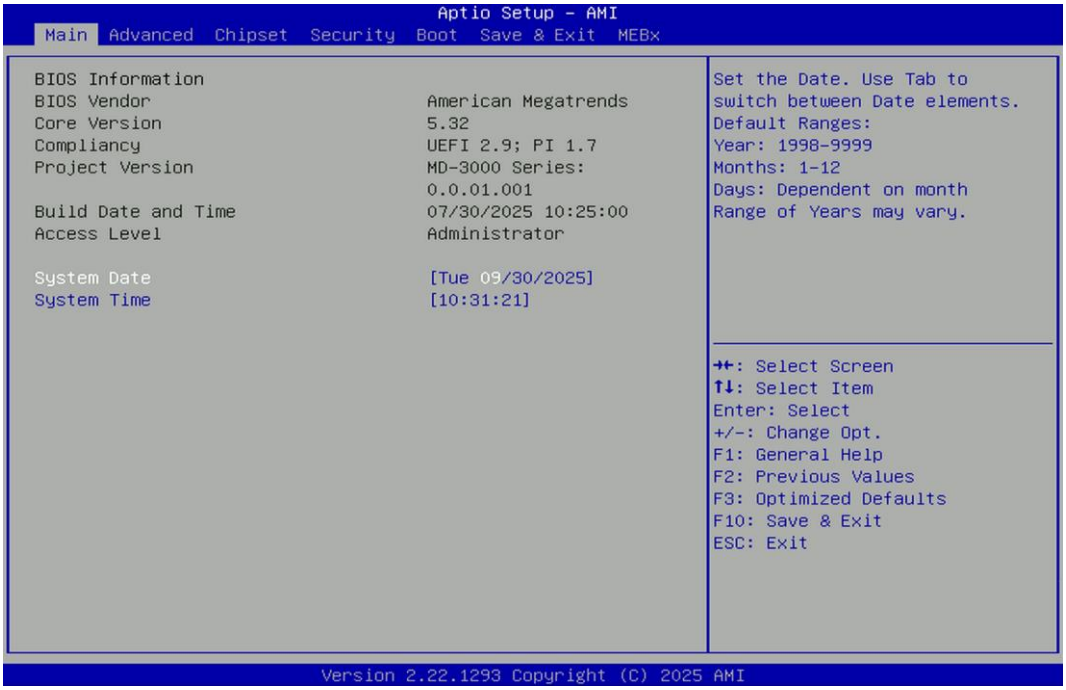
The main menu lists the setup functions you can change. You can use the arrow keys (↑↓) to select different items and fields. The description of the highlighted function is displayed at the bottom of the screen.

Sub-Menu

If a right pointer symbol is present to the left of a particular field, this field contains a sub-menu. A sub-menu contains additional options for a given field. You can use the arrow keys (↑↓) to highlight the field and press <Enter> to enter the sub-menu. Once inside, you can use the same keys to enter values and move from field to field. If you want to exit the sub-menu, press <Esc>.

4.2. Main Setup

After pressing <Del> to enter BIOS, the Main Menu will appear on the screen (see below). This manual is based on BIOS 0.0.01.001.



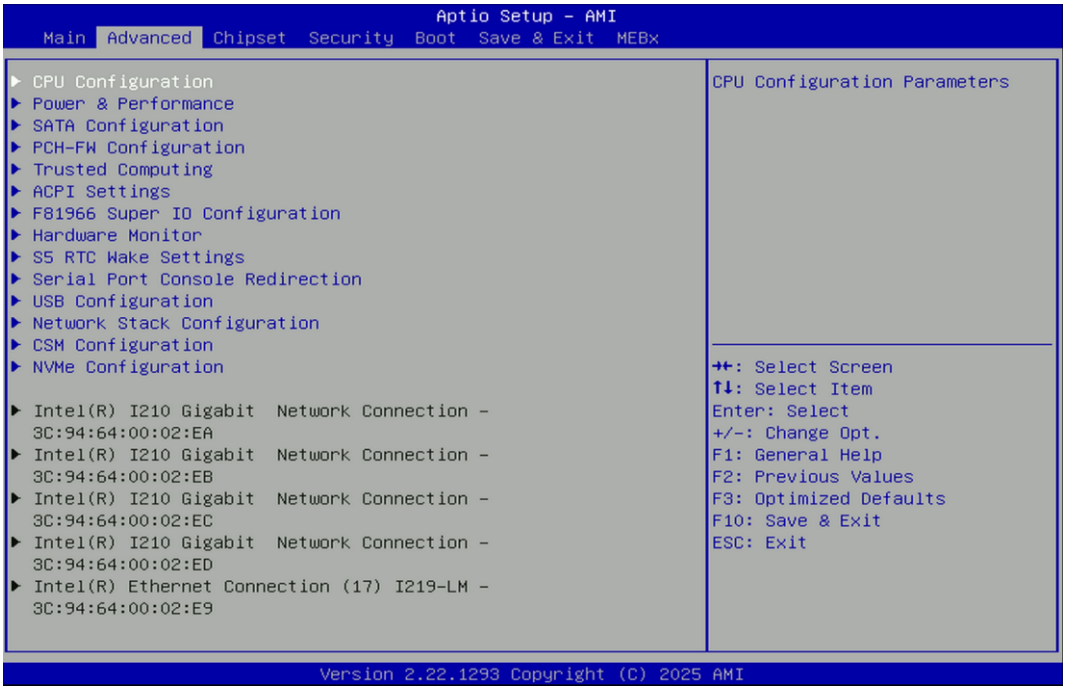
■ System Date

Set the date. Please use <Tab> to switch between date elements.

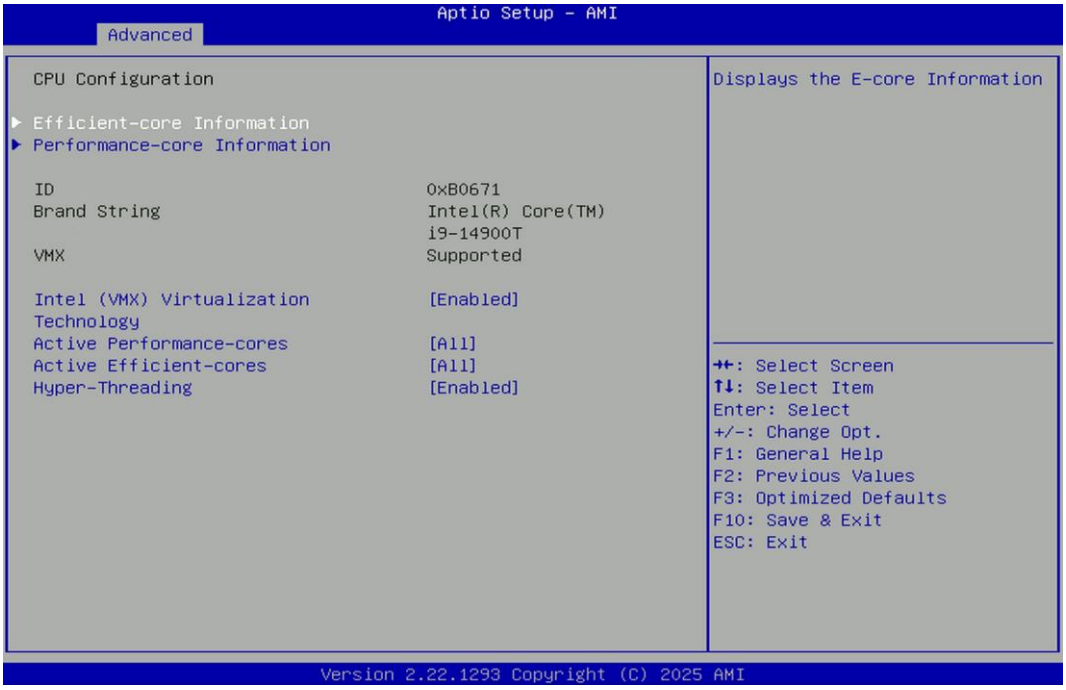
■ System Time

Set the time. Please use <Tab> to switch between time elements.

