QBiX-JMB-CMLA47EH-A1

Industrial Fanless System with Intel® Q470E Chipset,
Support for Intel® 10th Gen. Core™ i Processor

Startup Manual

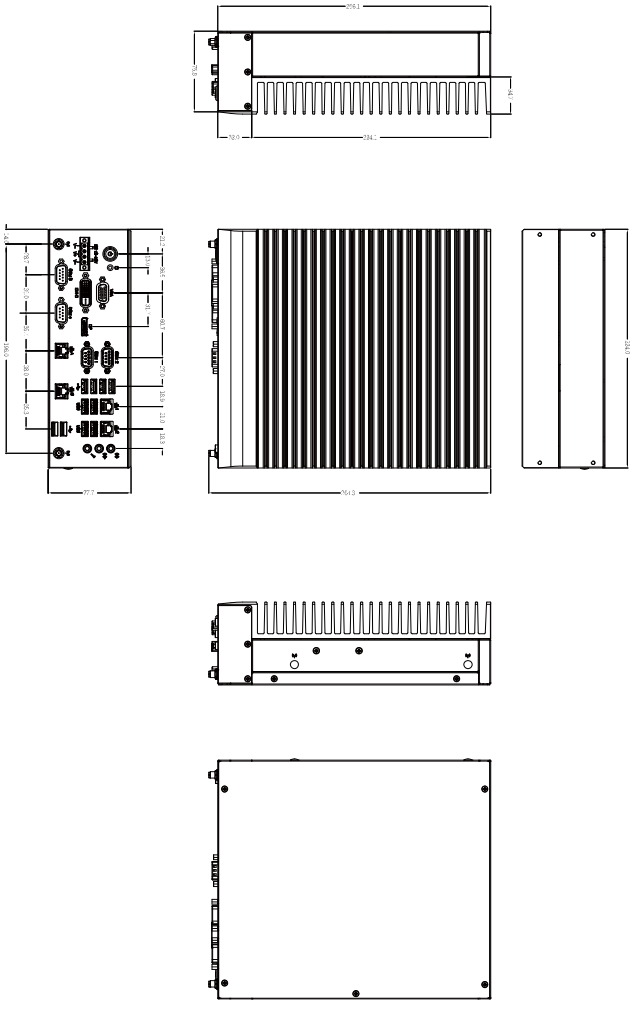
Packing List

Before you begin installing your card, please make sure that the following items have been shipped:

1. Screw HDD x 20 pcs (25984G-1C014-S00)
2. 4-pin Terminal Blocks Male Plug x 1 pcs (25IO0-2ESDV0-D2R)

Caution: DANGER OF EXPLOSION
IF BATTERY IS INCORRECTLY
REPLACED. REPLACE ONLY WITH THE
SAME OR EQUIVALENT TYPE RECOMMENDED
BY THE MANUFACTURER, DISCARD USED BATTERIES
ACCORDING TO THE MANUFACTURER'S
INSTRUCTIONS.

Dimension

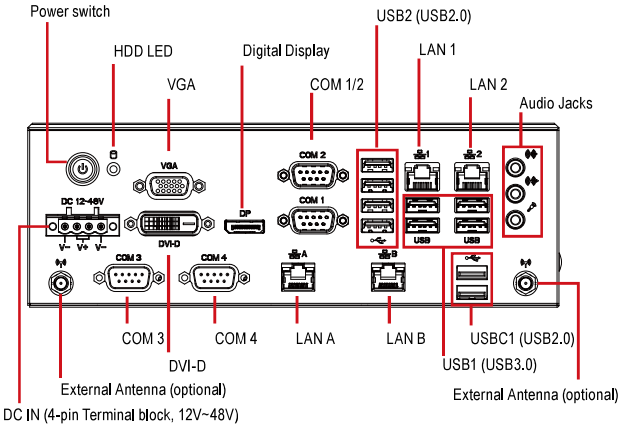


Specifications

Dimension	System Size: 224W x 256.1D x 77.7H(mm)
CPU	Support for 10th Generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processors in the LGA1200 package, TDP under 65W
Chipset	Intel® Q470E Express Chipset
Memory	2 x DDR4 SO-DIMM sockets supporting up to 64 GB, Dual channel DDR4 3200 MHz
Ethernet	1 x GbE LAN Port (Intel® I219V) 3 x GbE LAN Ports (Intel® I211AT)
Graphic support	Integrated Graphics Processor - Intel® HD Graphics support: 1 x DVI-D port, supporting a maximum resolution of 1920x1080 @60Hz 1 x D-Sub port, supporting a maximum resolution of 1920x1200 @60Hz 1 x DP port, supporting a maximum resolution of 4096x2160 @60Hz 3 independent displays output
Audio	Realtek® Audio Codec
Storage	4 x 2.5" HDD/SSD (SATA 6Gb/s)
Expansion Slots	1 x 2280 M.2 M-Key (PCIe x4, SATA 6Gb/s) 1 x 2230 M.2 E-Key (WiFi/BT) 1 x Full-size Mini PCIe with SIM slot

Front I/O	1 x DC IN (4-pin Terminal Block +12V~48V) 1 x VGA / 1 x DVI-D /1 x DP 2 x COM Ports (RS-232/422/485 & RI/5V/12V) 2 x COM Ports (RS-232) 4 x RJ45 LAN Ports 4 x USB 3.2 Gen 1 6 x USB 2.0 3 x Audio Jacks (Line in, Line out & Mic in) 2 x External Antenna Holes (Optional)
Rear I/O	—
Power	DC in +12V~48Vdc (Full Range)
Operation Temperature	Operating temperature: -20°C to 50°C (CPU 65W TDP) Operating temperature: -20°C to 60°C (CPU 35W TDP) Operating humidity: 0-90% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 0%-95% (non-condensing) Use wide temperature range memory and storage
Vibration During Operation	Operation: IEC 60068-2-64, 3 Grms, random, 5 ~ 500 Hz, 1 hr / Per Axis, with SSD/M.2 2280 Non-operation: IEC 60068-2-6, 2 G, Sine, 10 ~ 500 Hz, 1 Oct/min, 1 hr / Per Axis
Shock During Operation	Operation: IEC 60068-2-27, 50 G, half sine, 11 ms duration, With SSD
Packaging Content	Carton size: 300 x 315 x 166 (mm) Packing Capacity : 1 Including: Terminal Blocks Male Plug x 1pc (25IO0-2ESDV0-D2R) Screw M3x4L x 20pcs (25984G-1C014-S00)
Order Information	System : 6BQJQ47EAMR-SI (Box packing)

