SB-244-1N97
SB-244-1N305

Industrial Fanless PC w/ Intel®
Alder Lake-N processor

User Manual

Version 1.0

2025.09

Revision History

Version	Date	Description
1.0	2025.09	Initial release

Copyright Notice

The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the European Union (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

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.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped or damaged.
    f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

Warning

The Box PC and its components contain very delicately Integrated Circuits (IC). To protect the Box PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

Lithium Battery Replacement

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at: https://www.arbor-technology.com

Please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

https://www.arbor-technology.com

E-mail: info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1. Features

- Intel® Core™ i3-N305 (6M Cache, up to 3.8GHz)
  Intel® N97 (6M Cache, up to 3.6GHz)
- 1 x DDR4 3200MHz SO-DIMM Slot, up to 16GB
- Support DP/HDMI display
- Support 4 LAN ports
- Support Wide DC Input 10-36V
- Support M.2 2242 slot(SATA), mSATA, MiniPCIe, M.2 3052 5G
- Support Over-voltage and Reserved Power Insertion Protection

1.2. About this Manual

This manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary Maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

System	
CPU	Intel® Core™ i3-N305 (6M Cache, up to 3.8GHz) (SB-244-1N305) Intel® N97 (6M Cache, up to 3.6GHz) (SB-244-1N97)
Memory	1 x SDRAM DDR4 3200 MHz (max. 16GB)
Graphics	Integrated Intel® UHD graphics
Storage	1 x M.2 M key 2242 slot (SATA signal) 1 x MiniPCIe slot for mSATA
Watchdog Timer	Programmable 255 levels timer interval, from 1~255 sec/min
External I/O	
Serial Ports	4 x RS-232/422/485 (default RS-232) with auto flow control
USB Ports	2 x USB3.2 Gen. 2 4 x USB2.0
Audio	1 x Audio (Line-out & Mic-in) (Chipset ALC888S/897)
LAN	1 x RJ45, Intel® I210-AT GbE 3 x RJ45, Intel® I226-V 2.5GbE
Display	1 x HDMI, up to 4096x2160@60Hz 1 x DP, up to 4096x2160@60Hz
Button	1 x Power button w/LED
Remote ON/OFF	1 x SW
Internal I/O	
Expansion Slot	1 x full-size MiniPCIe slot (PCIe/USB2.0/SATA signal supported) 1 x M.2 B key 3052 cellular module (USB3.0 Signal supported)
SIM Scoket	1 x SIM Card socket for 3G/4G module 1 x SIM Card socket for 3G/4G/5G module
COM Port	2 x RS232 by Pin Head
GPIO	1 x 8 bit programmable GPIO pin header (3.3 / 5V Jumper adjustable)
Mechanical	
Chassis	Aluminum Alloy
Mounting	Wall-mount, VESA-mount (optional), DIN-Rail (optional, Composition: SB-244-VESA-MOUNT+SPA BOX PC DIN RAIL KIT)
Dimension (W x H x D)	224 x 140 x 46.2 mm

Weight	1.6kg
Environmental	
Operating Temp.	-20 ~ 60°C (-4 ~ 140°F)
Storage Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	5% ~ 95% (non-condensing)
Random Vibration	5~500Hz, 2Grms operation
Shock	Operation: 10G@11ms Non-operation: 30G@11ms
Qualification	
Certification	CE, FCC
Power System	
Power Input	10-36V DC, 2-pin phoenix connector
OS Support	
Windows 10, Windows 11 Ubuntu 20.04	

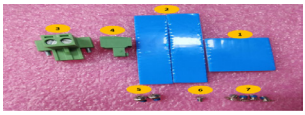
1.4. Configuration

Model	CPU	LAN	COM	USB	M.2 2230	M.2 2242	Mini-PCIe
SB-244-1N305	Intel® Core i3-N305	4	4	6	1	1	1
SB-244-1N97	Intel® N97	4	4	6	1	1	1

1.5. Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:

1 x SB-244-1N305 or SB-244-1N97



1. SSD Thermal PAD x 1
2. Memory Thermal PAD x 2
3. 2Pin DC-IN Phoenix connector x 1
4. 2Pin Remote SW Phoenix connector x 1
5. Screws
6. Screws
7. Screws

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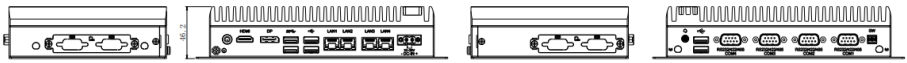
Chapter 2