4.3. Advanced Setup

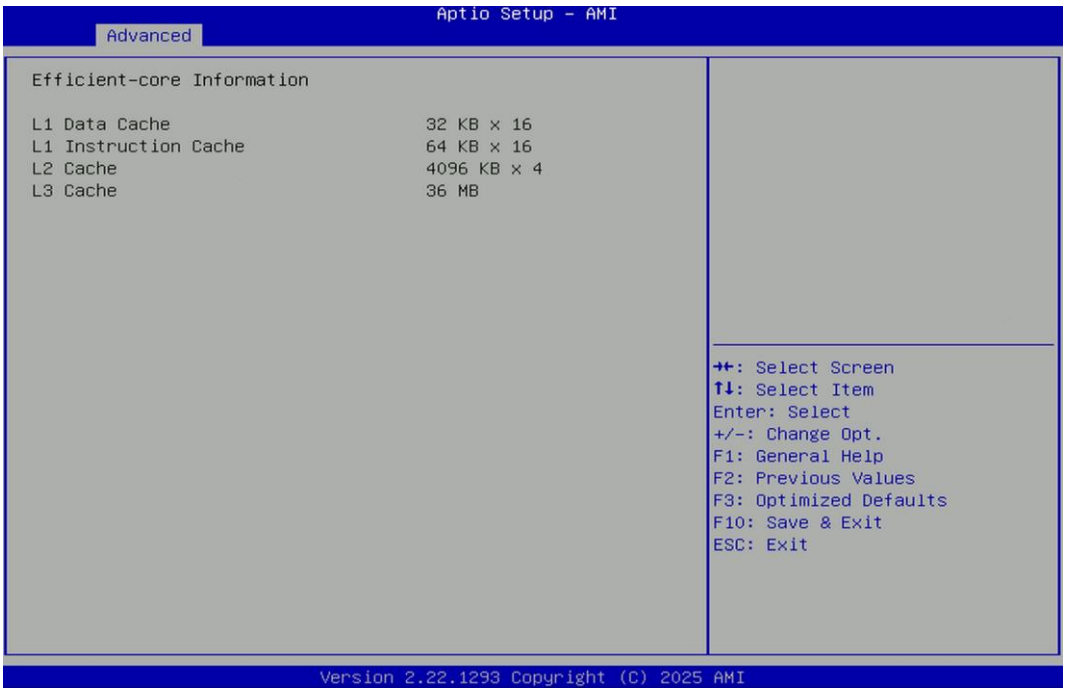


4.3.1. CPU Configuration



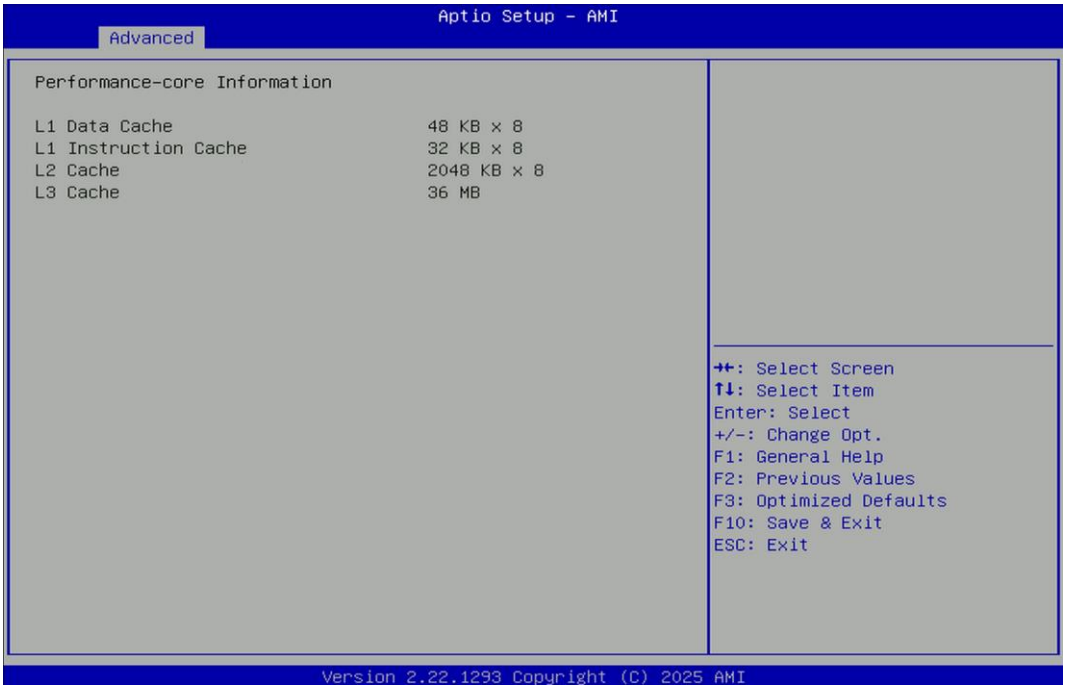
■ **Efficient-core Information**

This page displays the E-core Information.



- **Performance-core Information**

  This page displays the P-core Information.



- **Intel (VMX) Virtualization Technology [Enabled]**

  Enables or disables Intel Virtualization Technology. Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

- **Active Performance-cores**

  Allows you to choose the number of active performance cores. The options may change depending on the installed CPU.

  Configuration options: [All] [7] [6] [5] [4] [3] [2] [1].

- **Active Efficient-cores**

  Allows you to choose the number of active efficient cores. The options may change depending on the installed CPU.

  Configuration options: [All] [15] [14] [13] [12] [11] [10] [9] [8] [7] [6] [5] [4] [3] [2] [1] [0].

- **Hyper-threading**

  Enables or disables Hyper-Threading Technology.

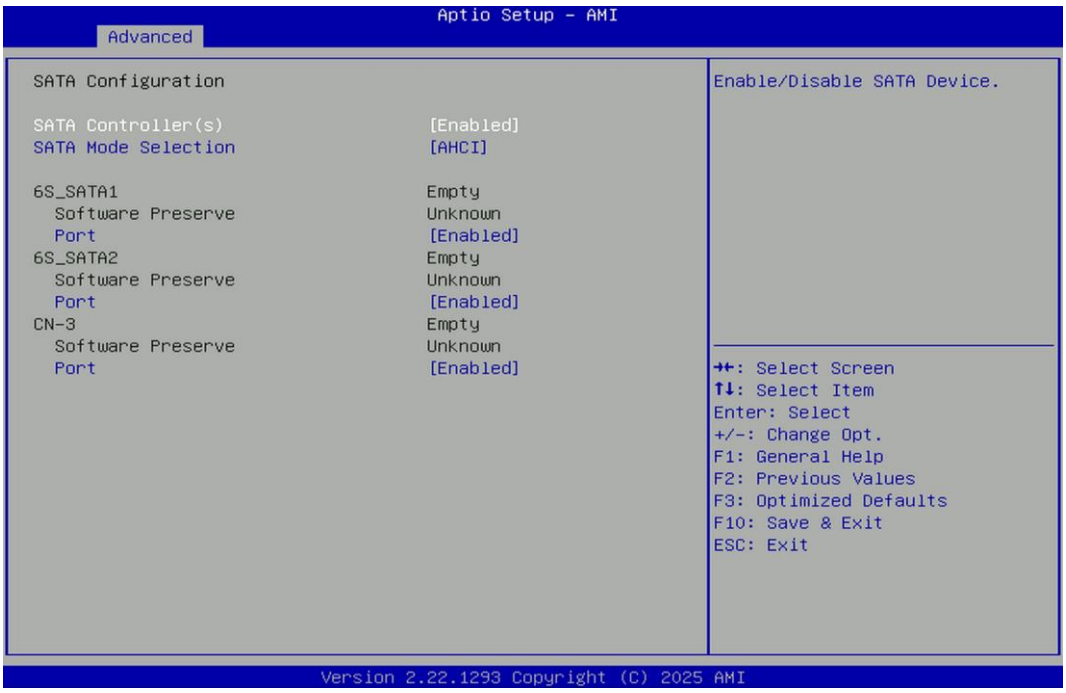
4.3.2. Power & Performance

- **SKU Power Config [Auto]**

  Allows users to choose the upper limit of CPU power.

  Configuration options: [Auto] [35W]

4.3.3. SATA Configuration



- **SATA Controller(s) [Enabled]**

  Enables or disables the Serial ATA controller.

- **SATA Mode Selection [AHCI]**

  This item only allows users to choose [AHCI] mode.

  - **6S_SATA1 [Enabled]**

    Enables or disables the 6S_SATA1 Port.

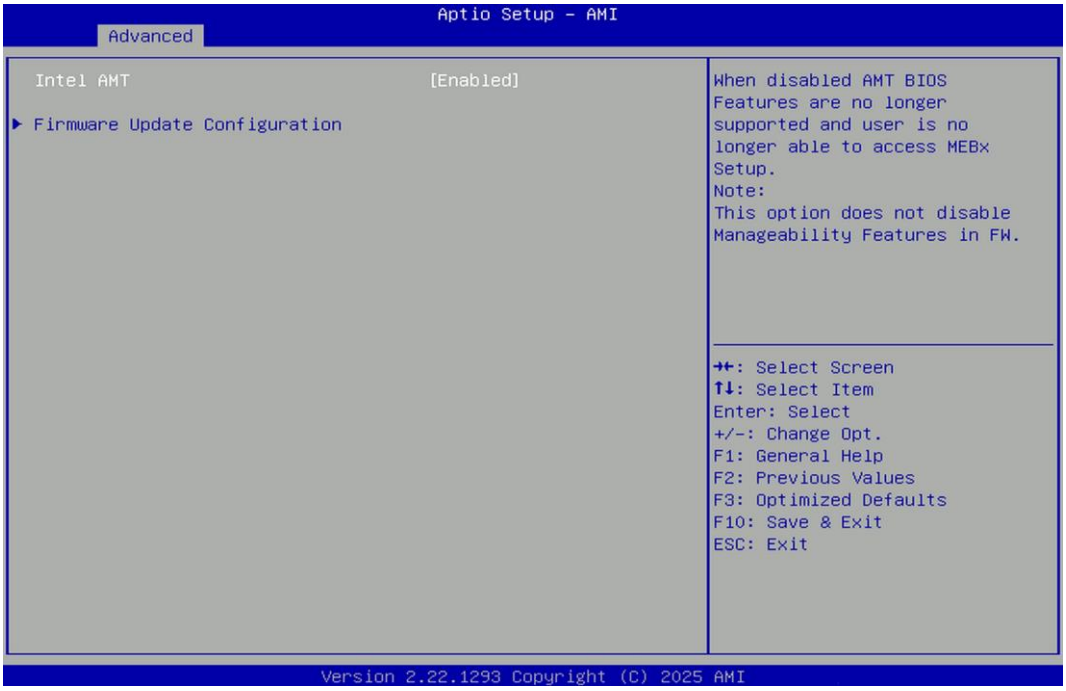
  - **6S_SATA2 [Enabled]**

    Enables or disables the 6S_SATA2 Port.

  - **CN-3 [Enabled]**

    Enables or disables the CN-3 Port.

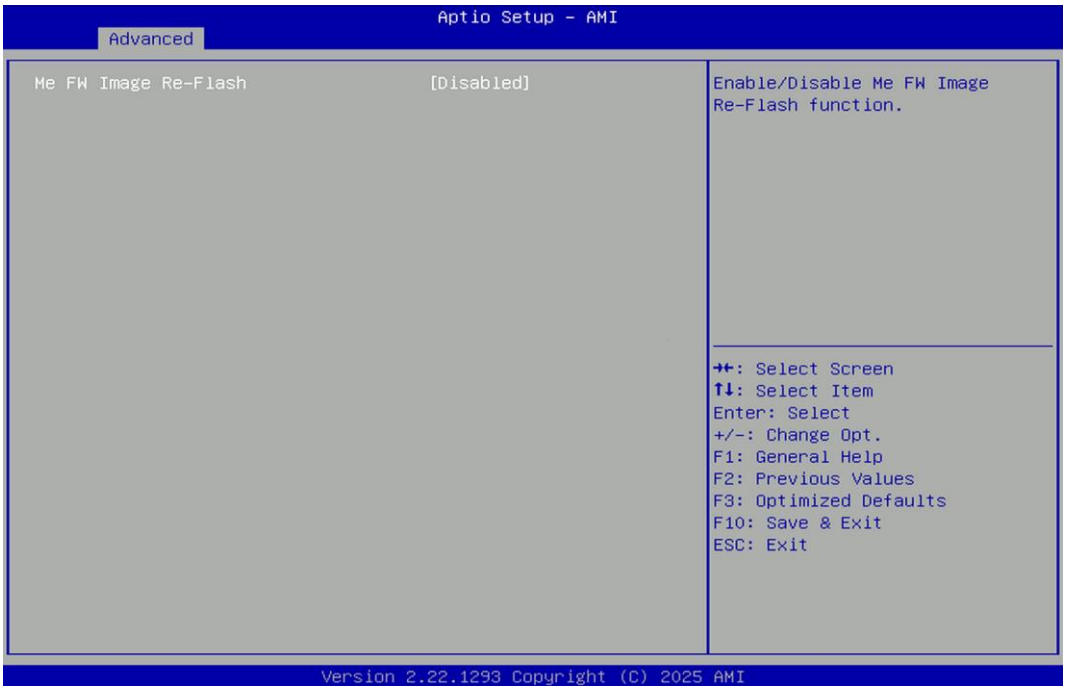
4.3.4. PCH-FW Configuration



- **Intel AMT [Enabled]**

  Allows users to enable or disable Intel® Active Management Technology BIOS execution.