System I/O Interface



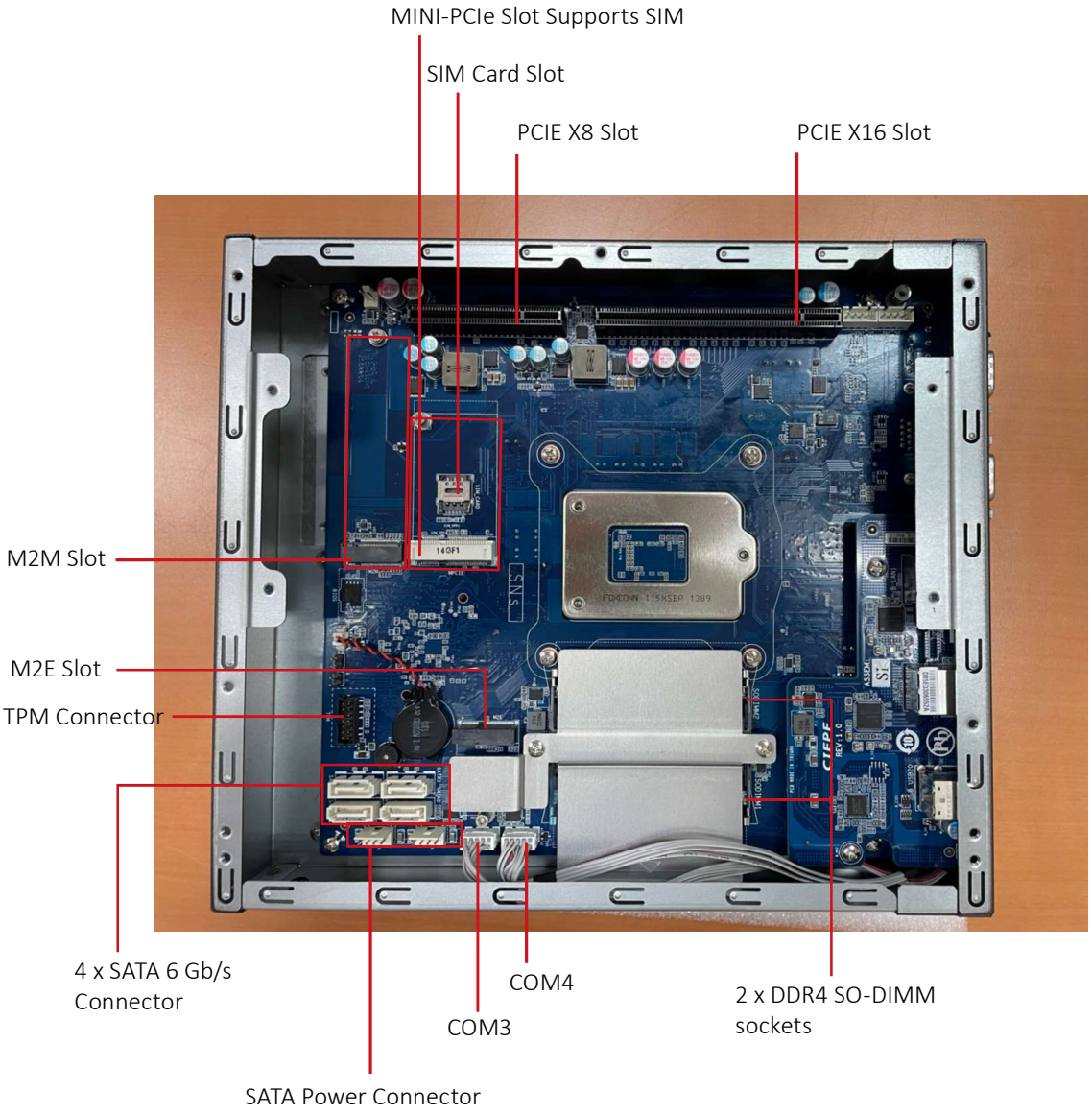
Jumpers and Connectors

The board has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of each of the jumpers and connectors.

Front I/O Connectors

No.	Code	Scription
1	VGA	VGA Connector
2	DVI-D	DVI-D Connector
3	DP	Digital Display Port
4	COM 1/2	RS-232/422/485
5	COM 3/4	RS-232
6	USB 1	4 x USB 3.2 Gen 1
7	USB 2	4 x USB 2.0
8	USB C1	2 x USB 2.0
9	LAN 1	Intel® I219V
10	LAN 2	Intel® I211AT
11	LAN A	Intel® I211AT
12	LAN B	Intel® I211AT
13	LED	Power and Storage Device Status LED
14	DC-12-48V	Power connector
15	**Audio**	**Audio Jacks (Line in, Line out & Mic in)**

Internal I/O Connectors



Simple Installation Process

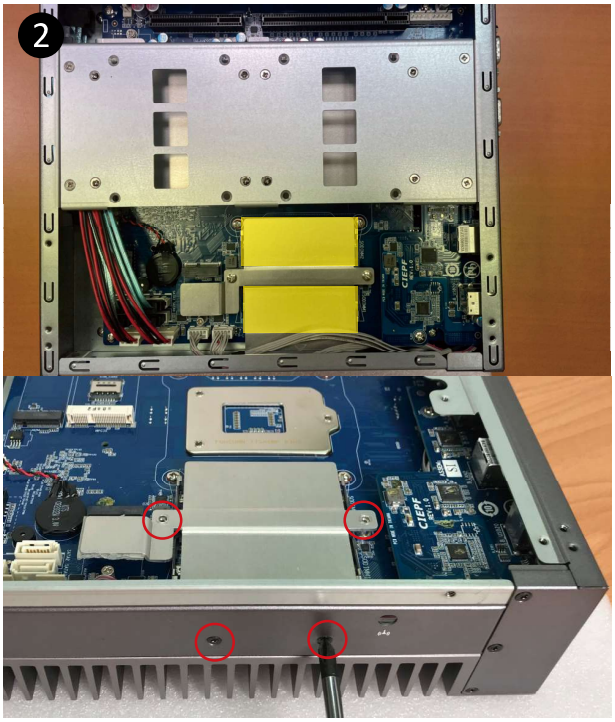
Memory Installation

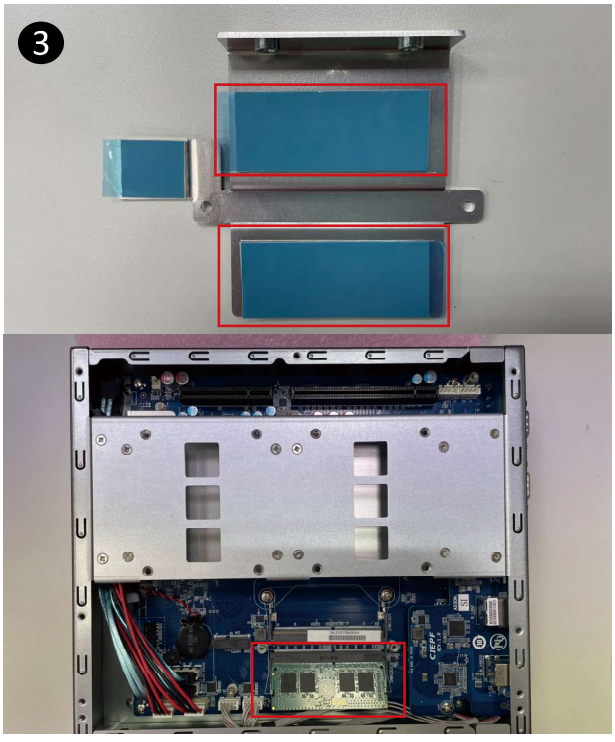
QBiX-JMB-CMLA47EH-A1 supports DDR4 SO-DIMM type memory module.

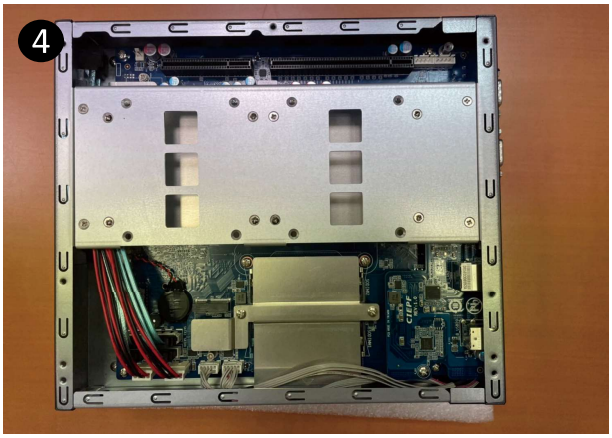
1. Loosen 7 screws and remove the bottom cover.
2. Loosen 4 screws to remove memory thermal cover.
3. Remove the release paper, and assemble memory.
4. Install 4 screws and memory thermal cover.

Note : Thermal pad and memory thermal cover must be fully mated and compacted.

5. Replace the bottom cover and secure with screws.

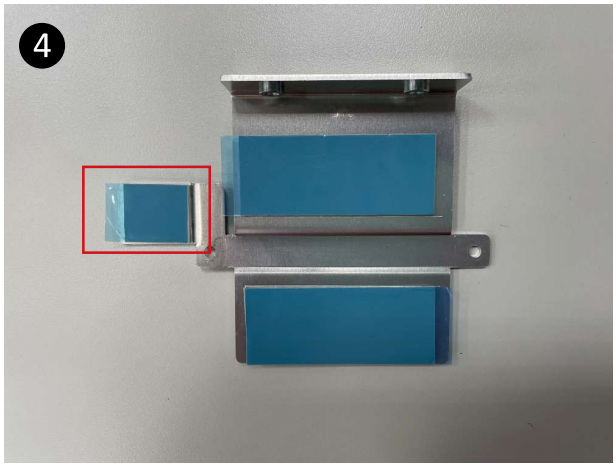






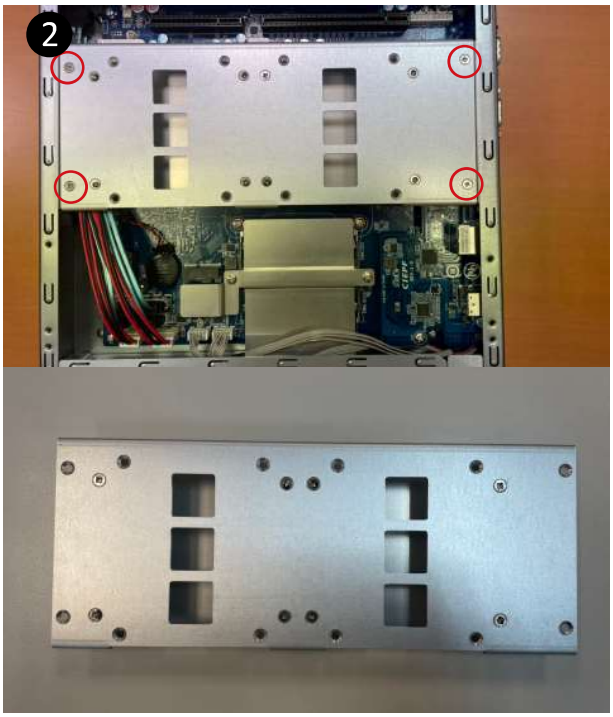
M2E (Support NGFF-2230 Wifi/BT) Installation