Getting Started

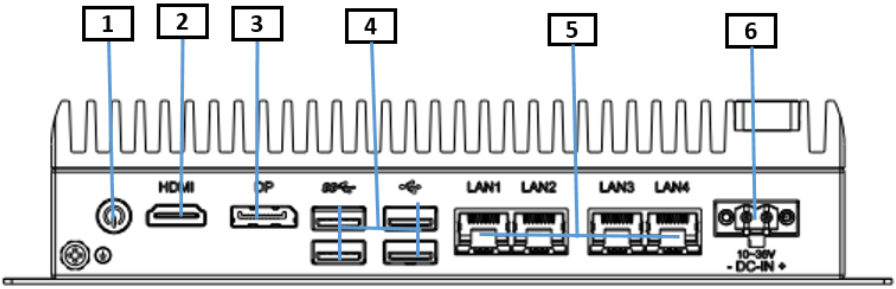
2.1. Dimensions

Unit: mm

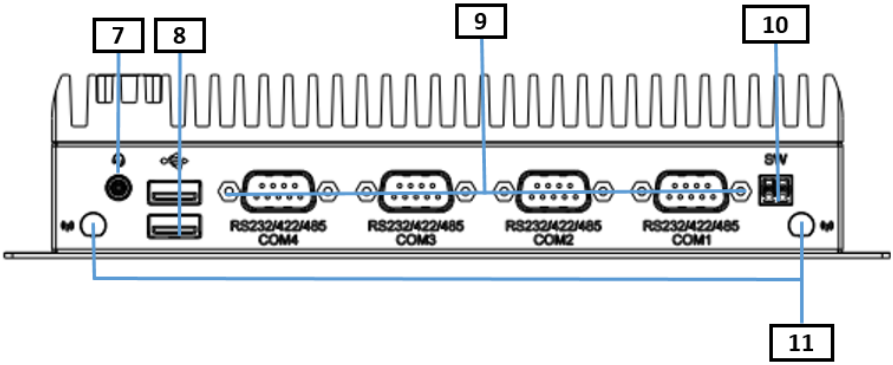


2.2. Overview

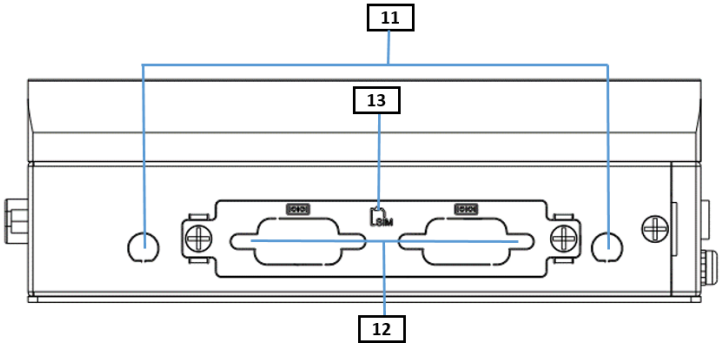
2.2.1 Side View



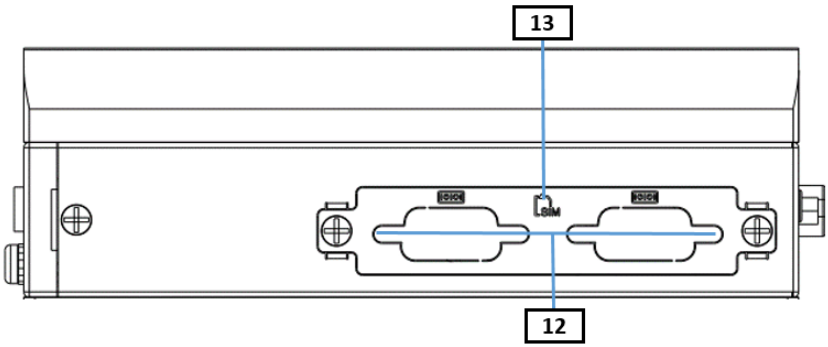
Front Side View



Rear Side View



Left Side View



Right Side View

No.	Item	No.	Item
1	Power ON/OFF	2	HDMI
3	DP	4	2 x USB3.2 Gen. 2 2 x USB2.0
5	LAN	6	DC-IN
7	Audio	8	USB2.0
9	RS485/422/232	10	Remote ON/OFF
11	Antenna Hole	12	2 x DB9 Service Doors
13	SIM slot		

2.2.2 Power ON/OFF Button

Function: Power Button

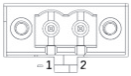
Power LED Status
White OFF: Power OFF
White ON: Power ON
White Flashing: S3 sleep

2.2.3 DC-IN Power Input

10-36V DC Power input with 2-pin phoenix connector, support Reversed Power Insertion Protection.

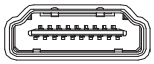
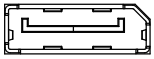
Function: DC-IN Power Connector
Connector Type: 2-pin phoenix connector
Pin Assignment: The pin assignments conform to the industry standard.

Pin	Desc.
1	GND
2	+10~36V



2.2.4 HDMI/DP Video Ports

Support 4K HD display and dual displays.

Description	Status	Figure
HDMI	4096x2106@60Hz	
DP	4096x2106@60Hz	

2.2.5 USB Ports

Provide 6 USB ports, 2x USB3.2 Gen. 2, 2 x USB2.0, support Plug-and-play and hot-swappable.

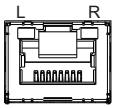
Function: USB 3.2/2.0 Stacked Connectors
Connector Type: USB 3.2/2.0 type A connectors
Pin Assignment: The pin assignments conform to the industry standard.

USB version	Theory bandwidth	Speed name	Voltage/Current (Max.)
USB2.0	480Mbps	High-Speed	5V/500mA
USB 3.2 Gen2	10Gbps	Super-Speed USB	5V/900mA

2.2.6 LAN Port

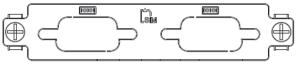
4x LAN ports, one Intel I210 GbE & three Intel I226-V 2.5GbE, support Wake on LAN, Intel I210 support Ether CAT.

Function: RJ-45 port for Giga LAN
Connector Type: 4 x RJ-45 connectors that support 10/100/1000Mbps fast Ethernet
Pin Assignment: The pin assignments conform to the industry standard.



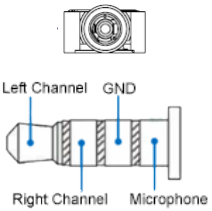
2.2.7 Service Door

Choose the module interface based on functional requirements, which can be expanded to include 8bit GPIO or 2 x COM ports.



2.2.8 Audio Connector

Function: For external microphone, headphones or speakers.
Connector Type: 3.5mm audio port interface
Pin Assignment: Support a 2-in-1 audio I/O interface with a 3.5mm hole diameter for external microphones, headphones, or speakers on a 4-segment devices.



Note: As the microphone pins of Android and iPhone version devices are opposite, they cannot be used the same audio input/output ports.

2.2.9 Serial Port Connector RS-232/RS-422/RS-485 (COM1 ~ COM4)

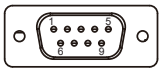
6 x COM ports, 4 x DB9 type, support 50~115.2kbps band rate

COM1, COM2, COM3, COM4

Function: RS-232/RS-422/RS-485 Selectable Serial Port

Connector Type: External 9-pin D-sub male connector

Pin Assignment: COM1~4 RS232/RS-422/RS-485 connector



Pin	RS-232	RS-422	RS-485
1	DCD	TX-	Data-
2	RXD	TX+	Data+
3	TXD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	RI	-	-

COM 5~6 RS232 3-wire connector (2 x 3 pin headers)

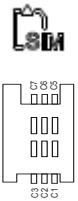
Pin	RS-232	Pin	RS-232
1	-	6	-
2	RXD	7	-
3	TXD	8	-
4	-	9	-
5	GND		

Note1: COM 1~4 can be set as selection mode through BIOS setting and support RS-485/RS-422/RS-232 auto-flow.

Note2: COM 5~6 only support RS-232 mode.