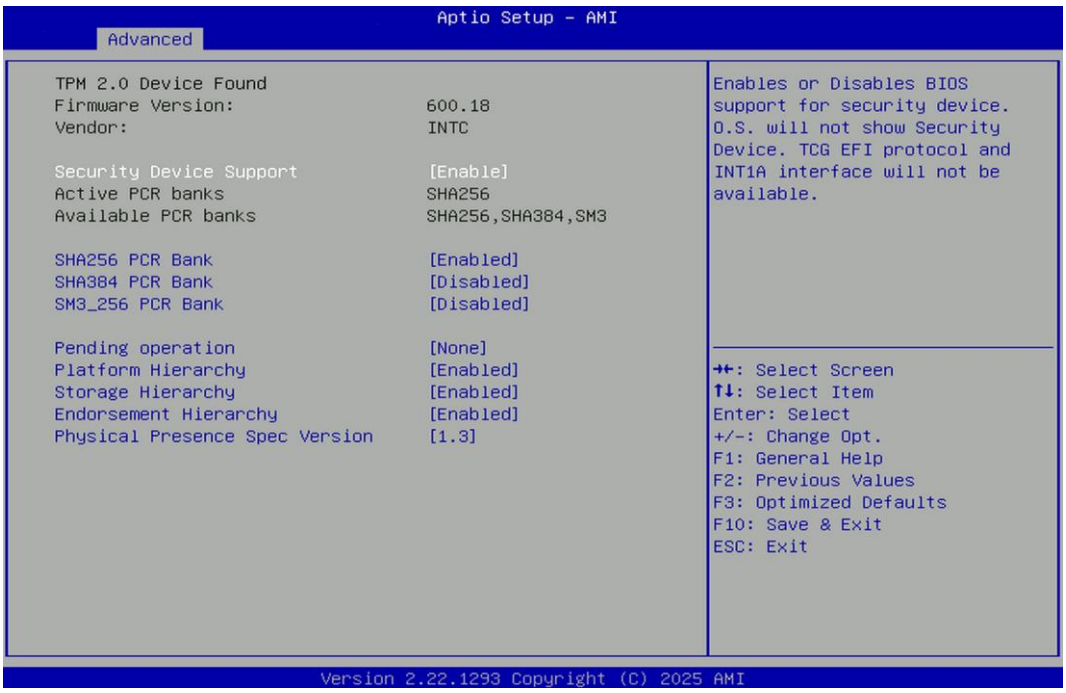
- **Firmware Update Configuration**



  - **ME FW Image Re-Flash [Disabled]**

    Allows users to enable or disable ME firmware image re-flash function.

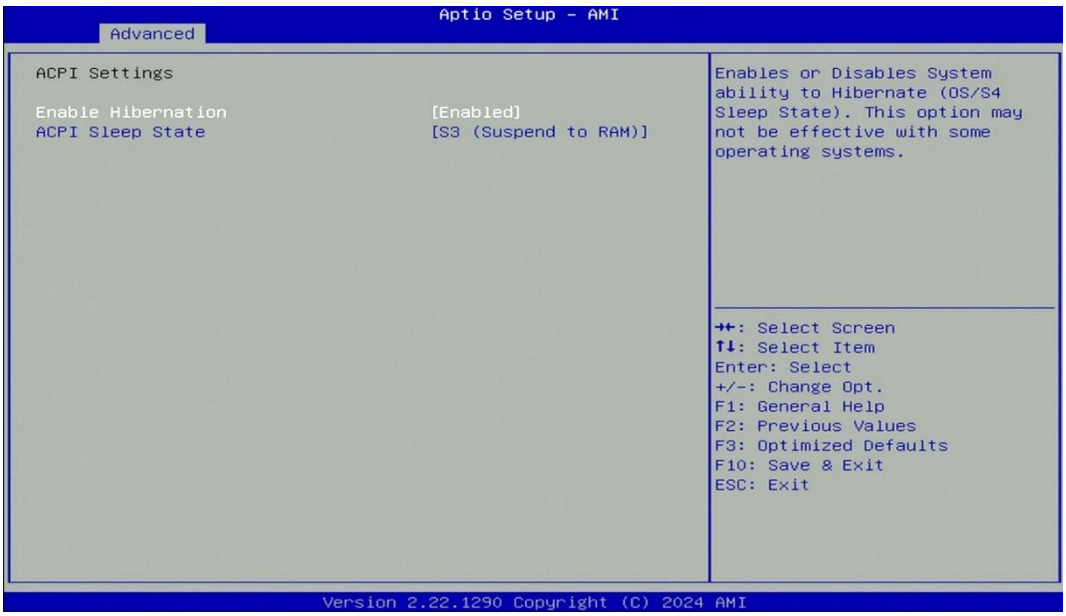
4.3.5. Trusted Computing



- **Security Device Support [Enabled]**
  Enables or disables Security Device Support function.
- **SHA256 PCR Bank [Enabled]**
  Enables or disables SHA256 PCR Bank function.
- **SHA384 PCR Bank [Disabled]**
  Enables or disables SHA384 PCR Bank function.
- **SM3_256 PCR Bank [Disabled]**
  Enables or disables SM3_256 PCR Bank function.
- **Pending Operation [None]**
  Allows you to select which mode of Pending Operation will operate.
  Configuration options: [None], [TPM Clear]
- **Platform Hierarchy [Enabled]**
  Enables or disables Platform Hierarchy function.
- **Storage Hierarchy [Enabled]**
  Enables or disables Storage Hierarchy function.
- **Endorsement Hierarchy [Enabled]**
  Enables or disables Endorsement Hierarchy function.
- **Physical Presence Spec Version [1.3]**
  Allows you to select which mode Physical Presence Spec Version will operate.
  Configuration options: [1.2], [1.3]

4.3.6. ACPI Settings

This item allows users to configure ACPI settings.



- **Enable Hibernation [Enabled]**

  Enables or disables system hibernation (OS/S4 state).

- **ACPI Sleep State [S3 (Suspend to RAM)]**

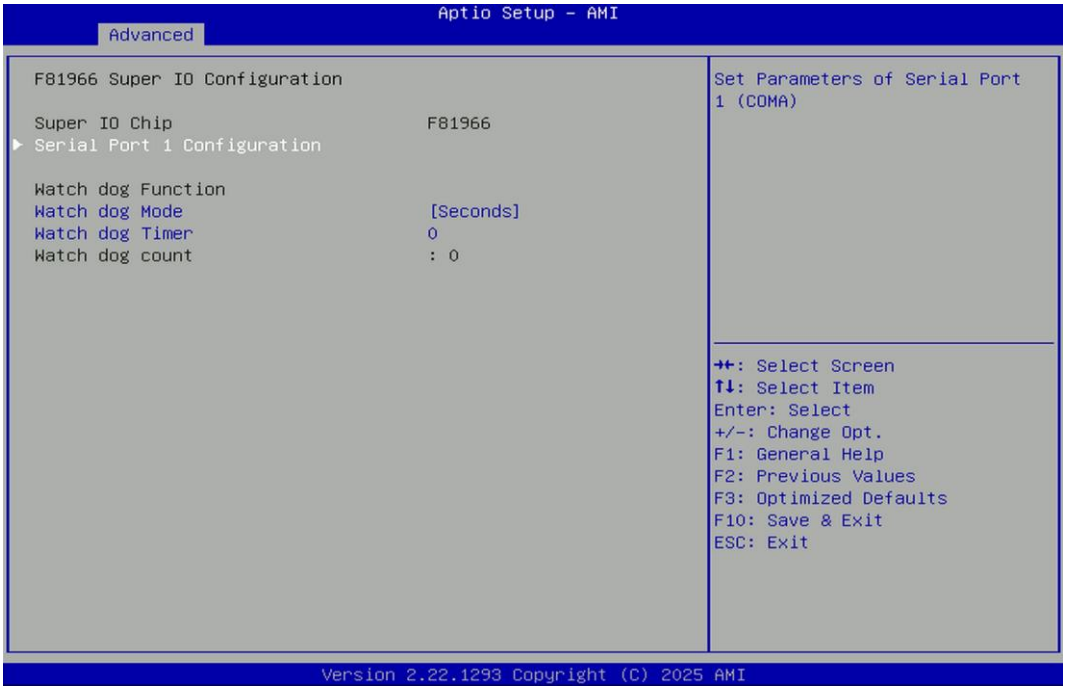
  Allows users to select the highest Advanced Configuration Power Interface® (ACPI) sleep state that the system will enter when the suspend button is pressed.

  [Suspend Disabled]: Disables entering suspend state.

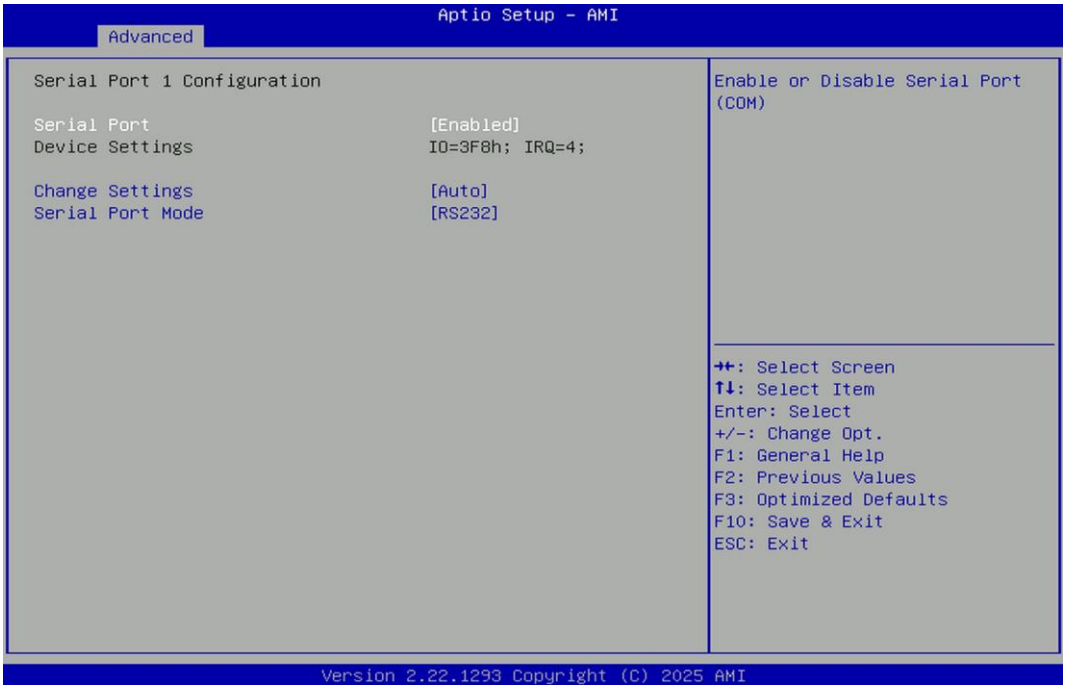
  [S3 (suspend to RAM)]: Enables suspend to RAM state.

4.3.7. F81966 Super IO Configuration

The screen allows users to select options for Super IO configuration and change selected values.



■ **Serial Port 1 Configuration**



❑ **Serial Port [Enabled]**

This item allows users to enable or disable the serial port.

❑ **Change Settings [Auto]**

This item allows users to change the address & IRQ settings of the specified serial port.

- ❑ **Serial Port 1 Mode [RS232]**

  This item allows users to select Serial Port Mode.