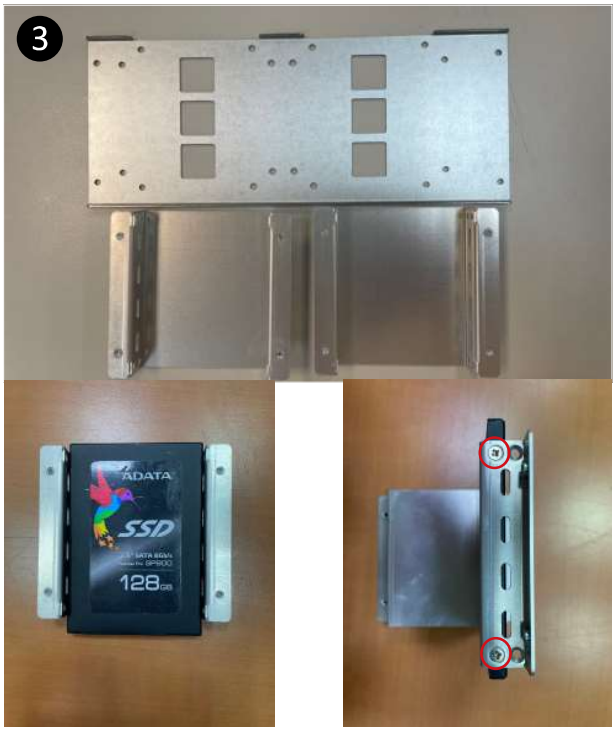
1. Loosen 7 screws and remove the bottom cover.
2. Loosen 4 screws to remove M2E thermal cover.
3. Install the module in the M2E (Support NGFF-2230 Wifi/BT) slot and secure with screws.
4. Remove the release paper on the thermal pad.
5. Install 4 screws and M2E thermal cover.
6. Replace the bottom cover and secure with screws.

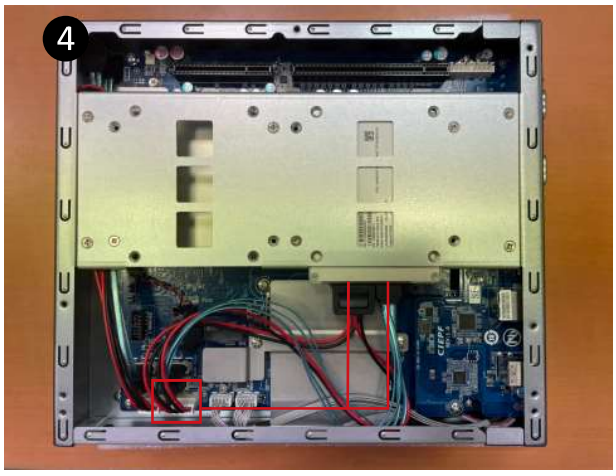


Storage Installation 1 (2.5” HDD/SSD)

1. Loosen 7 screws and remove the bottom cover
2. Loosen 4 screws to remove storage tray.
3. Secure storage with 4 x screws.
4. Assemble SATA cable/power cable and replace storage tray securely with 4 x screws.
5. Replace the bottom cover and secure with screws.

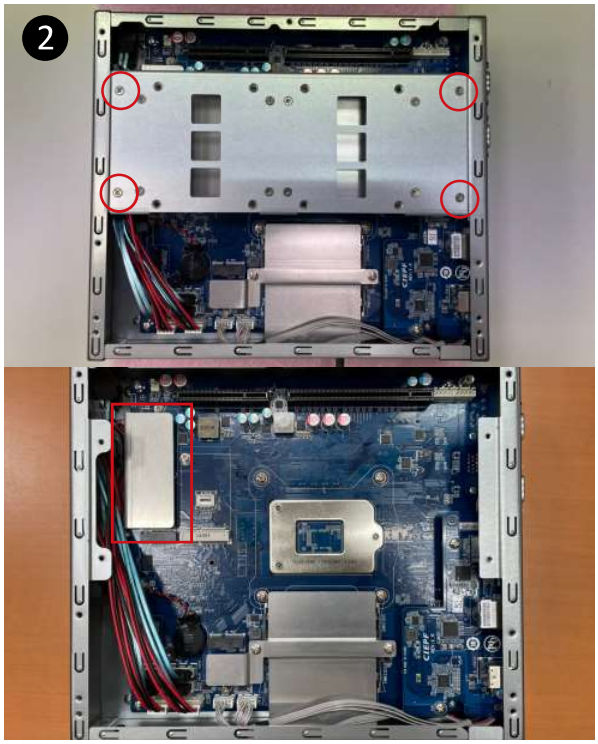


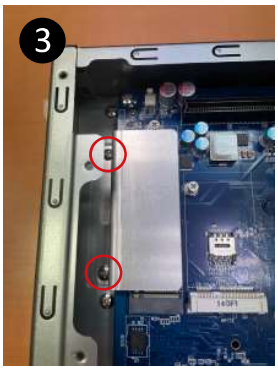


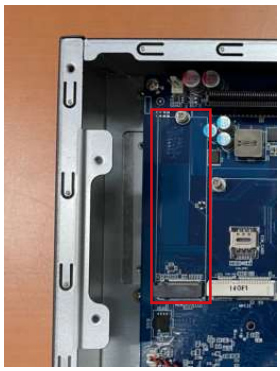


Storage Installation 2 (M2M Storeage)

1. Loosen 7 screws, and then remove the bottom cover
2. Loosen 4 screws to remove the hard disk storage aluminum sheet
3. Loosen the 2 screws to remove the aluminum heat sink.
4. Assemble the M2M (NGFF-2280 SATA) storage hard drive, and remove the release paper which is on the aluminum heat sink.
5. Install the 2 screws to securely replace the aluminum heat sink and heat sink paste.
6. Install 4 screws to firmly install the hard disk storage aluminum sheet
7. Replace the bottom cover and secure with screws.



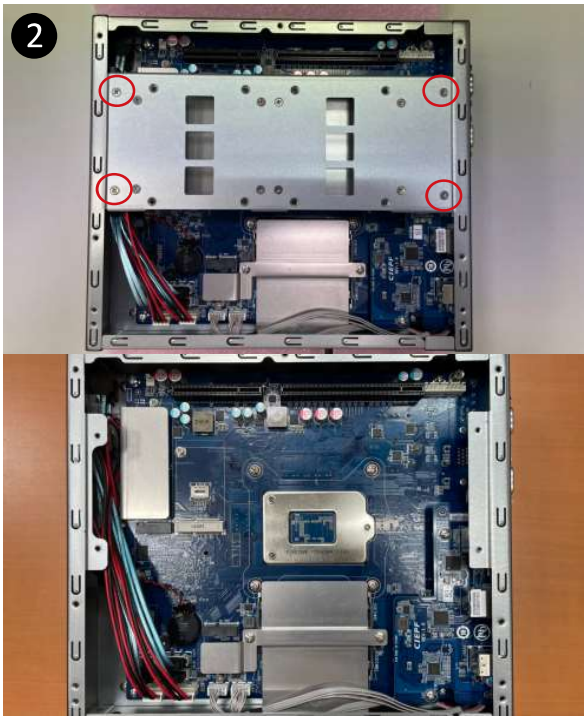




Mini-PCIe Slot (PCIex1 + USB2.0) and SIM Card Slot Installation

QBiX-JMB-CMLA47EH-A1 supports one full size Mini-PCIe.