2.2.10 3G/4G/5G Antenna Reserved Hole

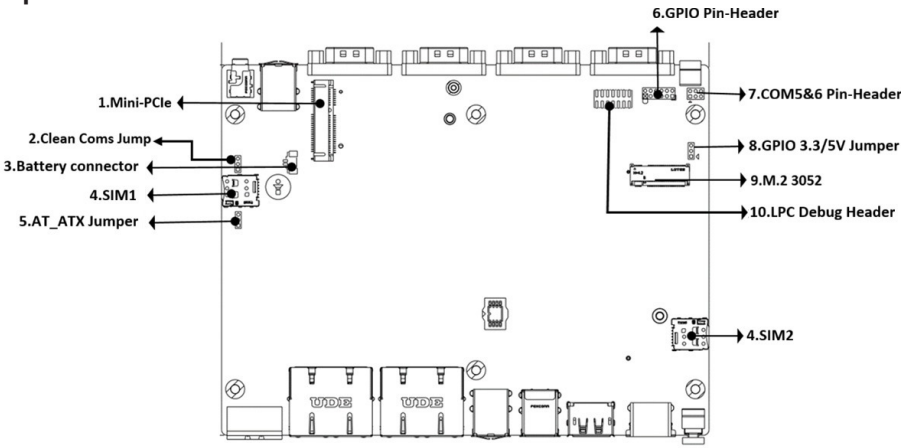
2.2.11 SIM Card Socket



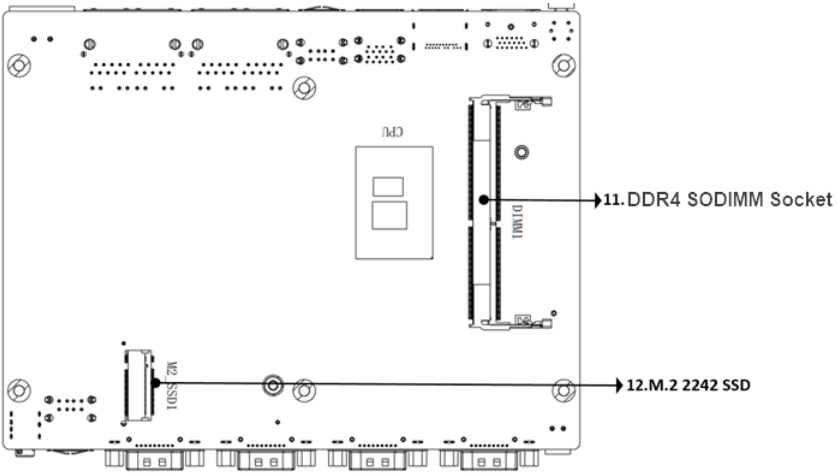
Function:	3G/4G/5G SIM card Socket
Connector Type:	SIM Card Socket
Pin Assignment:	The pin assignments conform to the industry standard.

2.3. Internal Connector / Jumper

Top Side:



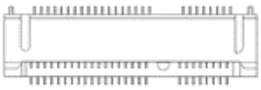
Bottom Side:



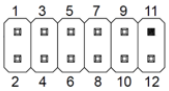
No.	Name	PCB Printing Name
1	Mini-PCIe Socket	MINI_PCIE1
2	Clear CMOS Jumper	JCMOS1
3	Battery Connector	JBAT1
4	3G/4G/5G SIM Slot	JSIM1. JSIM2
5	AT/ATX Jumper	JP1
6	GPIO PIN Header	JGPIO1
7	COM 5&6 Pin Header	JCOM5_1
8	GPIO 3.3V/5V Jumper	JGPSET1
9	M.2 3052 Socket	M2_KEY_B1
10	LPC Debug Pin Header	JDEBUG1
11	DDR4 SO-DIMM Slot	DIMM1
12	M.2 2242 Socket	M2_SSD1

2.3.1 Mini-PCIe Slot

Function: Mini-PCIe Socket support PCIe/USB2.0/mSATA signals
Connector Type: Mini-PCIe 52-pin Socket
Pin Assignment: The pin assignments conform to the industry standard.



2.3.2 8bit internal GPIO pin header (JGPIO1)



Pin	Pin Definition	Pin	Pin Definition
1	VCC_GPIO	2	VCC_GPIO
3	JPIO1	4	JPIO5
5	JPIO2	6	JPIO6
7	JPIO3	8	JPIO7
9	JPIO4	10	JPIO8
11	x	12	GND

2.3.3 8bit GPIO Voltage Jumper (JGPSET1)

Function: GPIO 3.3V/5V Jumper Setting

Setting:

Pin	Description	
Short 1-2 (Default)	5V	
Short 2-3	3.3V	

2.3.4 AT/ATX Selection Jumper

This jumper supports two power-on modes: AT mode and ATX mode.
When AT mode is selected, the system will automatically turn on after being connected to the power supply; When ATX mode is selected, the system needs to press the power-on button after the system is connected to the power supply.
AT/ATX mode can be set through jumpers or BIOS options. For jumper settings, please refer to the settings below:

Function: AT/ATX selection mode

Setting:

Pin	Description	
Short 1-2 (Default)	ATX Mode (Start by Power Button)	
Short 2-3	AT Mode (Start automatically after Power ON)	

2.3.5 Clear CMOS

CMOS is a readable and writable RAM chip on the computer motherboard. Because of its readable and writable characteristics, it is used on the computer motherboard to save the data after the BIOS has set the computer hardware parameters. This chip is only used to store data.

Function: Clears/keeps CMOS

Jumper Type: 2.00 mm pitch 1x3-pin header

Setting:

Pin	Description	
Short 1-2	Keeps CMOS (default)	
Short 2-3	Clears CMOS	

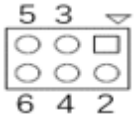
2.3.6 Serial Ports (COM5/6) Pin Header

Function: COM5/6 Pin Header

Connector Type: 2.54mm pitch 6-pin

Pin Assignment:

Pin	Description
1	COM5_SOUT
2	COM6_SOUT
3	COM5_SIN
4	COM6_SIN
5	GND
6	GND



Chapter 3

Installation & Maintenance

3.1. Bottom Cover / Top Cover Installation and Removal

1. Remove six M3x4 screws from the bottom cover, as shown in Figure 3.1-1.

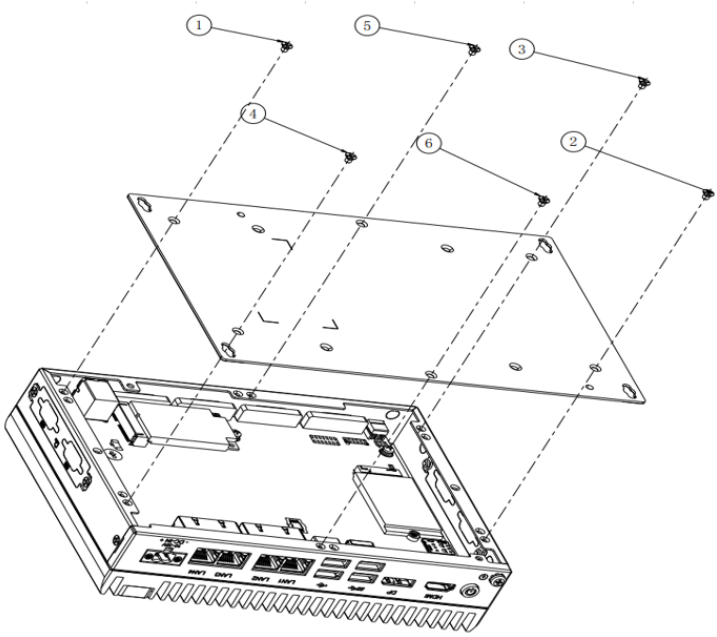


Figure 3.1-1

2. Remove the two M3x6 spring screws in the middle of the motherboard and the four M3x4 screws in the four corners of the chassis, and remove the top cover (aluminum extrusion); as shown in Figure 3.1-2.

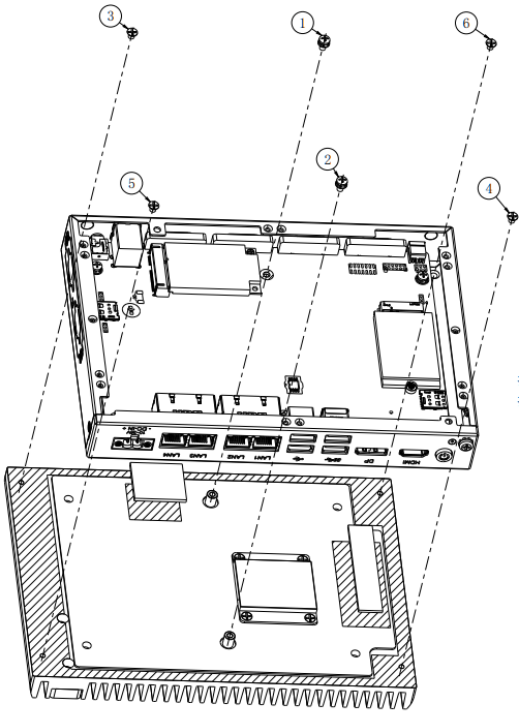


Figure 3.1-2

3.2. Key Parts installation and Removal

1. Remove the memory module;

M.2 2242 module: remove 1 pan-head M3x3 screw as shown in Figure 3.2-1.

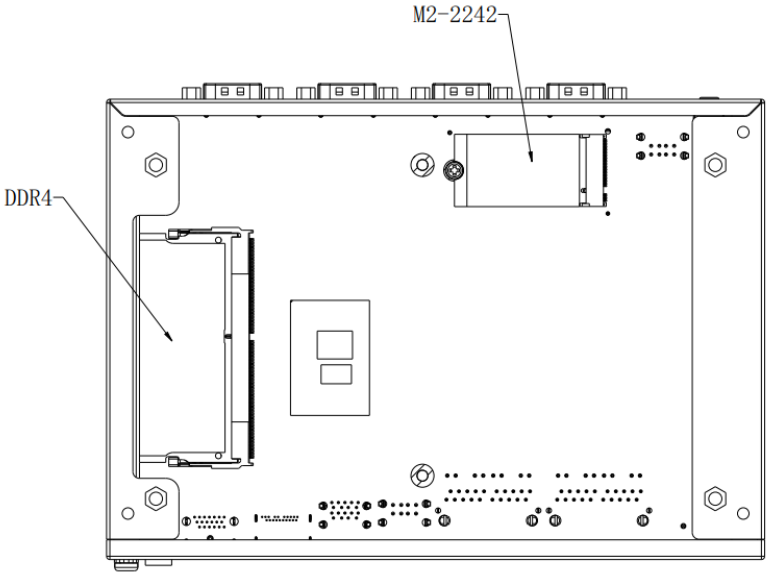


Figure 3.2-1

2. Remove the Mini-PCIe module: Remove one flat-head M2x3 screw; Remove the 3052-5G module: remove one pan-head M3x3 screws to lock as shown in Figure 3.2-2.