  Configuration options: [RS232] [RS422/RS485 Full Duplex] [RS485 Half Duplex]

- ■ **Watch Dog Mode [Seconds]**

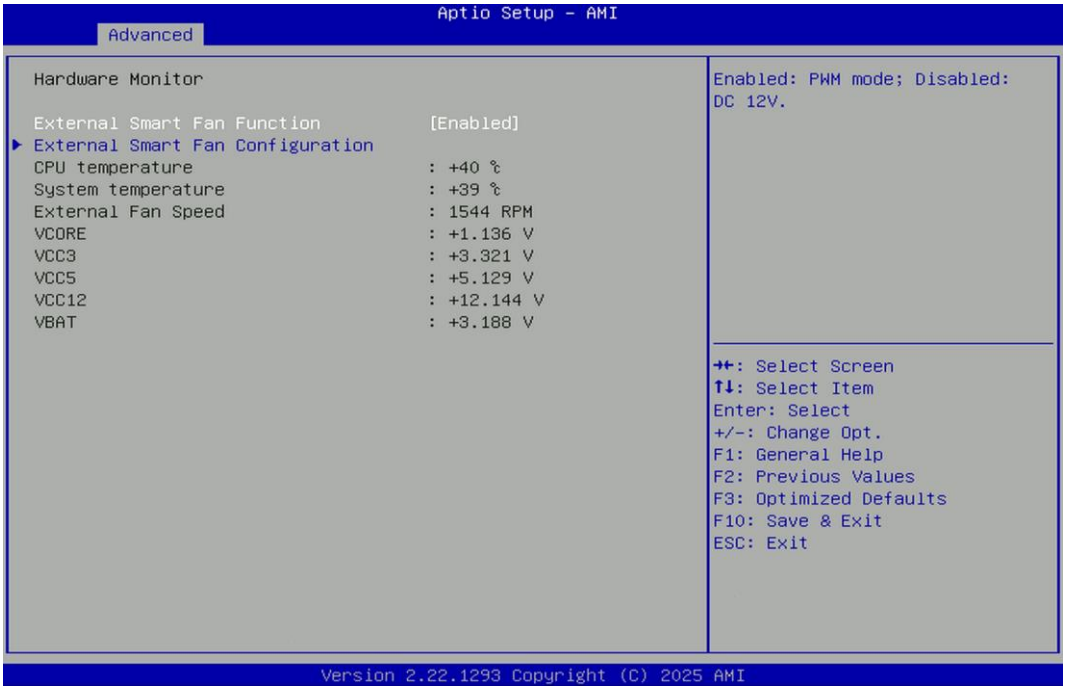
  Changes the Watch Dog mode. Select [Seconds] or [Minutes].

- ■ **Watch Dog Timer [0]**

  The user can set a value in the range of 0 to 255. Setting this value to 0 disables the Watch Dog Timer.

4.3.8. Hardware Monitor

These items display the current status of all monitored hardware devices/ components, such as voltages and temperatures.



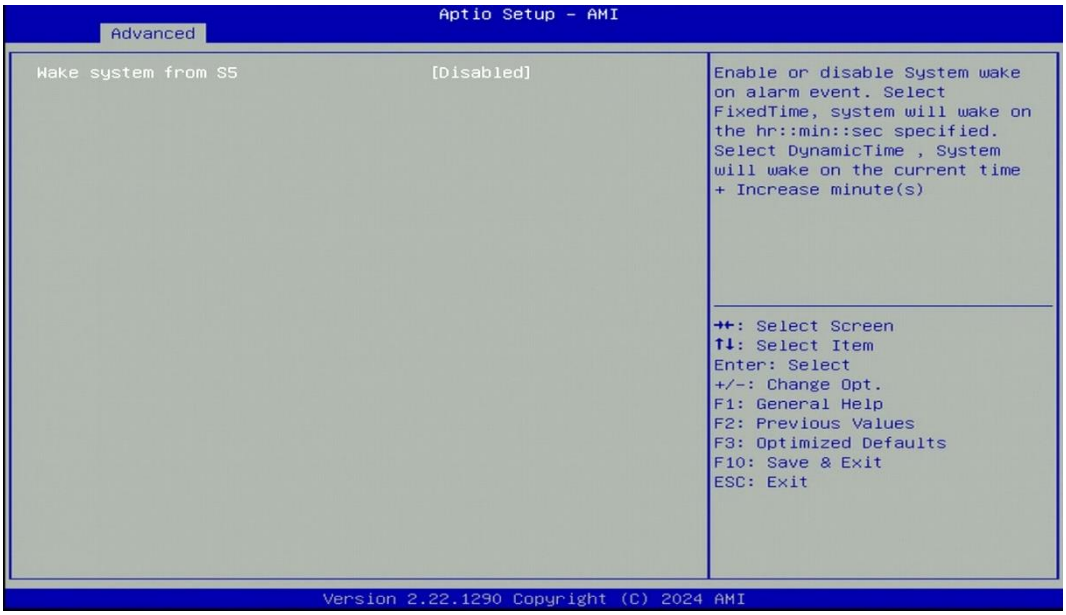
- ■ **External Smart Fan Function [Enabled]**

  Enables or disables smart fan function.

- ■ **External Smart Fan Configuration**

  Allows users to set smart fan parameters.

4.3.9. S5 RTC Wake Settings



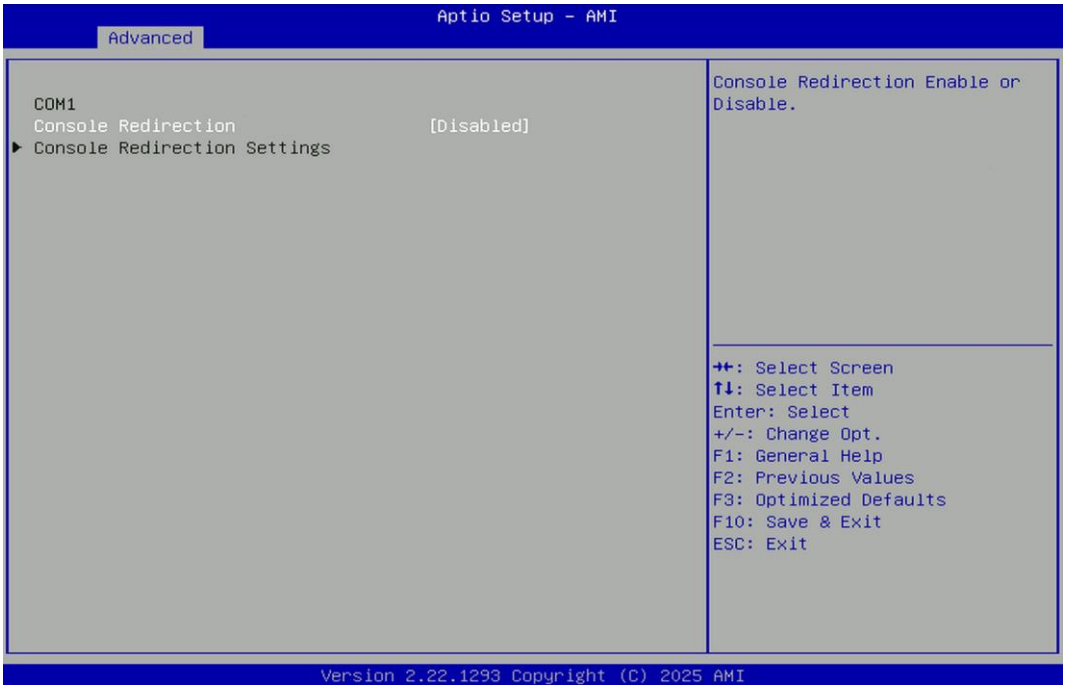
■ **Wake System from S5 [Disabled]**

This item allows users to automatically wake the system from S5 state.

[Fixed Time]: Set a specified time (HH:MM:SS) to wake the system.

[Dynamic Time]: Set a countdown time to wake the system.

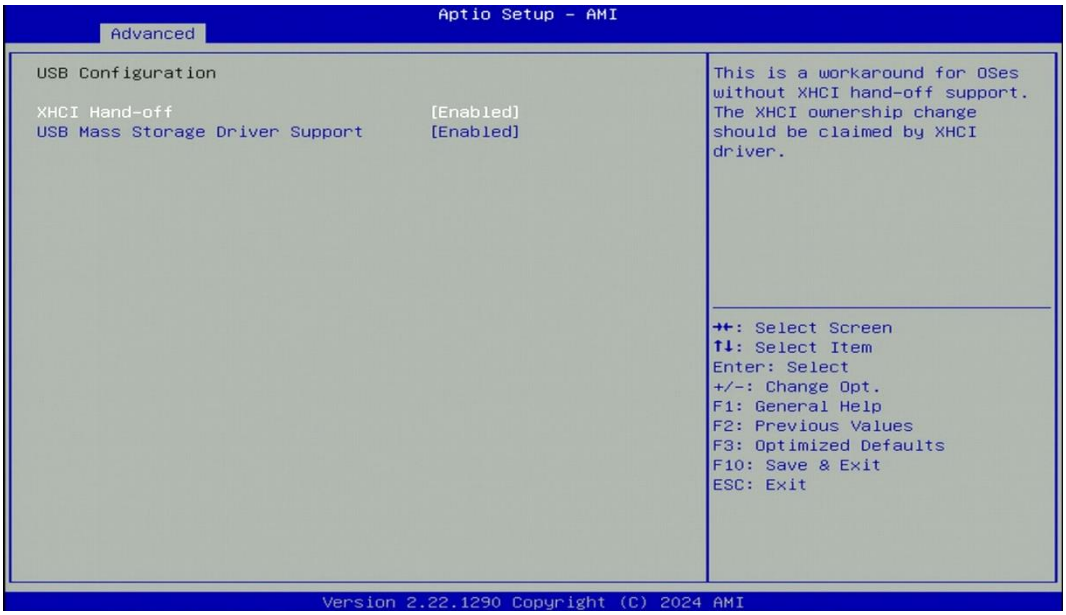
4.3.10. Serial Port Console Redirection



■ **Console Redirection [Disabled]**

These items allow users to enable or disable COM1 console redirection.

4.3.11. USB Configuration



- **XHCI Hand-off [Enabled]**

  This item allows users to enable or disable XHCI hand-off function.