1. Loosen 7 screws, and then remove the bottom cover
2. Loosen 4 screws to remove the hard disk storage aluminum sheet
3. Assemble the Mini-PCIe expansion Card (Mini-PCIex1 + USB2.0) or 3G/4G SIM Card in SIM Slot.
4. Install 4 screws to firmly install the hard disk storage aluminum sheet
5. Replace the bottom cover and secure with screws.



Safety Instructions

1. Read these safety instructions carefully.
2. Keep this Startup Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for 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. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
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 by 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.
14. 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.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40°C (-40°F) OR ABOVE 85°C (185°F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
17. RESTRICTED ACCESS AREA: The equipment should only be installed in a Restricted Access Area.
18. DISCLAIMER: This set of instructions is given according to IEC 704-1. GIGAIPC disclaims all responsibility for the accuracy of any statements contained here in.

GIGAIPC

QBiX-JMB-CMLA47EH-A1

Industrial Fanless System with Intel® Q470E Chipset,
Support for Intel® 10th Gen. Core™ i Processor

BIOS Manual

Introduction

BIOS (Basic input/output system) provides hardware detailed information and boot-up options, which include firmware to control, set-up and test all hardware settings. Therefore, BIOS is the communication bridge between OS/application software and hardware.

How to Entering into BIOS menu

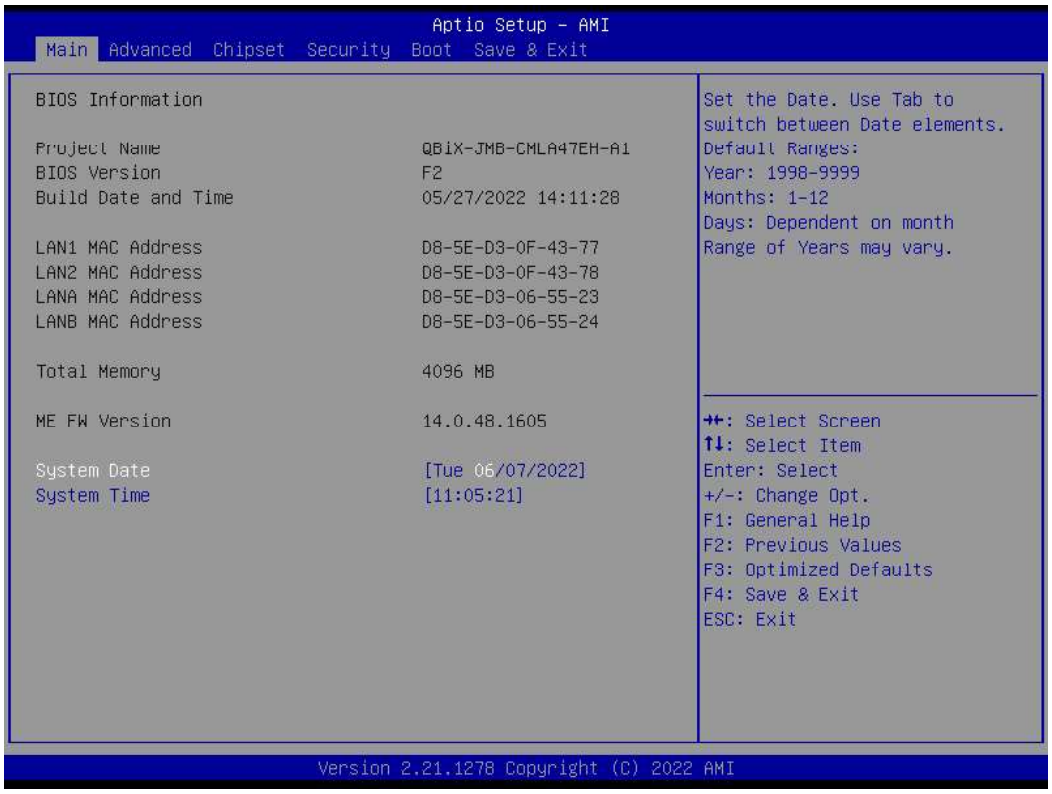
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

Function Keys to setup in BIOS Setup program

Function keys	Description
→←	Select Screen
↑↓	Select Item
Enter	Execute command or enter the submenu
+	Increase the numeric value or make changes
—	Decrease the numeric value or make changes
F1	General Help
F2	Previous Values
F3	Load Optimized Defaults Settings
F4	Save changes & Exit the BIOS Setup program
ESC	Exit the BIOS Setup program

1. The Main Menu

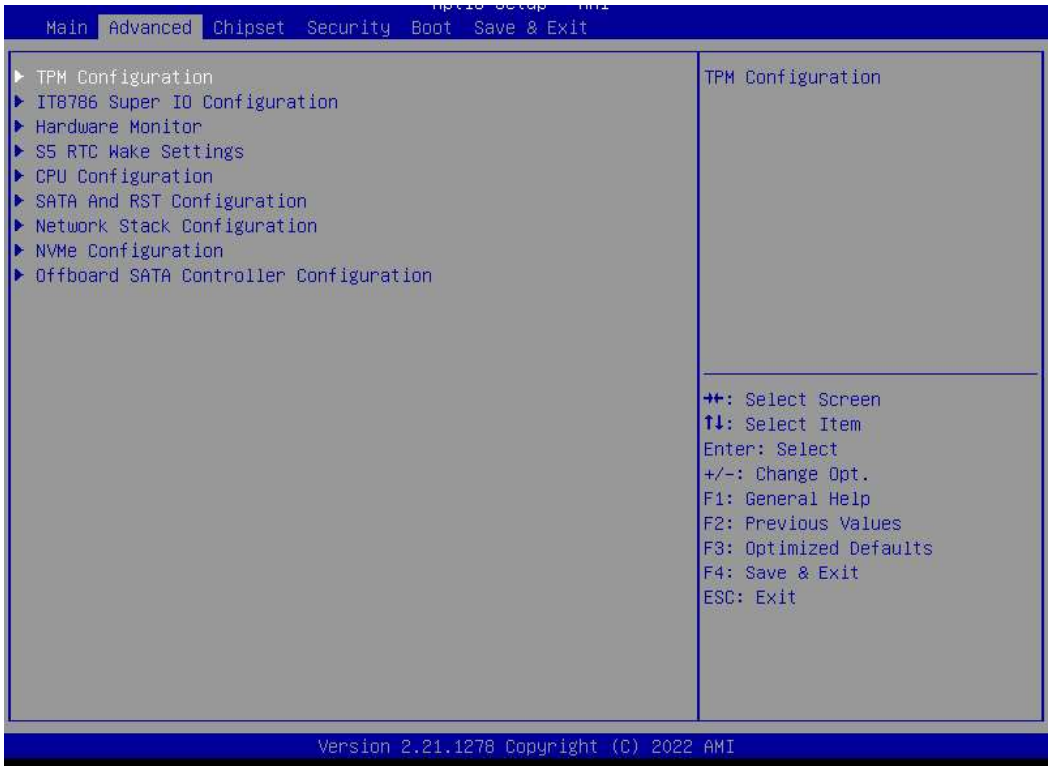
The main menu shows the basic system information.
Use arrow keys to move among the items.



Items	Description
Project Name	**Shows Project name information**
BIOS Version	**Shows the BIOS version of the system**
Build Date and Time	**Shows the Build Date and Time when the BIOS was created.**
LAN1 MAC Address	**Shows LAN1 MAC Address information**
LAN2 MAC Address	**Shows LAN2 MAC Address information**
LANA MAC Address	**Shows LANA MAC Address information**
LANB MAC Address	**Shows LANB MAC Address information**
Total Memory	**Shows the total memory size of the installed memory**
ME FW version	**Shows ME firmware version**
System Date	**Set the Date for the system (Format : Week - Month - Day - Year)**
System Time	**Set the time for the system (Format : Hour - Minute - Second)**