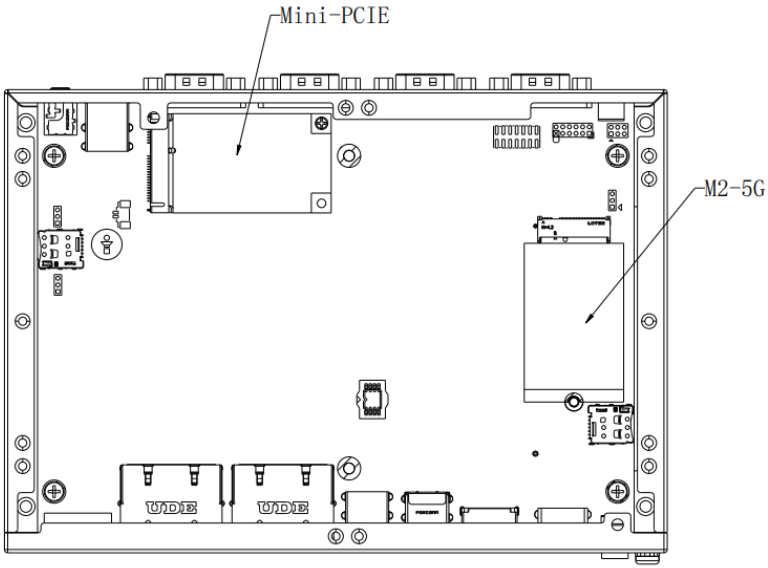


Figure 3.2-2

3. Attach the CPU PAD to the CPU chip or remove it from the CPU chip; as shown in Figure 3.2-3

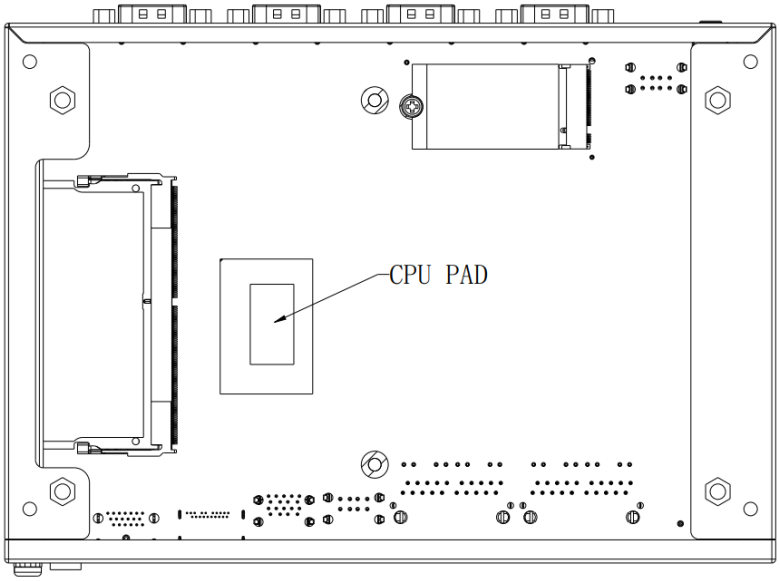


Figure 3.2-3

4. Apply the memory thermal PAD and M.2 thermal PAD to the anode; Buckle the chassis module onto the aluminum extrusion; The memory thermal PAD and M.2 thermal PAD are removed from the aluminum extrusion respectively as shown in Figure 3.2-4.

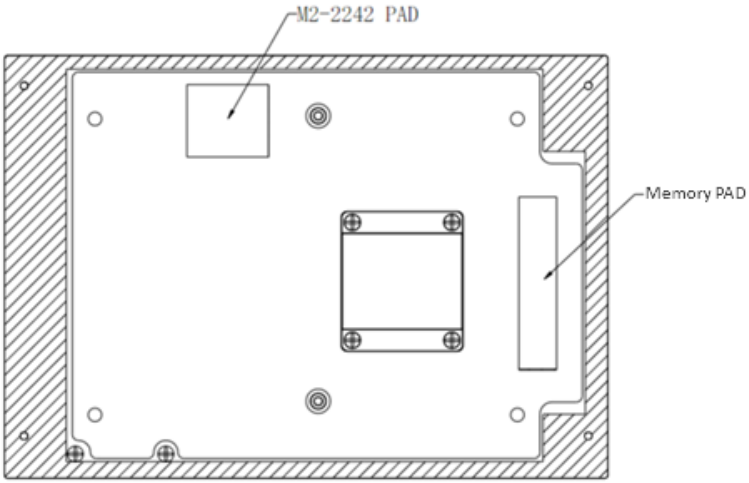


Figure 3.2-4

3.3. SIM Card Installation and Removal

1. Remove the two M3x4 screws and remove the bracket.
2. Push/remove the SIM card into the card slot and lock the cover bracket back to its position, as shown in Figure 3.3-1.

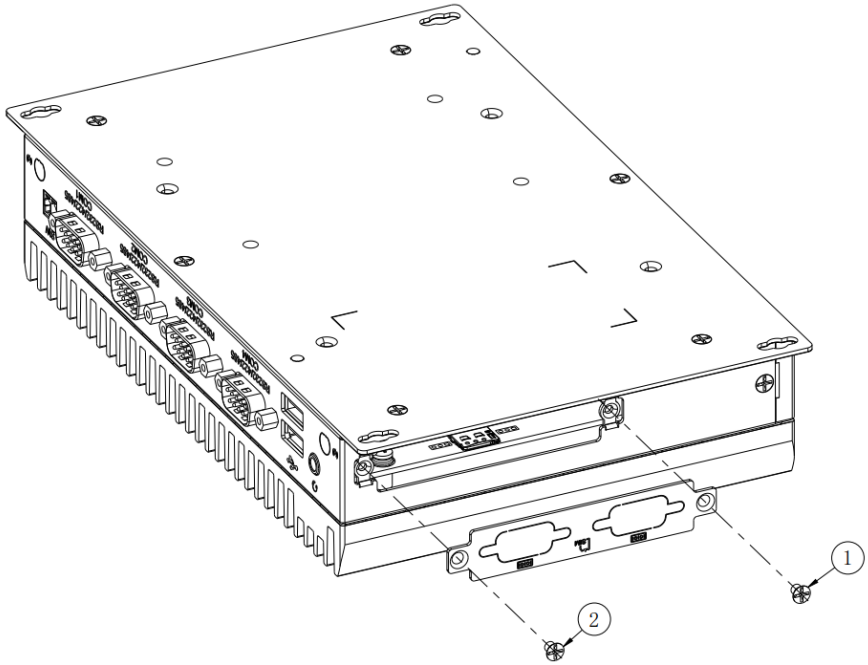


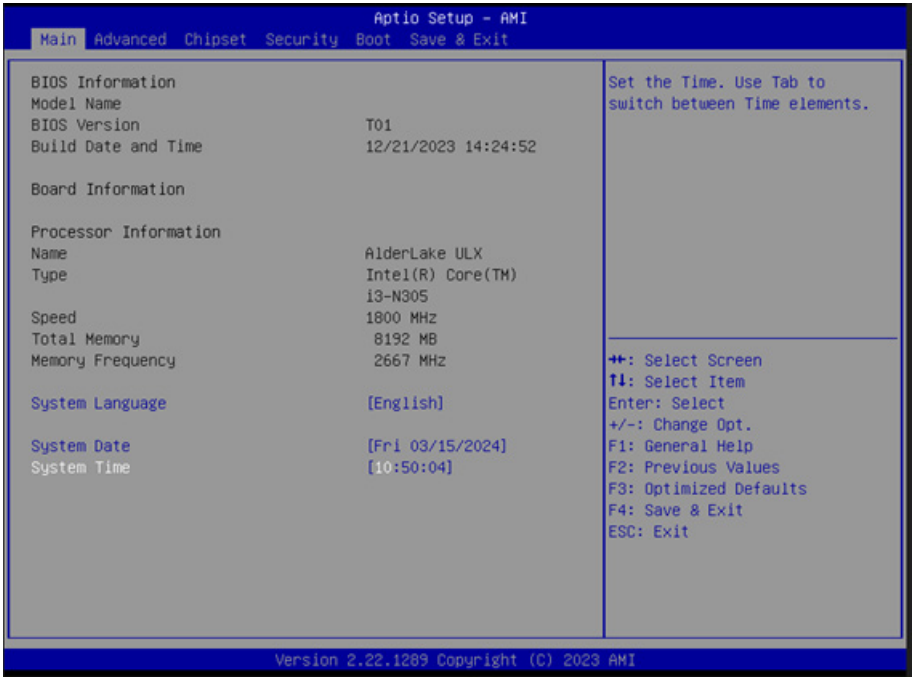
Figure 3.3-1

Chapter 4

BIOS

The BIOS Setup utility is to configure the system settings stored in the system's BIOS ROM. The BIOS is activated once the computer powers on. When the computer is off, the battery on the main board supplies power to BIOS RAM.