- **USB Mass Storage Driver Support [Enabled]**

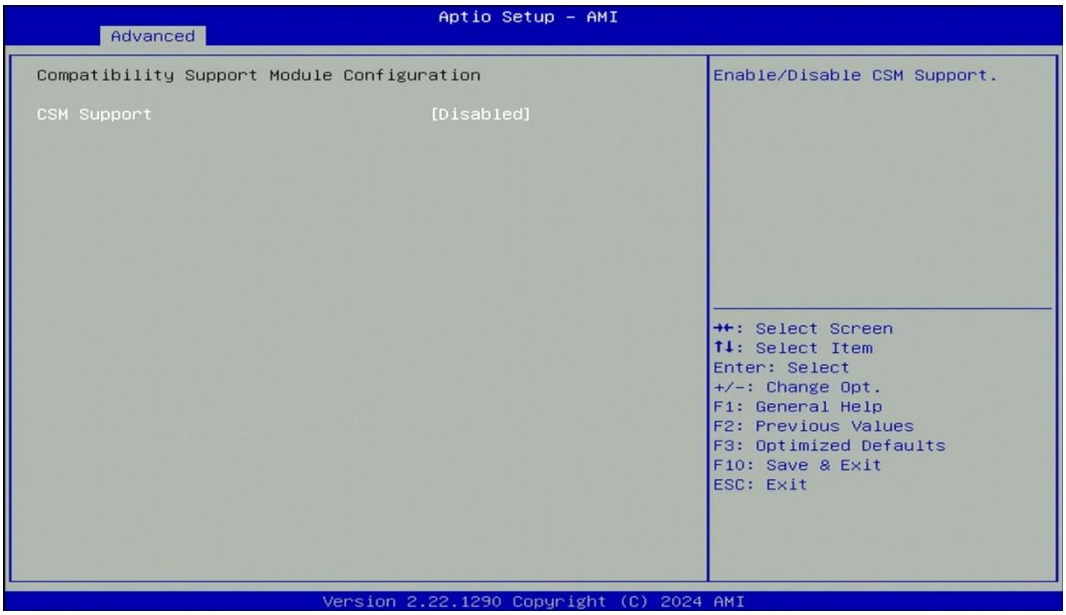
  Enables or disables support for USB mass storage devices.

4.3.12. Network Stack Configuration

- **Network Stack [Disabled]**

  Enables or disables UEFI Network Stack.

4.3.13. CSM Configuration

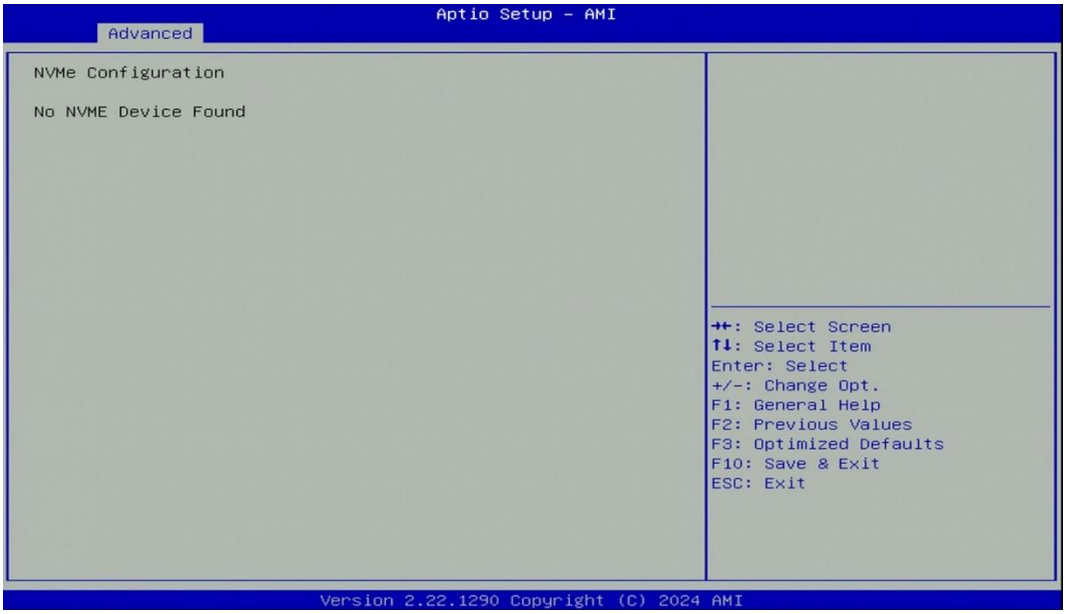


- **CSM Support [Disabled]**

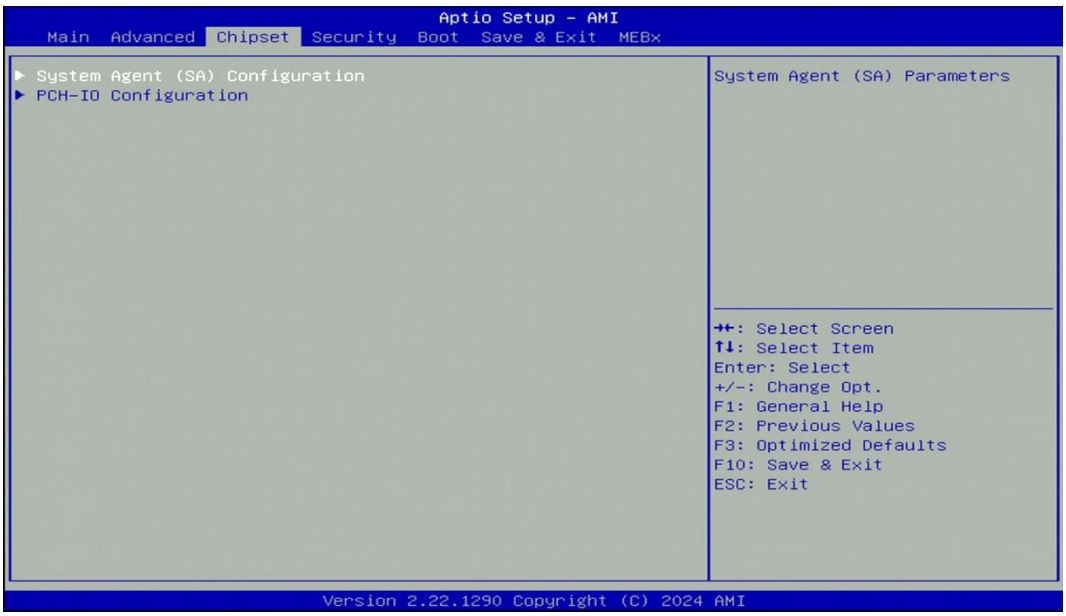
  Enables or disables Compatibility Support Module.

4.3.14. NVMe Configuration

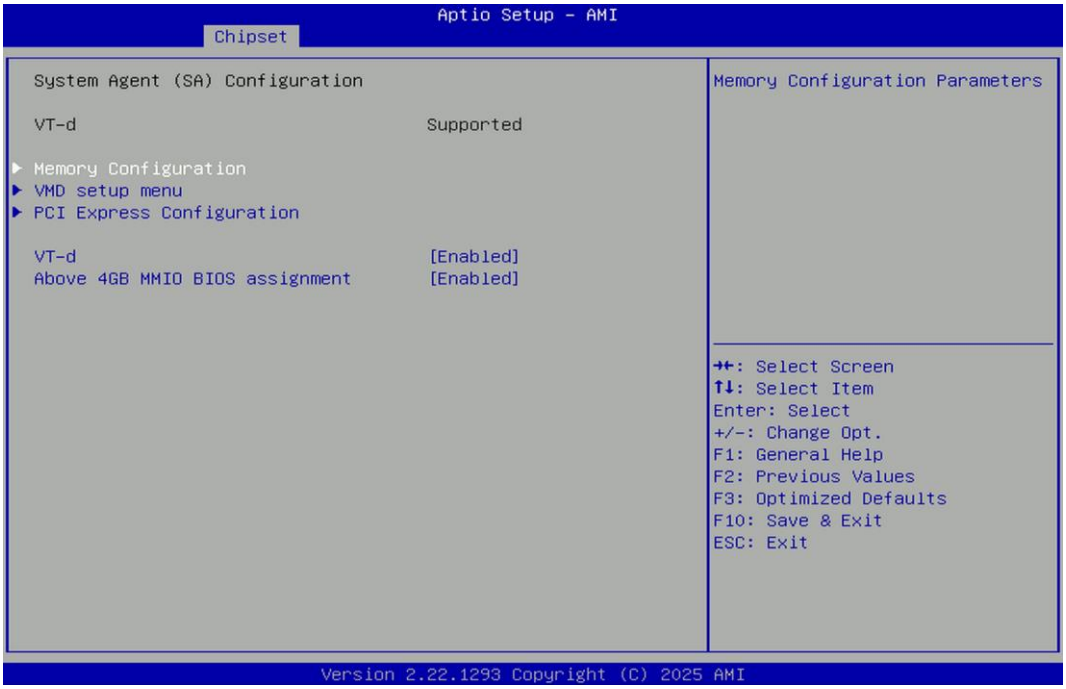
The screen allows users to select options for the NVMe configuration and change the value of the selected option. These settings appear only if an NVMe Device is detected.



4.4. Chipset Setup

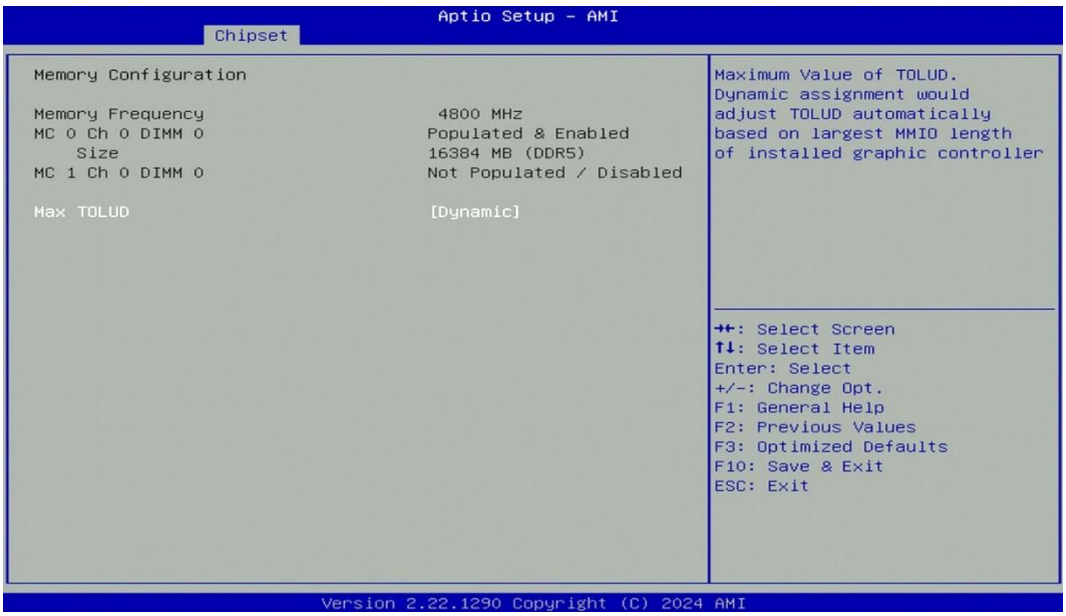


4.4.1. System Agent (SA) Configuration



■ Memory Configuration

This item displays details of the memory installed in the system.