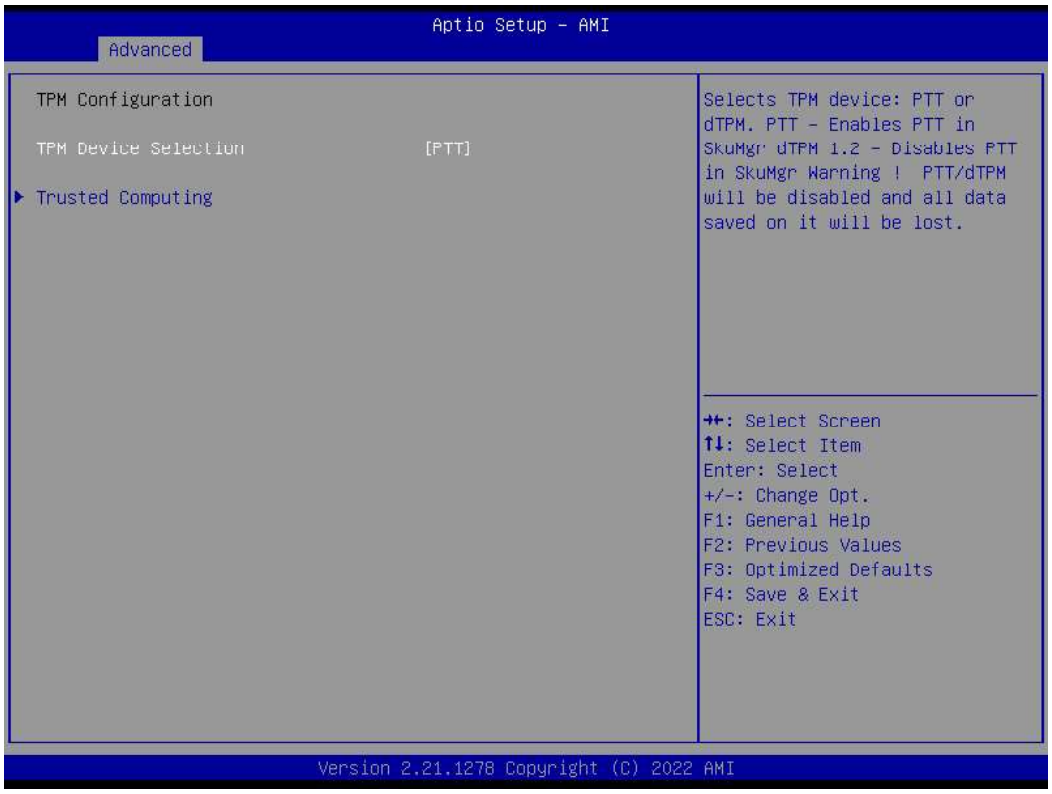
2. Advanced

The Advanced menu is to configure the functions of hardware settings through submenu. Use arrow keys to move among the items, and press <Enter> to access into the related submenu.



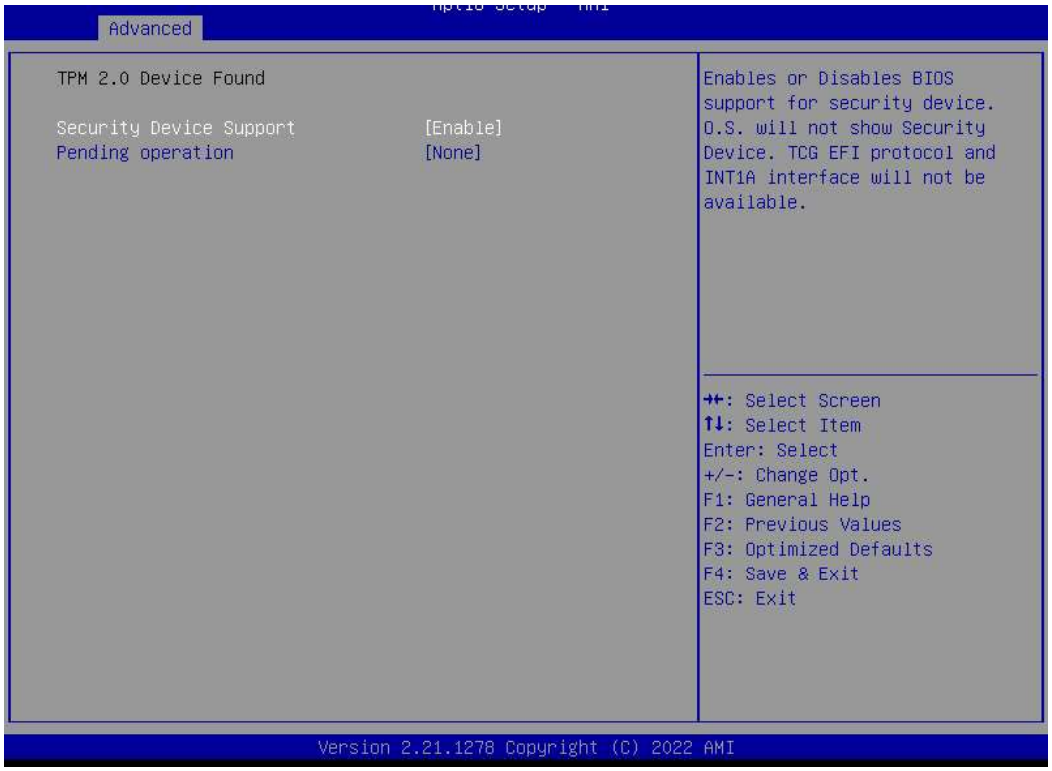
2.1 TPM configuration

Use TPM Configuration submenu to choose TPM interface.



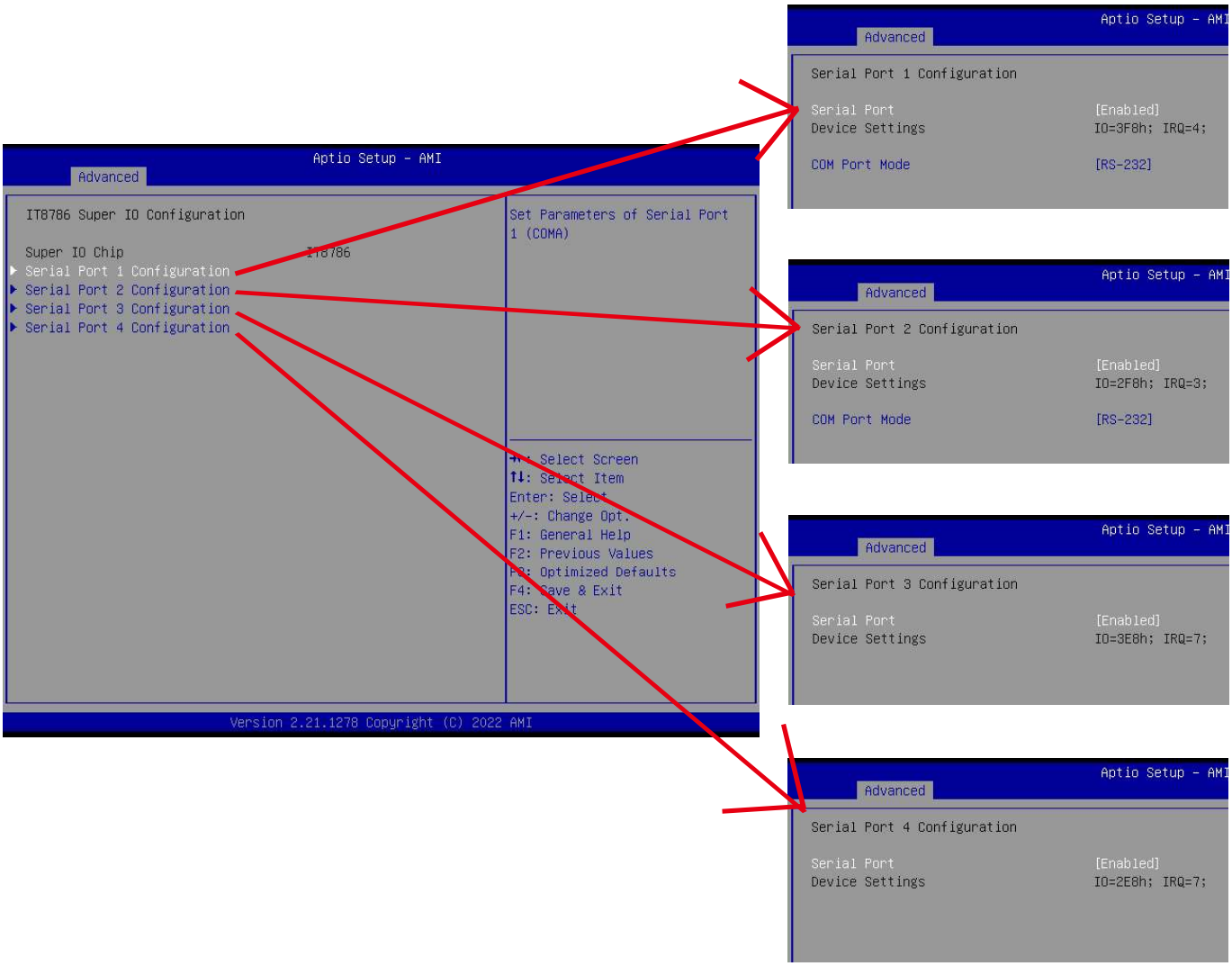
Item	Description
TPM Device Selection	**PTT : Internal TPM (Default setting)** **dTPM : External TPM (When using External TPM module or having TPM chip on MB)**

Trusted Computing : Shows TPM information, and TPM module configuration setting.