To enter the BIOS Setup utility, keep hitting the "Delete" key upon powering on the computer.



Note: Actual model name and board information varies according to your model.

Key Commands

The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to navigate within the utility and use the utility.

Hot-Key	Function	Description
<Del>	Enter the BIOS Setup interface	After system is powered ON
<F7>	Call the BIOS quick boot item selection menu	
<Ctrl>+<Alt>+<Del>	Restart the system	
← →	BIOS page selection	After entering BIOS setup interface
↓ ↑	BIOS item selection	
Enter	Confirm selection	
<F3>	Load defaults	
<F4>	Save settings and exit	
Esc	Exit the BIOS setup interface	

Note: This BIOS Setup utility is updated from time to time to improve system performance and hence the screenshots hereinafter may not fully comply with what you actually have onscreen.

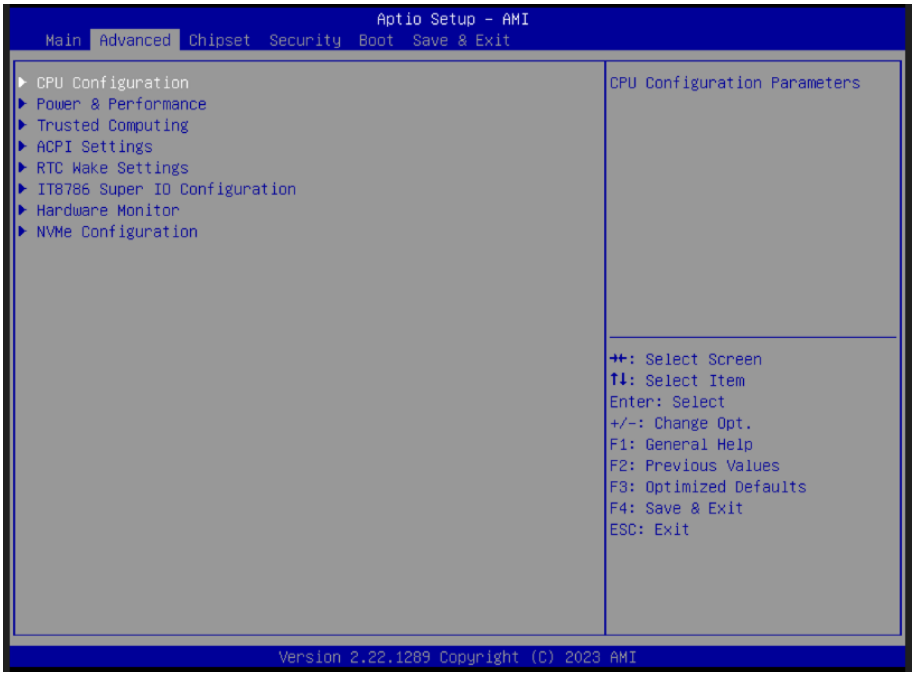
4.1. Main - Sets system Time & Date.

The **Main** menu features the settings of **System Date** and **System Time** and displays some BIOS info.

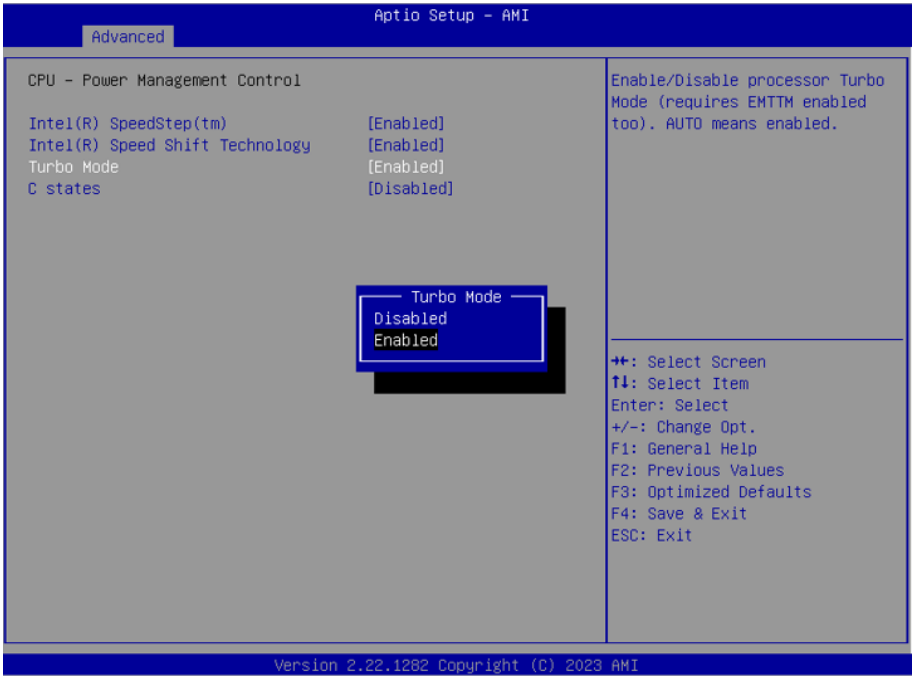
Setting	Description
System Date	Sets system date.
System Time	Sets system time.

4.2. Advanced

Use the keyboard arrow keys to move to the BIOS Advanced option. The submenu has detailed option descriptions.