■ VMD Configuration

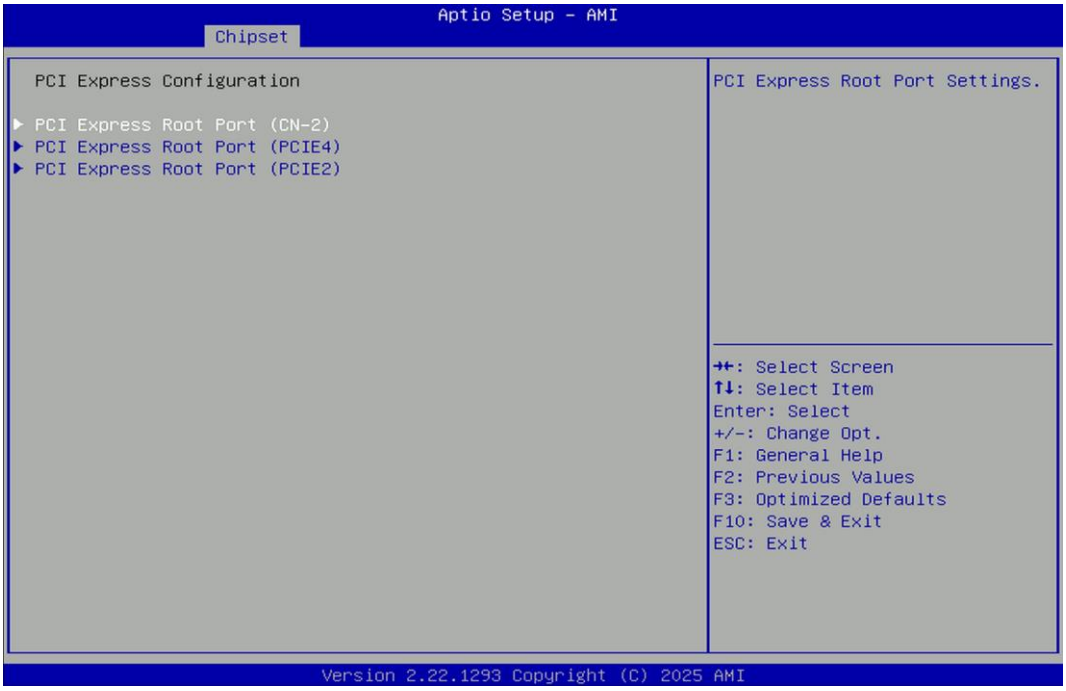
❑ Enable VMD controller [Disabled]

Allows users to enable or disable the VMD Controller.

Configuration options: [Disabled] [Enabled]

Enabling this function allows the system to support RAID and enables the Intel® Rapid Storage Technology (RST) sub-menu.

■ PCI Express Configuration



❑ PCI Express Root Port (CN-2)

■ PCI Express Root Port [Enabled]

Enables or disables PCI Express Root Port.

■ PCIe Speed [Auto]

Allows you to select PCI Express interface speed.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3] [Gen 4].

❑ PCI Express Root Port (PCIE4)

■ PCI Express Root Port [Enabled]

Enables or disables PCI Express Root Port.

■ PCIe Speed [Auto]

Allows you to select PCI Express interface speed.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3].

❑ PCI Express Root Port (PCIE2)

■ PCI Express Root Port [Enabled]

Enables or disables PCI Express Root Port.

■ PCIe Speed [Auto]

Allows you to select PCI Express interface speed.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3].

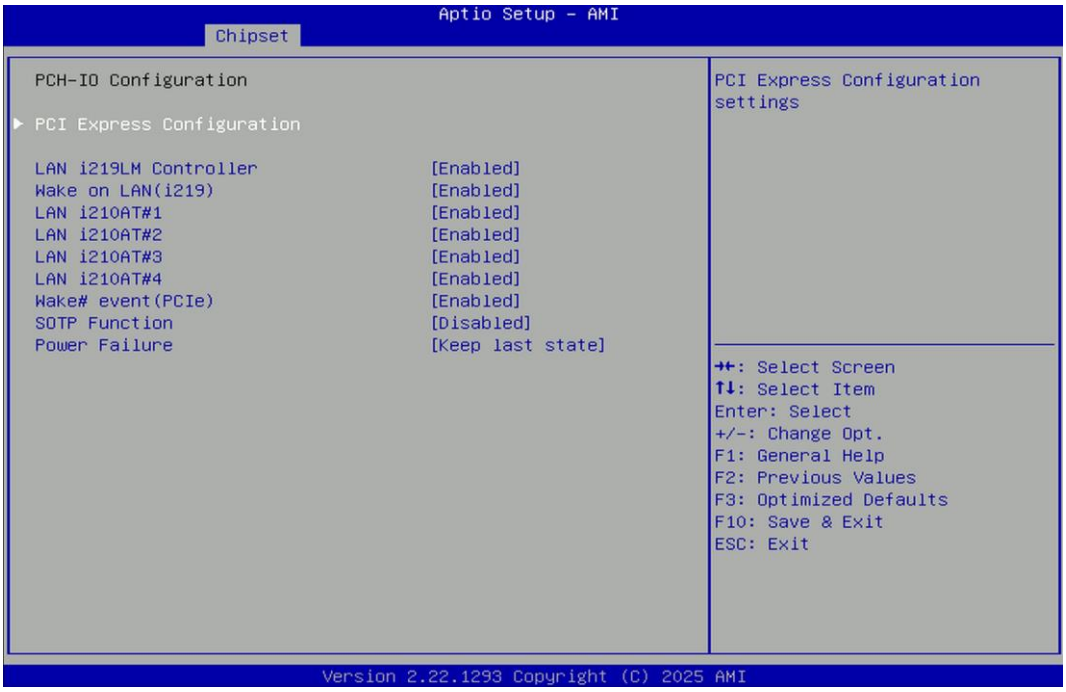
■ VT-d [Enabled]

This item allows users to enable or disable Intel® Virtualization Technology for Directed I/O (VT-d) function.

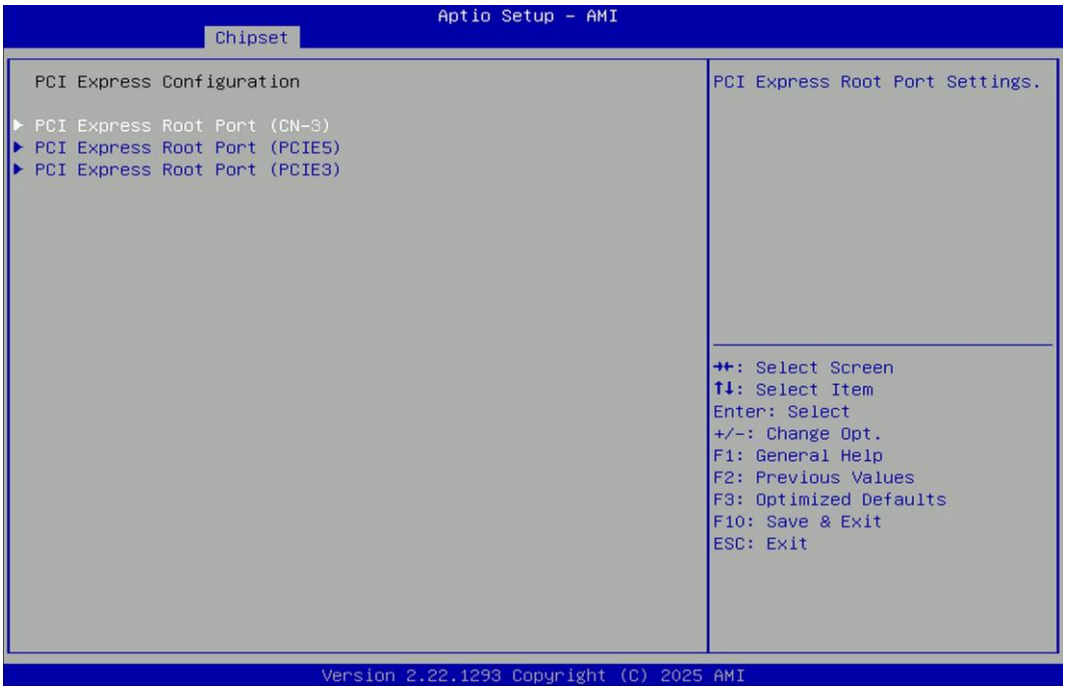
■ **Above 4GB MMIO BIOS assignment [Enabled]**

This item allows users to enable or disable the Above 4GB Memory Mapped IO BIOS assignment function.

4.4.2. PCH-IO Configuration



■ **PCI Express Configuration**



- **PCI Express Root Port (CN-3)**
  - **PCIe Speed [Auto]**

    Allows you to select PCI Express interface speed.

    Configuration options: [Auto] [Gen1] [Gen2] [Gen3].
- **PCI Express Root Port (PCIE5)**
  - **PCI Express Root Port [Enabled]**

    Enables or disables PCI Express Root Port.
  - **PCIe Speed [Auto]**

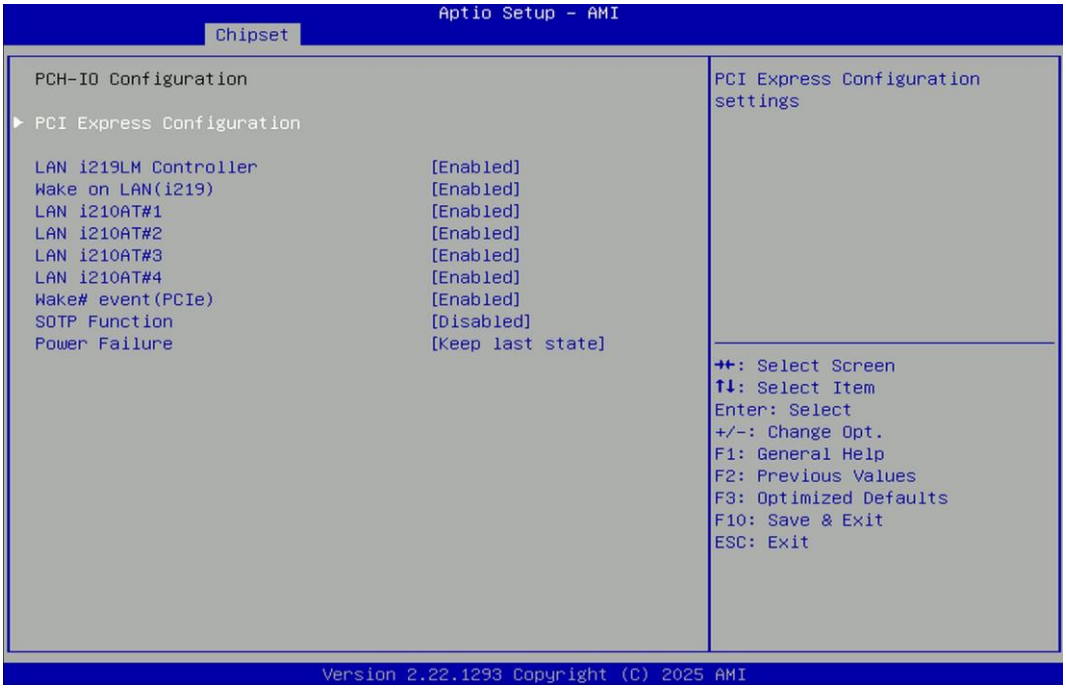
    Allows you to select PCI Express interface speed.

    Configuration options: [Auto] [Gen1] [Gen2] [Gen3].
- **PCI Express Root Port (PCIE3)**
  - **PCI Express Root Port [Enabled]**

    Enables or disables PCI Express Root Port.
  - **PCIe Speed [Auto]**

    Allows you to select PCI Express interface speed.