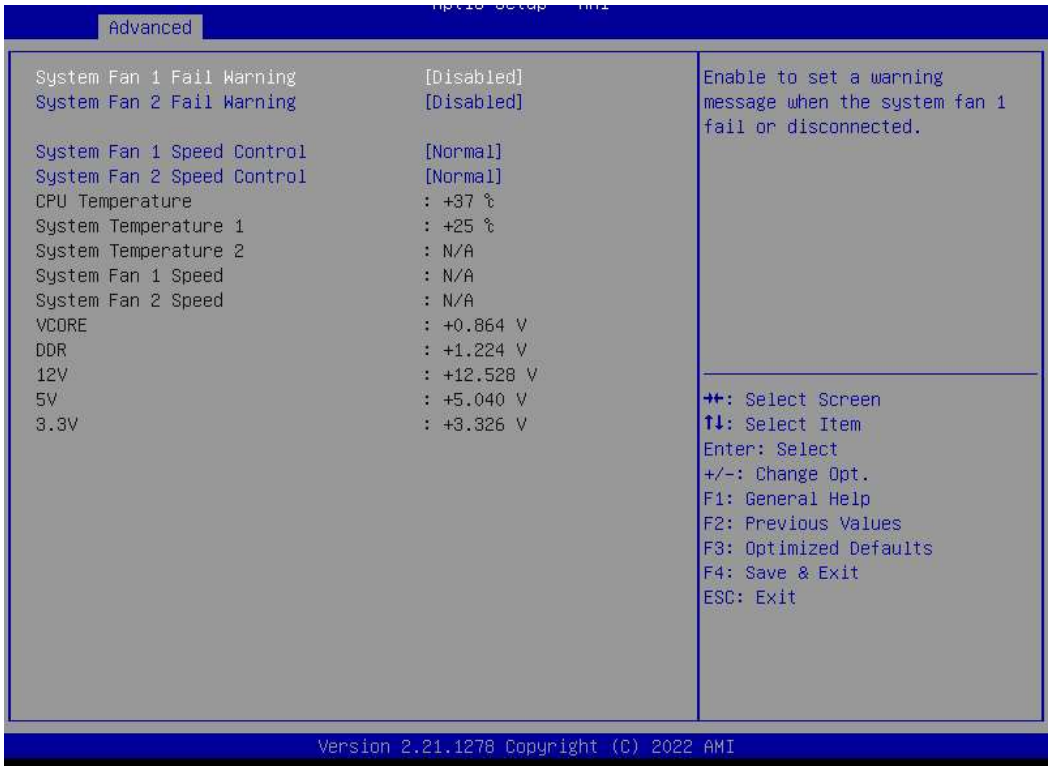
Item	Description
Security Device Support	**Enabled : Enables TPM feature (Default setting)** **Disabled : Disables TPM feature**
Pending operation	**None : No execution will be conducted (Default setting)** **TPM clear : Set to clear data on TPM**

2.2 IT8786 Super IO Configuration



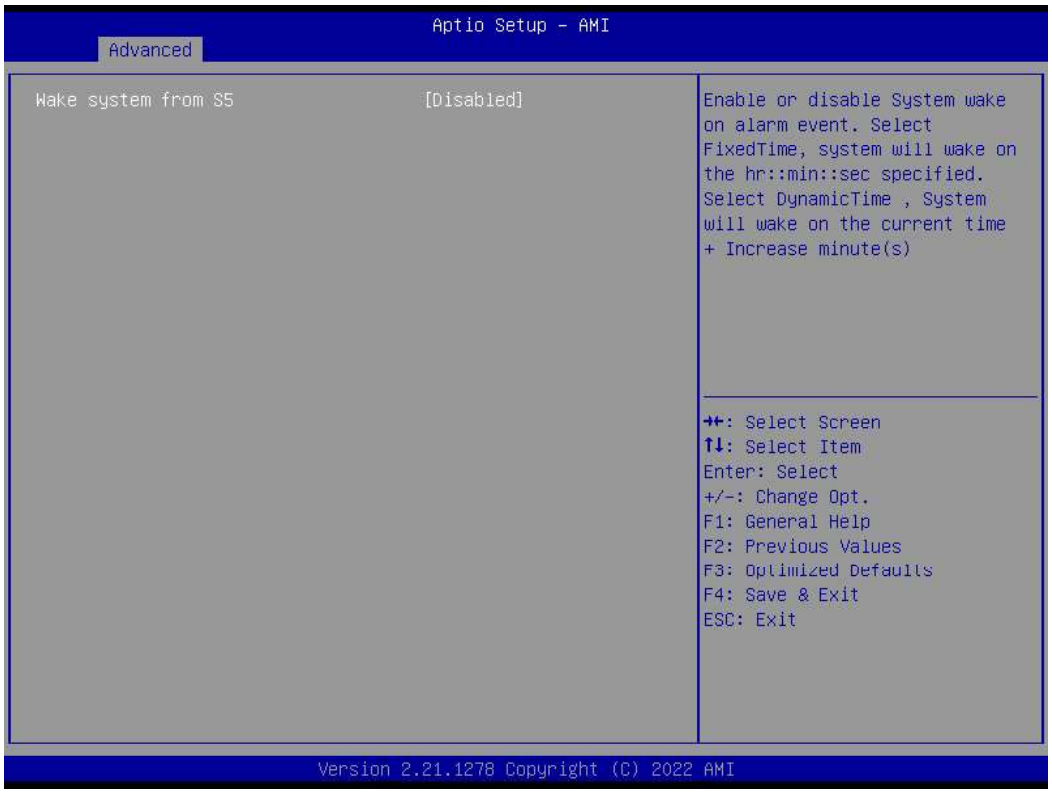
Item	Description
Super IO Chip	Shows Super I/O chip model
Serial Port 1 Configuration **Serial Port 2 Configuration**	Press [Enter] to configure advanced items : Serial Port : **Enabled : Enables allows you to configure the serial port settings** **Disabled : if Disabled, displays no configuration for the serial port** Device settings : Display the specified Serial Port base I/O address and IRQ COM Port Mode : Choose RS-232, RS-422, or RS-485 feature
Serial Port 3 Configuration **Serial Port 4 Configuration**	Press [Enter] to configure advanced items : Serial Port : **Enabled : Enables allows you to configure the serial port settings** **Disabled : if Disabled, displays no configuration for the serial port** Device settings : Display the specified Serial Port base I/O address and IRQ