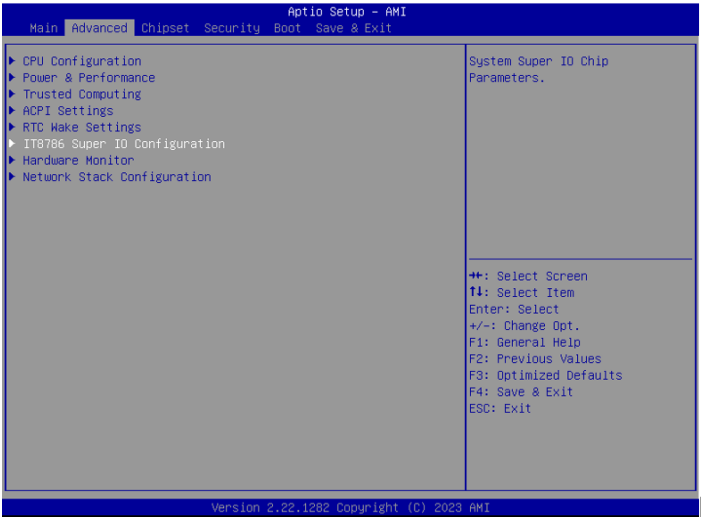
4.2.1. Turbo Mode Setting

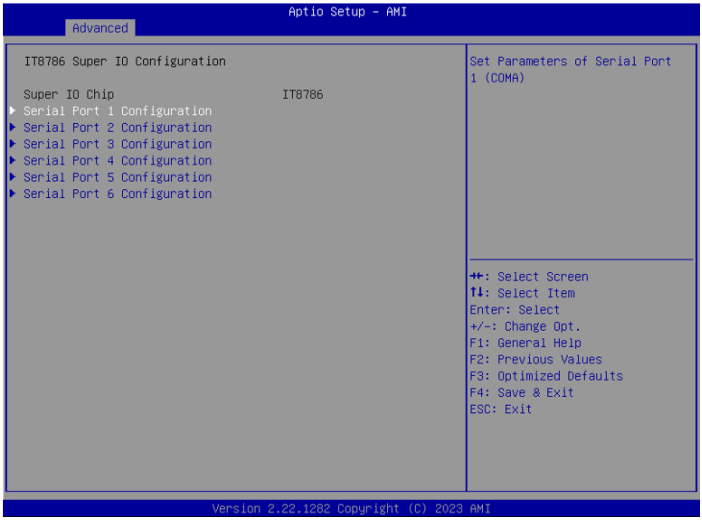


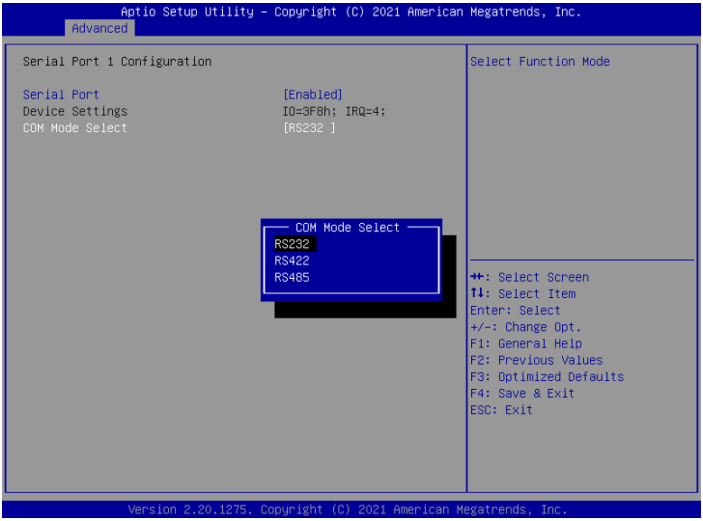
Enter Advanced menu, select "**Power & Performance**" -> "**CPU-Power Management Control**" -> "**Turbo Mode**". After that users can choose Enabled/ Disabled. After setting, press F4 to save and exit, the system will take effect after reboot.

4.2.2. COM Mode Setting

Under the **Advanced** menu, select "**IT8786 Super IO Configuration**" -> "**Serial Port X Configuration**" -> "**COM Mode Select**". Users can select RS232, RS422 and RS485 for COM mode setting. After setting, press F4 to save and exit, the system will take effect after reboot.



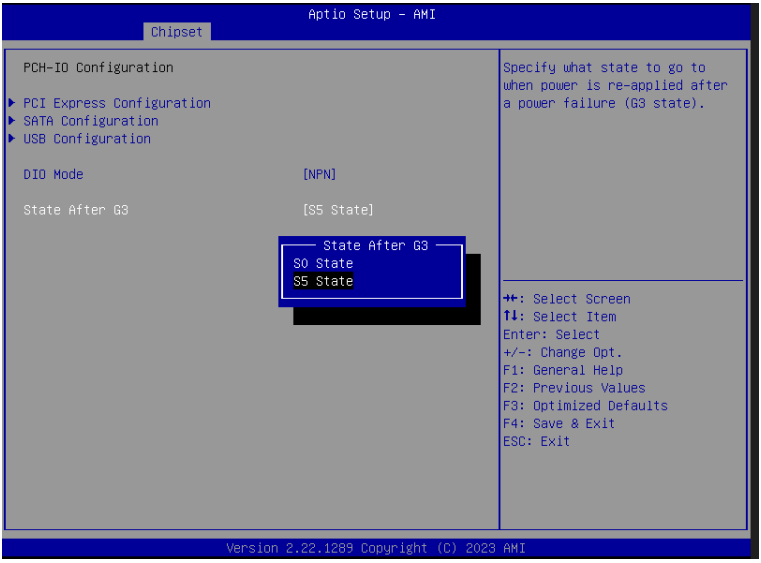



Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
Advanced
Serial Port 1 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
COM Mode Select [RS232]
COM Mode Select
RS232
RS422
RS485
Select Function Mode
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2021 American Megatrends, Inc.

4.3. Chipset Menu

Use the arrow keys on the keyboard to move to the Chipset option. The submenu has detailed option descriptions.

4.4. Auto TURN-ON (AT/ATX)



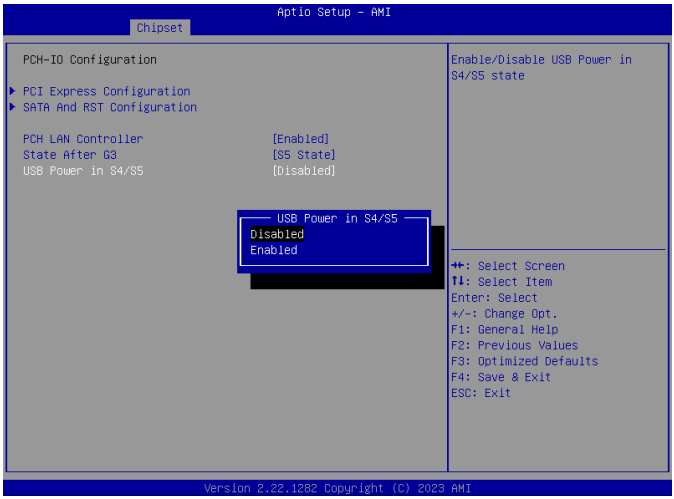
Enter "**Chipset**" menu, and select "**Chipset**"->"**PCH-IO Configuration**"->"**State After G3**" in order. Users can select "**S0 State/S5 State**" for power mode on the system.