    Configuration options: [Auto] [Gen1] [Gen2] [Gen3].



- **LAN i219LM Controller [Enabled]**

  Enables or disables LAN i219LM Controller.
- **Wake On LAN (i219) [Enabled]**

  Enables or disables LAN i219LM Wake on LAN function.

- **LAN i210AT#1 Controller [Enabled]**

  Enables or disables LAN i210AT#1 Controller.

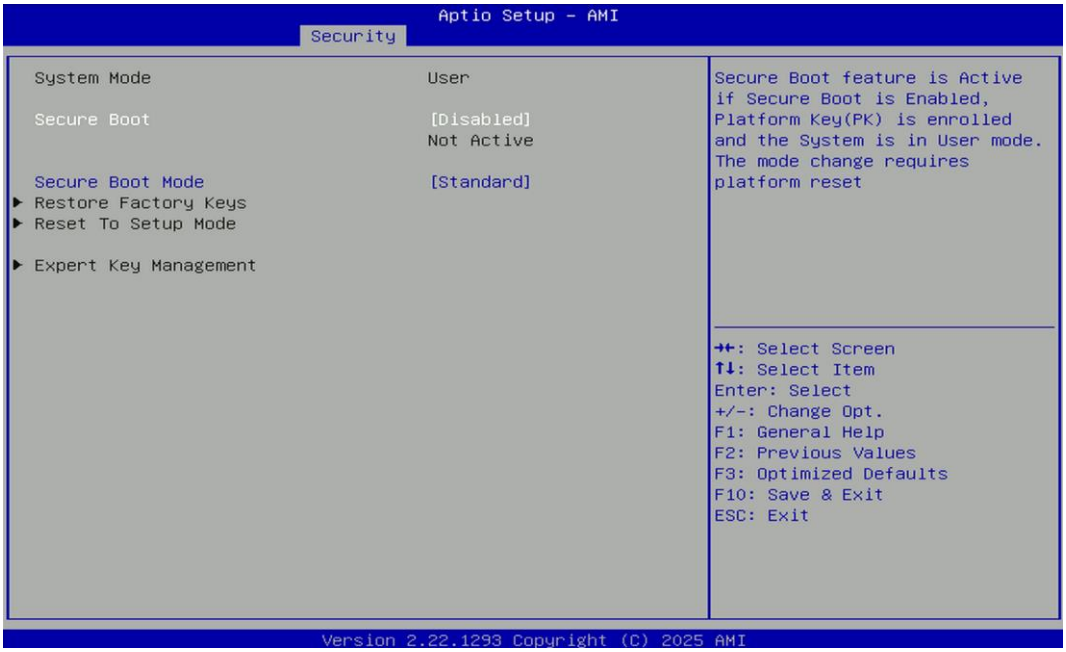
- **LAN i210AT#2 Controller [Enabled]**
  Enables or disables LAN i210AT#2 Controller.
- **LAN i210AT#3 Controller [Enabled]**
  Enables or disables LAN i210AT#3 Controller.
- **LAN i210AT#4 Controller [Enabled]**
  Enables or disables LAN i210AT#4 Controller.
- **Wake# event (PCIe) [Enabled]**
  Enables or disables LAN i210AT Wake on LAN function.
- **SOTP Function [Disabled]**
  Enables or disables Smart Over Temperature Protection function.
- **Power Failure [Keep last state]**
  Allows you to specify which power state the system will enter when power is resumed after a power failure (G3 state).
  [Always on]: Enters power on state.
  [Always off]: Enters power off state.
  [Keep last state]: Enters the last power state before a power failure.

4.5. Security Setup

This section allows users to configure BIOS security settings. To remove a password, select the password, then leave the field blank and press <Enter>.

- **Administrator Password**
  Administrator Password controls access to the BIOS Setup utility.
- **User Password**
  User Password controls access to the system at boot and to the BIOS Setup utility.

■ Security Boot



❑ **Secure Boot [Disabled]**

Enable or disable Secure Boot function.

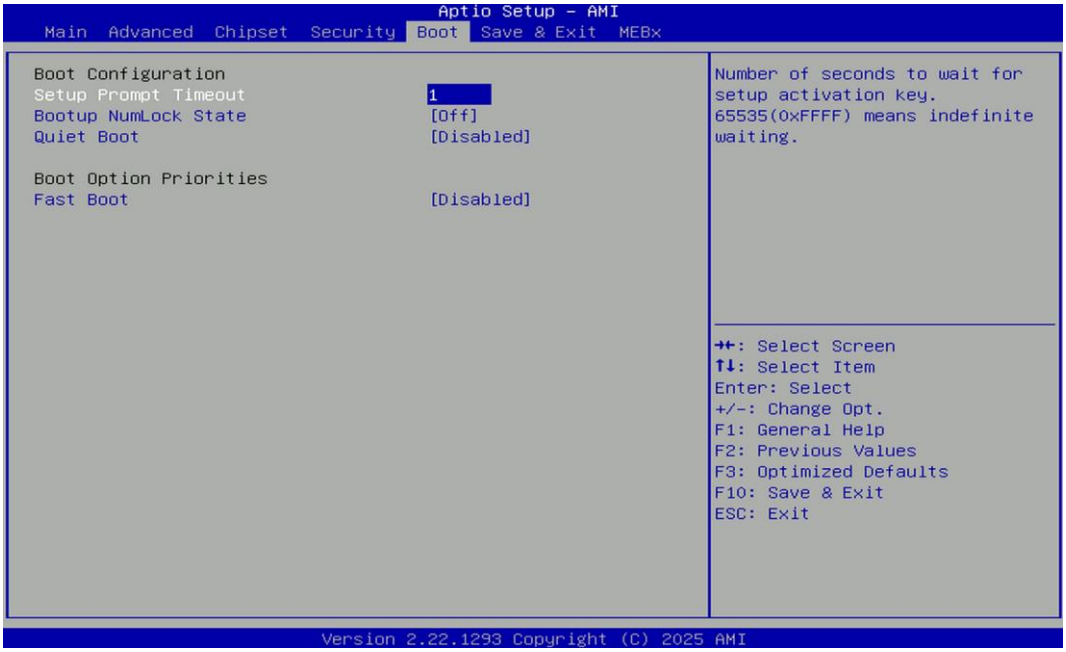
❑ **Secure Boot Mode [Standard]**

Allows you to select Secure Boot Mode.

Configuration options: [Standard] [Custom].

4.6. Boot Setup

This section allows you to configure Boot settings.



- **Setup Prompt Timeout [1]**

  Use this item to set the number of seconds (1 to 65535) to wait for setup activation key.

- **Bootup NumLock State [Off]**

  Allows users to select the power-on state for keyboard NumLock.

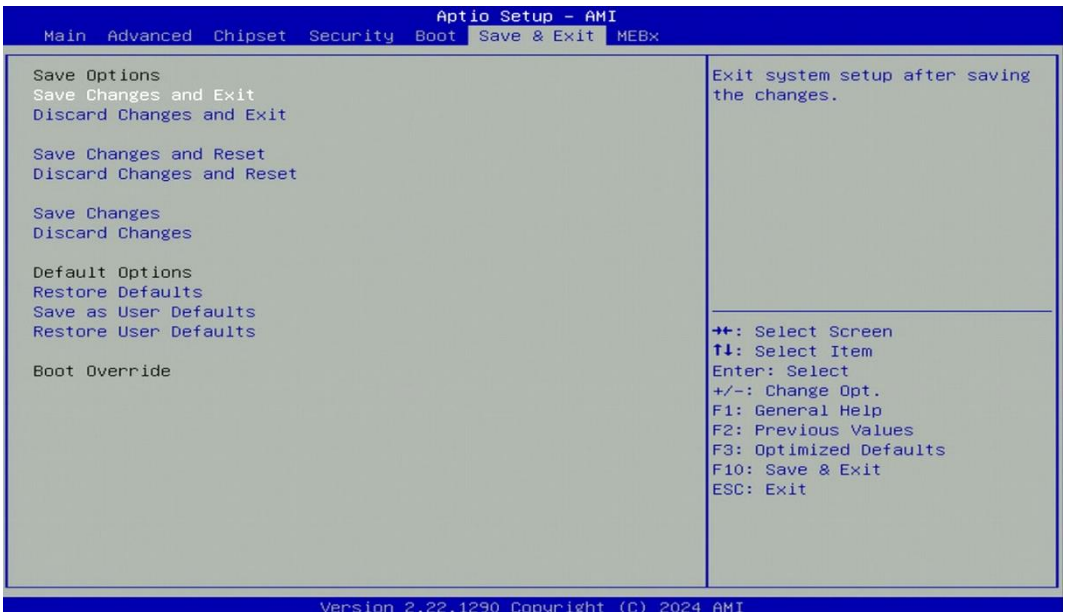
- **Quiet Boot [Disabled]**

  Allows users to enable or disable Quiet Boot function.

- **Fast Boot [Disabled]**

  Allows users to enable or disable Fast Boot function.

4.7. Save & Exit



- **Save Changes and Exit**

This item allows users to exit system setup after saving changes.

- **Discard Changes and Exit**

This item allows users to exit system setup without saving changes.

- **Save Changes and Reset**

This item allows users to reset the system after saving changes.

- **Discard Changes and Reset**

This item allows users to reset system setup without saving any changes.

- **Save Changes**

This item allows users to save changes made so far to any of the setup options.

- **Discard Changes**

This item allows users to discard changes made so far to any of the setup options.

- **Restore Defaults**

This item allows users to restore/ load default values for all the options.

- **Save as User Defaults**

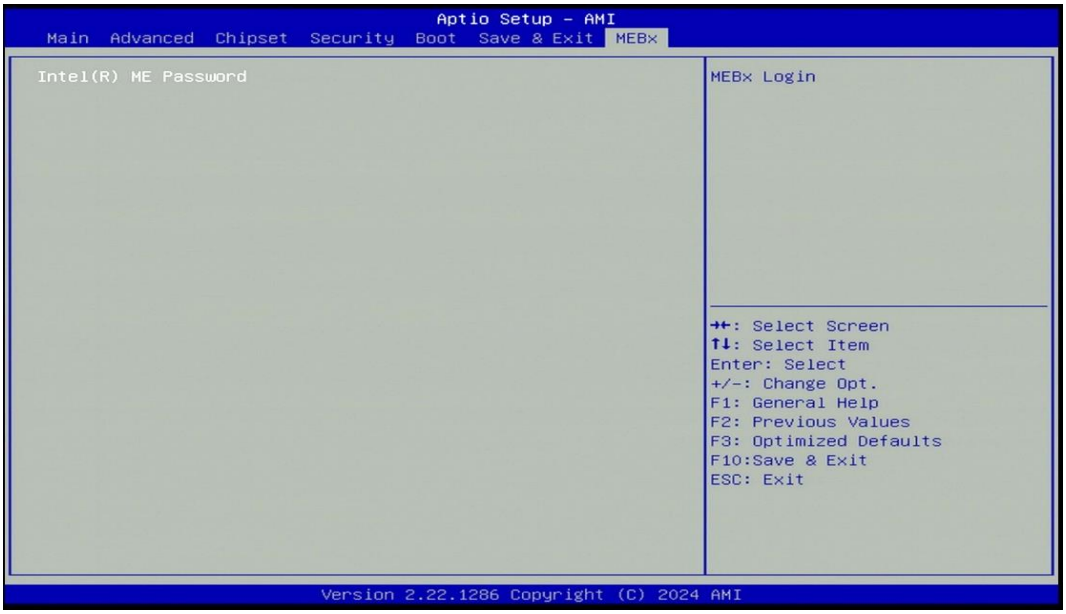
This item allows users to save the changes made so far as user defaults.