2.3 Hardware Monitor



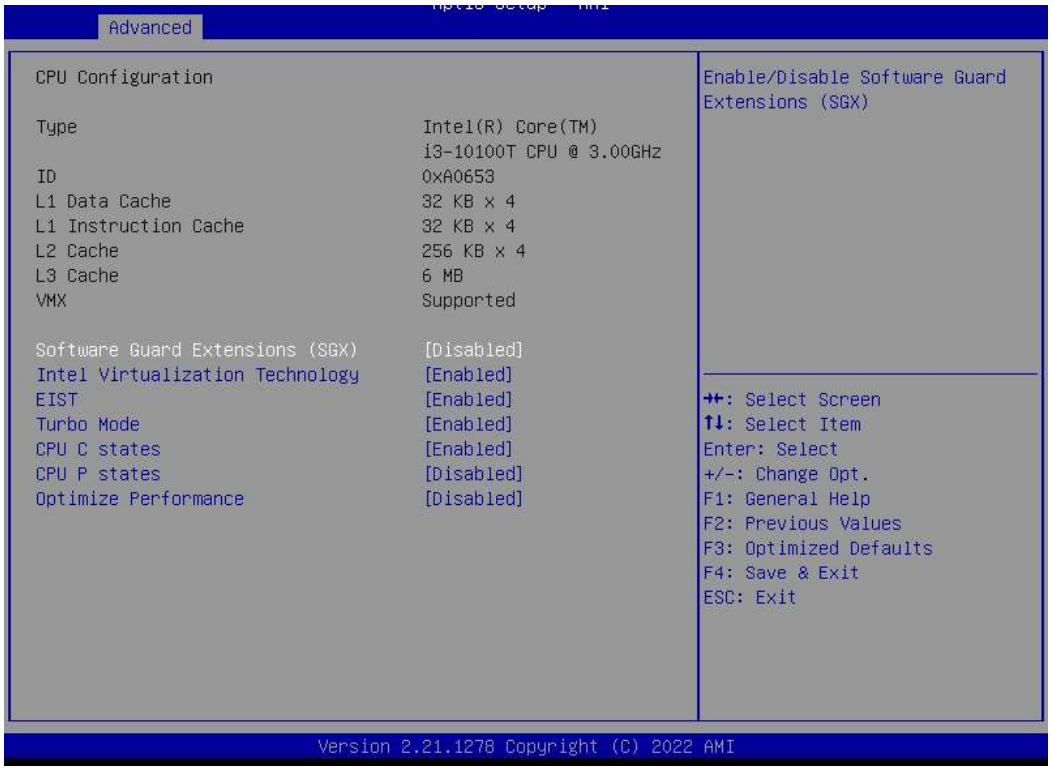
Item	Description
System Fan 1 Fail Warning	**Enabled : Enables System FAN 1 Fail warning alert function** **Disabled : Disables System FAN 1 Fail warning alert function (Default setting)** (This setting will effect only if you add the extend kit on the system)
System Fan 2 Fail Warning	**Enabled : Enables System FAN 2 Fail warning alert function** **Disabled : Disables System FAN 2 Fail warning alert function (Default setting)** (This setting will effect only if you add the extend kit on the system)
System Fan 1 Speed Control	**Normal : Fan speed set by BIOS default (Default setting)** **Full Speed : Set Fan operates at full speed** (This setting will effect only if you add the extend kit on the system)
System Fan 2 Speed Control	**Normal : Fan speed set by BIOS default (Default setting)** **Full Speed : Set Fan operates at full speed** (This setting will effect only if you add the extend kit on the system)
CPU Temperature	Shows current CPU temperature
System Temperature 1	Shows current System temperature
System Temperature 2	Shows current System temperature for the extend kit of the system (This numerical value will shows only if you add the extend kit on the system)
System Fan 1 Speed	Shows current System fan 1 Speed for the extend kit of the system (This numerical value will shows only if you add the extend kit on the system)
System Fan 2 Speed	Shows current System fan 2 Speed for the extend kit of the system (This numerical value will shows only if you add the extend kit on the system)

2.4 S5 RTC Wake Settings



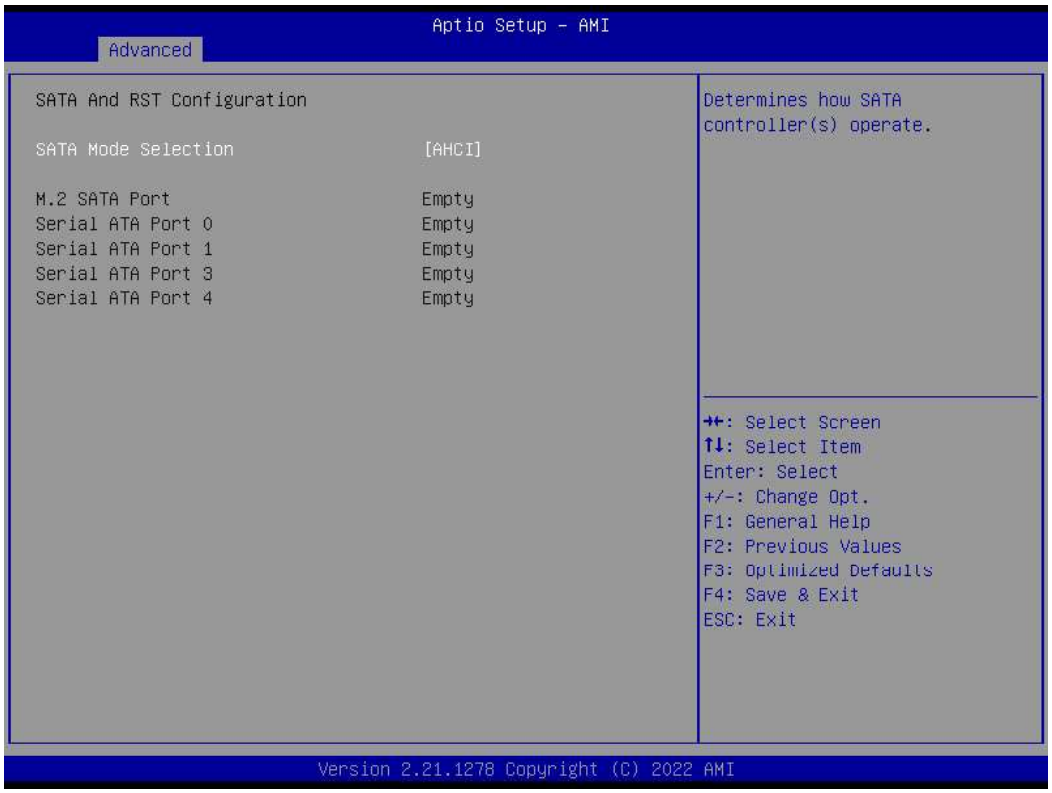
Item	Description
Wake system from S5	Enable or Disable System to wake on a specific time. **Disabled : Disables system to wake on a specific time (Default setting)** **Fixed Time : Enables system to wake on a specific time (Format : hr : min : sec)**

2.5 CPU Configuration



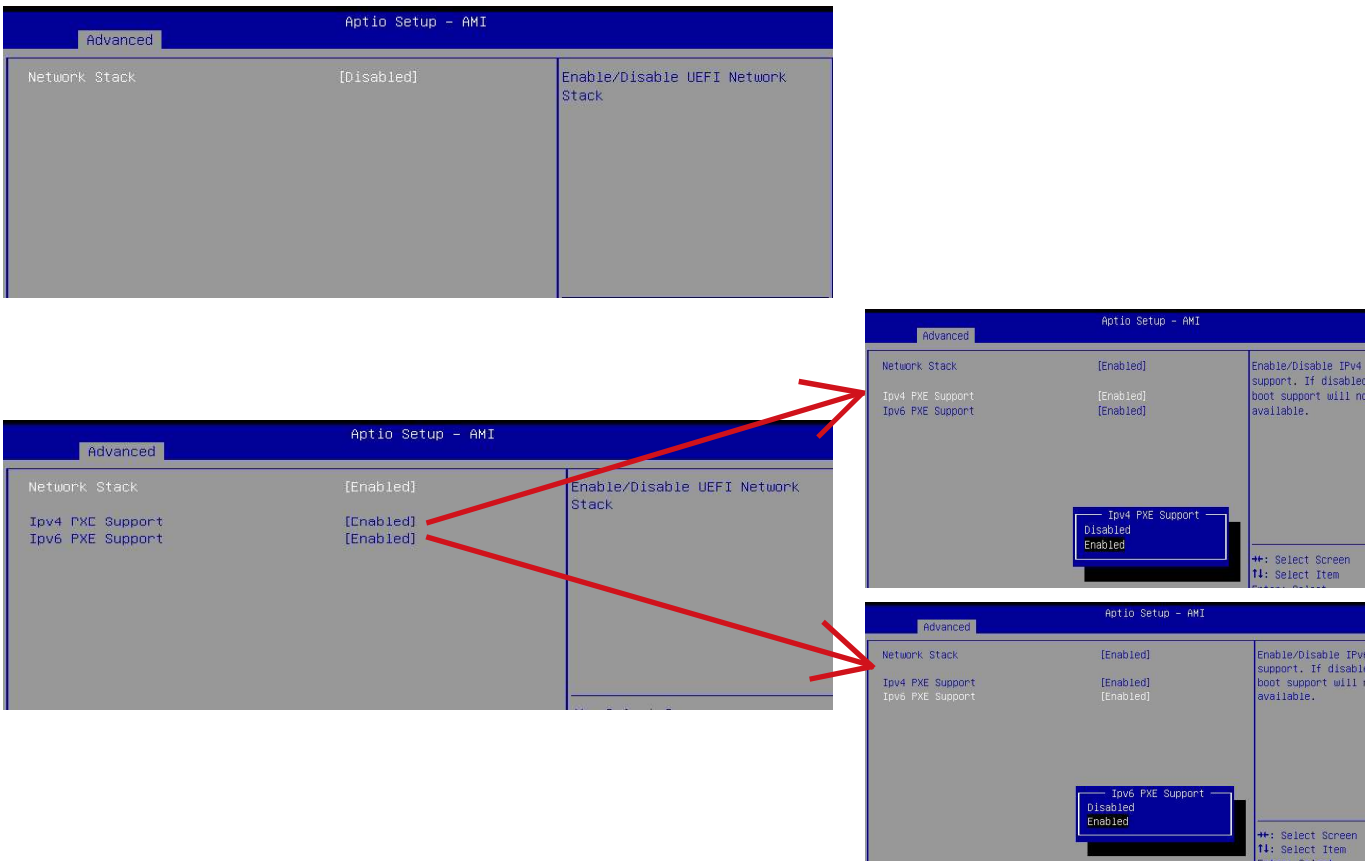
Item	Description
Software Guard Extensions (SGX)	**Disabled : Disables Software Guard Extensions (SGX) (Default seeting)** **Enabled : Enables Software Guard Extensions (SGX)** **Software Controlled : If this item is selected, SGX will be controlled by SGX application for UEFI boot OS**
Intel Virtualization 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. **Enabled : Enables Intel Virtualization Technology (Default setting)** **Disabled : Disables Intel Virtualization Technology**
EIST	According to System loading, Enhanced Intel SpeedStep Technology (EIST)will automatically adjust the CPU voltage and core frequency to decrease heat and power consumption for power saving. **Enabled : Enables EIST Technology (Default setting)** **Disabled : Disables EIST Technology**
CPU C states	Command CPU to enter into low power consumption mode when CPU is under idle mode. **Enabled : Enables CPU C states function (Default setting)** **Disabled : Disables CPU C states function**
CPU P states	CPU will adjust frequency depends on it's loading. **Enabled : Enables CPU P states function** **Disabled : Disables CPU P states function (Default setting)**
Optimize Performance	To optimize CPU performance. **Enabled : Enables optimize performance function** **Disabled : Disables optimize performance function (Default setting)**