"**S0 State**" is AT mode, it will power on the system automatically after connecting the power supply, and S5 State is ATX mode.Users need to press the power button to turn on the system after connecting the power supply.

"**S5 State**" is ATX mode. After connecting the power supply, you need to press the power button to power up the device. After setting, press F4 to save and exit, the system will take effect after reboot.

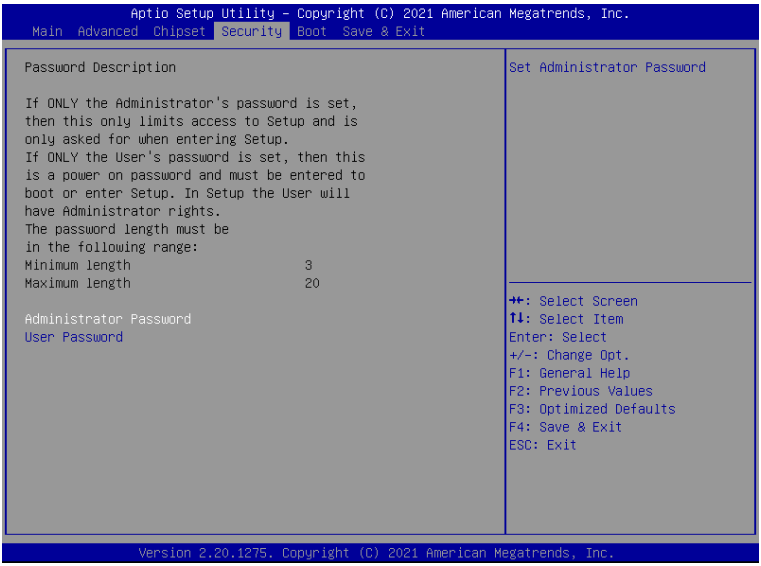
4.5. Set USB port is powered during sleep or off

Set whether the USB port is powered during sleep or shutdown.



Enabled: USB port is powered.
Disabled: USB port is not powered.

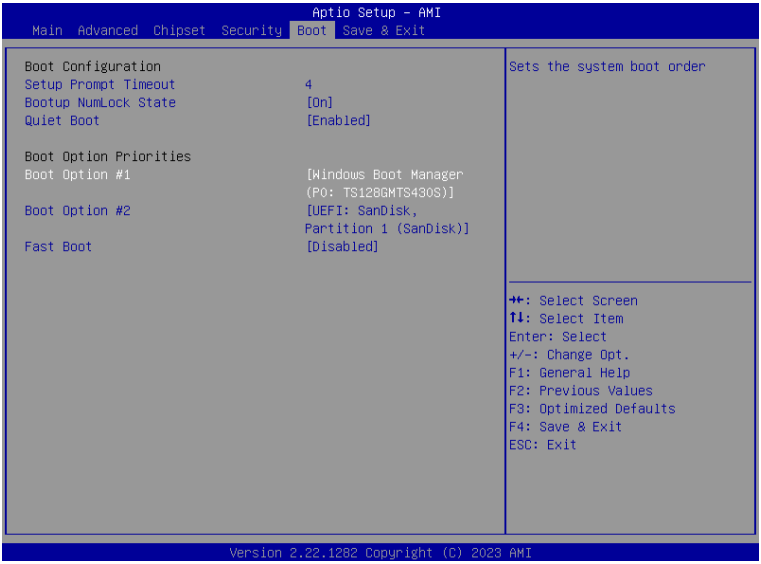
4.6. Security



Use the keyboard arrow keys to move to the Security option. The submenu has detailed option descriptions, including security settings. Administrator and user passwords can be set to protect the computer from infringement.

Setting	Description
Administration Password	To set up an administrator password: 1. Select **Administrator Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.
User Password	To set up an user password: 1. Select **User Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.

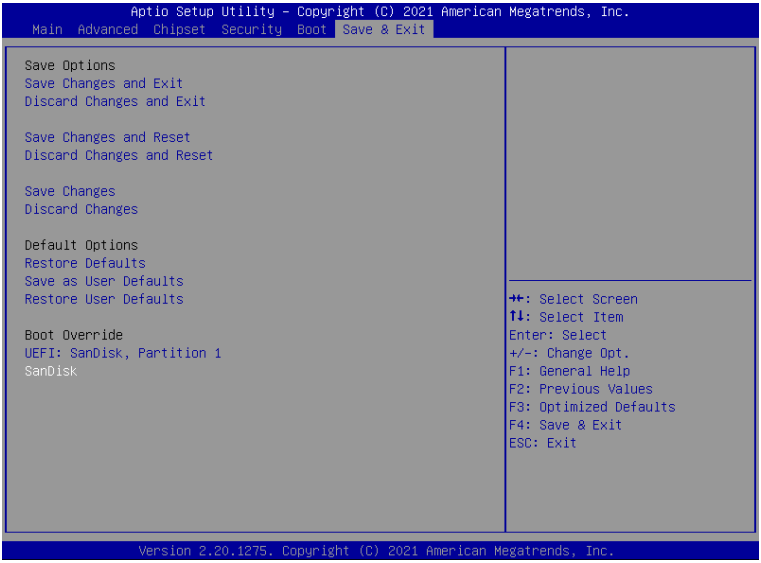
4.7. Boot



"**Boot**" menu contains the boot settings above. Users can set the boot logo, select the order of boot devices, etc.

Setting	Description
Bootup NumLock State	▶ Set NumLock on or off when booting.
Quiet Boot	▶ **Enabled:** Logo will be displayed at boot up. ▶ **Disabled:** Boot up the system and display the self-test screen, without logo.
Boot Option Priorities	▶ Users can set the order in which devices are started at startup **Boot Option #1** is the first priority startup item, **Boot Option #2** is the second startup item, and so on. Press F4 to save and exit, the system will take effect after reboot.

4.8. Save & Exit



The Save & Exit menu displays the way to exit the BIOS setup utility. When users have completed the setup, users must save and exit for the changes to take effect.

Setting	Description
Save Changes and Exit	Save the changes and then restart the system.
Discard Changes and Exit	Discard the changes and restart the system.
Restore Defaults	Restore default values.
Boot Override	Set boot device priority.