- **Restore User Defaults**

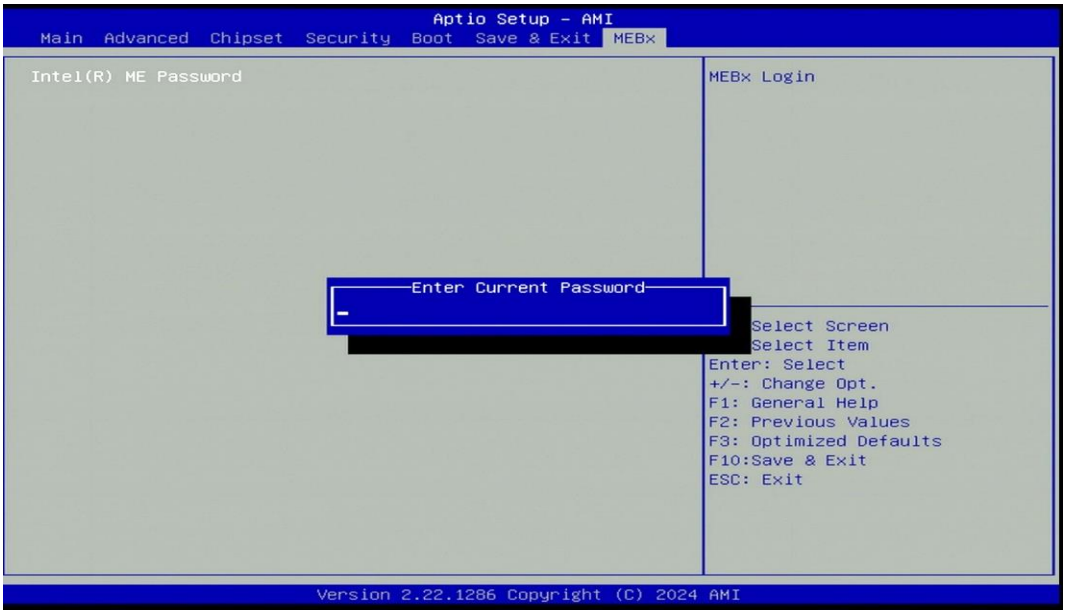
This item allows users to restore the user defaults to all the options.

4.8. MEBx

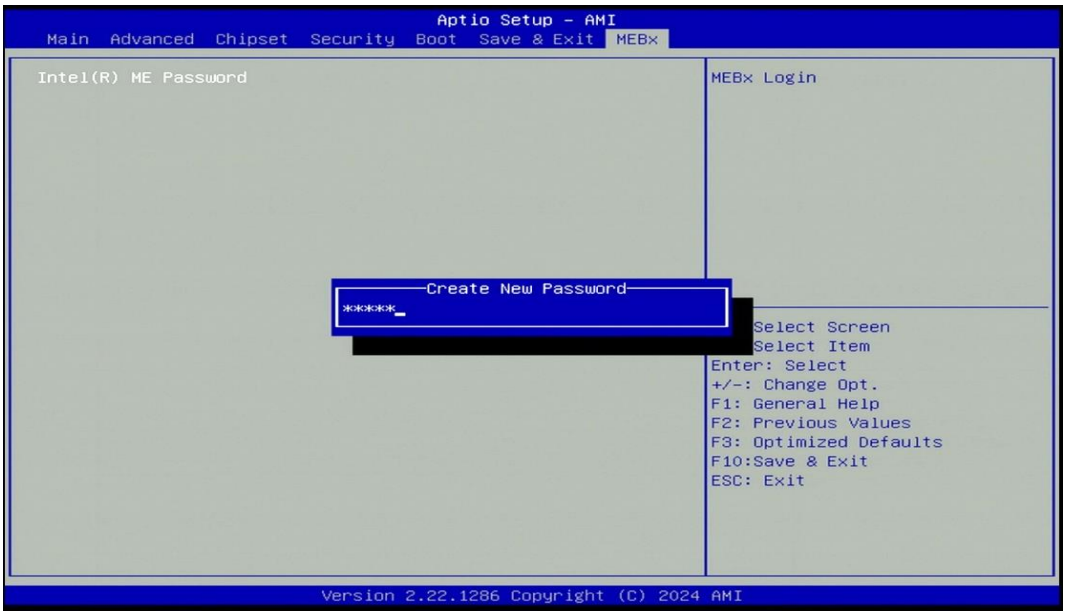
This page is for the ME function setting. Press the <Del> key to enter the BIOS menu, then use the arrow keys to navigate to the MEBx page.



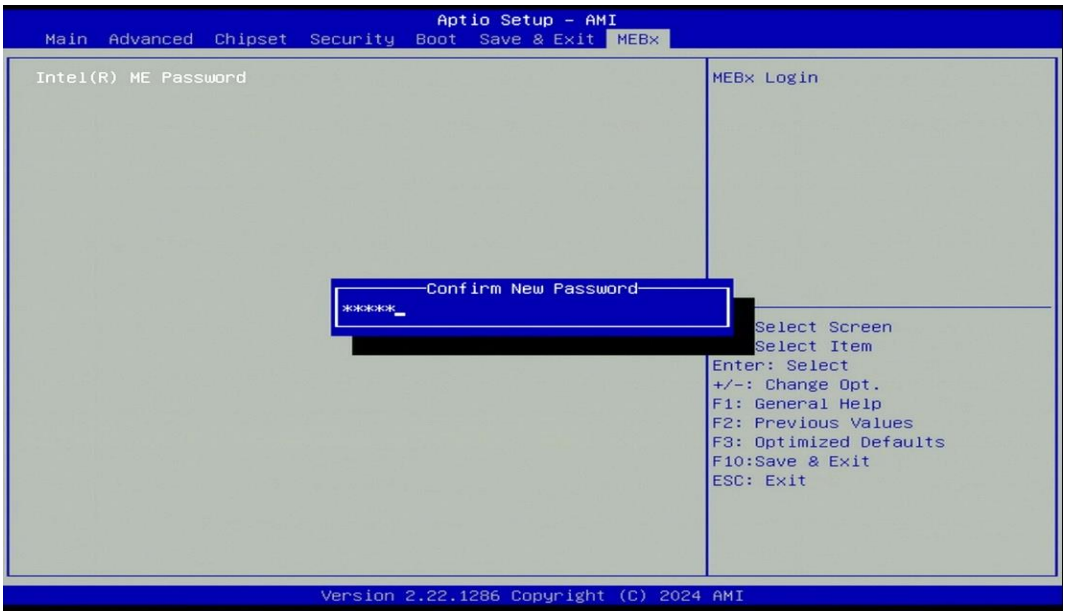
Press <Enter> and enter the default password "admin" to enter the next step for password creation.



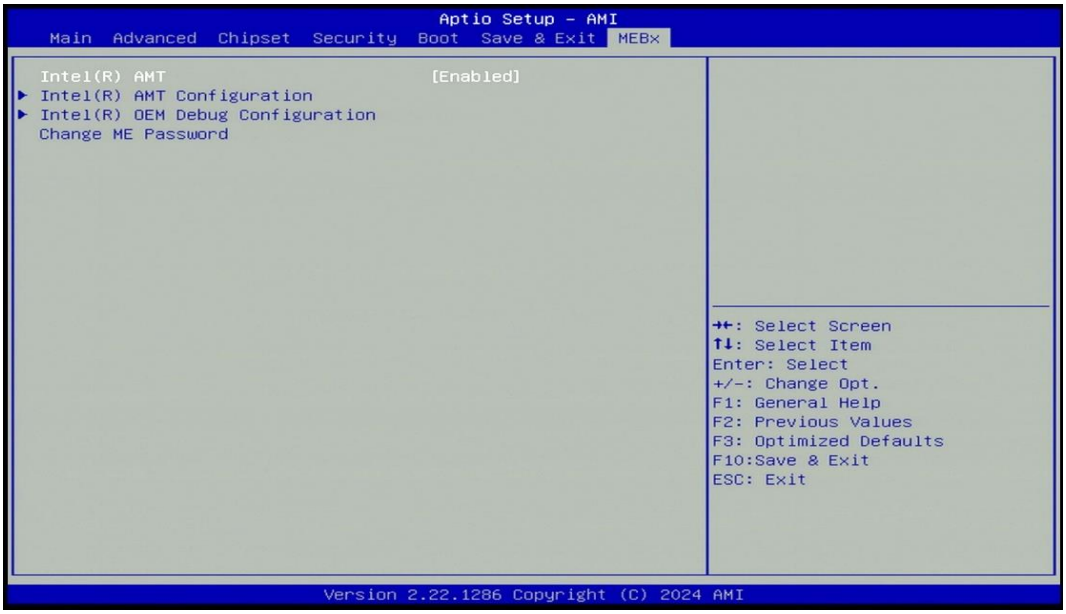
Create a new password using 8 characters including uppercase and lowercase letters, numbers, and special symbols.



Enter the created password again for confirmation.



This reveals the MEBx function settings.



Chapter 5
Product Application

5.1 Where can I download drivers?

Drivers for the MD-3000 Series can be downloaded from the CINCOZE website.

5.2 Where can I find technical documents?

The following documents are the most relevant technical references for the MD-3000 Series. All documents can be accessed via the CINCOZE Partner Zone:

- **Application Notes**: Navigate to *Home > Partner Zone > Technical Support > Application Notes*.
- **Configure & Installation**: Navigate to *Home > Partner Zone > Technical Support > Configure & Installation*.
- **Other Product Information**: Navigate to *Home > Partner Zone > Product Center > Product Information > Rugged Embedded Computers*

Catalog	Document Tile
Application Notes	DIO Application Guide
	DIO Technical Guide
	WDT Application Guide
	WDT Technical Guide
Configure & Installation	AT ATX Function Manual
	BIOS Administrator User Password Function Manual
	Clear CMOS Function Manual
	COM Function Manual
	CSM Function Manual
	Digital I/O Function Manual
	How to import Secure Boot Key?
	How to restore Windows image with Clonezilla?
	How to set TPM function under Windows?
	How to stop automatic driver update in Windows SOP
	How to Update BIOS and ME under UEFI shell?
	How to Update BIOS under UEFI shell?
	How to Update BIOS under Windows?
	Intel AMT with KVM Remote Control
	POE Module User Manual
	PXE Function Manual
	RAID Function Manual
	Remote Switch Function Manual
	Wake On LAN Function Manual
	WDT Function Manual