2.6 SATA And RST Configuration



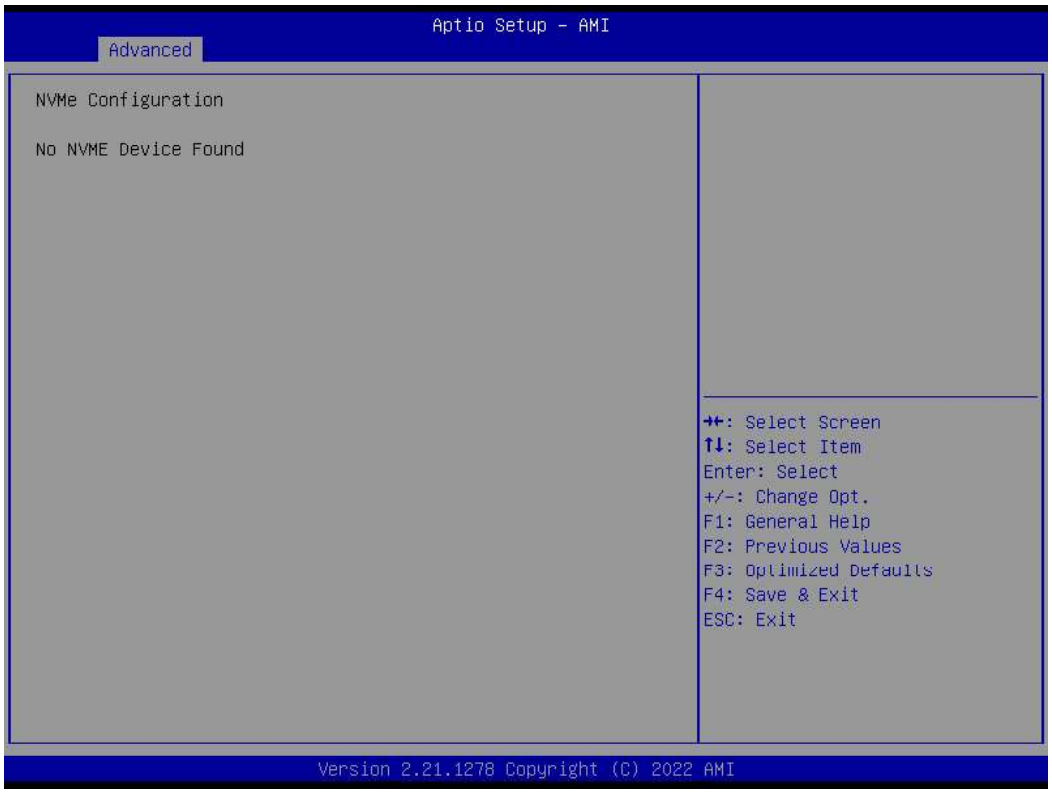
Item	Description
SATA Mode Selection	Set SATA controller to AHCI mode
M.2 SATA Port	shows M.2 SSD information
Serial ATA Port 0	shows 2.5" SATA HDD/SSD information
Serial ATA Port 1	
Serial ATA Port 3	
Serial ATA Port 4	

2.7 Network Stack Configuration

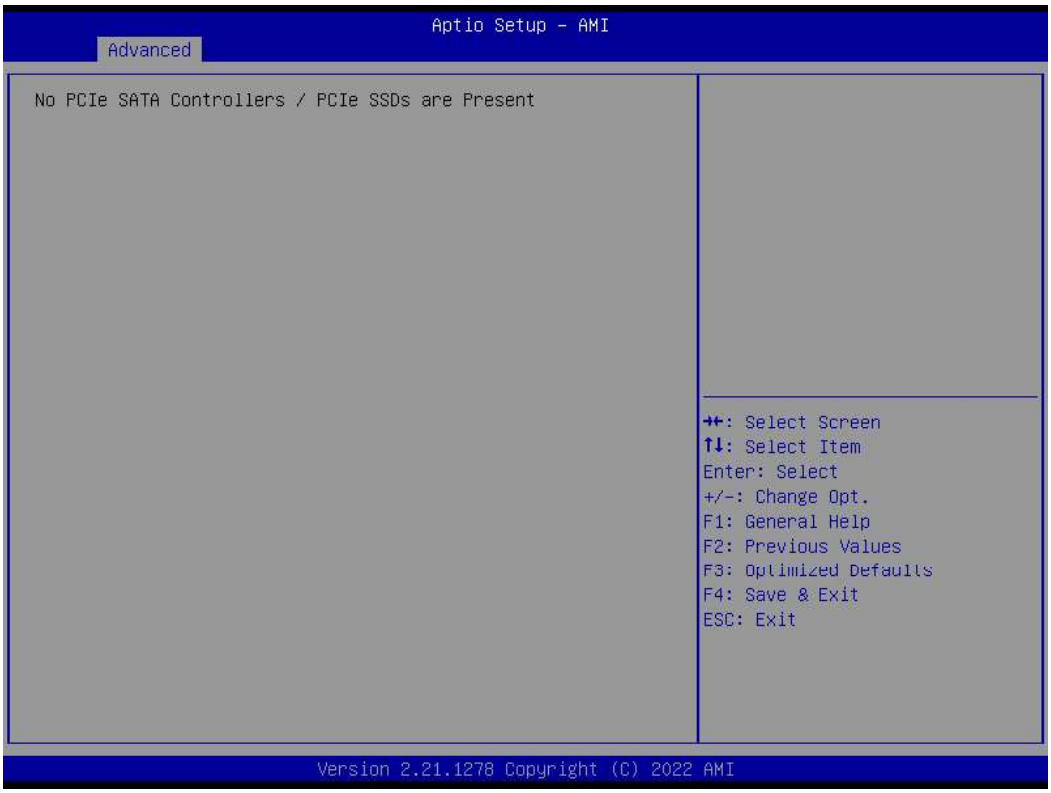


Item	Description
Network Stack	When system is power on, install LAN driver under UEFI mode **Disabled : Disables UEFI Network Stack (Default setting)** **Enabled : Enables UEFI Network Stack**
Ipv4 PXE Support	When Network stack is enabled : **Disabled : Disables Ipv4 PXE Support** **Enabled : Enables Ipv4 PXE Support**
Ipv6 PXE Support	When Network stack is enabled : **Disabled : Disables Ipv6 PXE Support** **Enabled : Enables Ipv6 PXE Support**

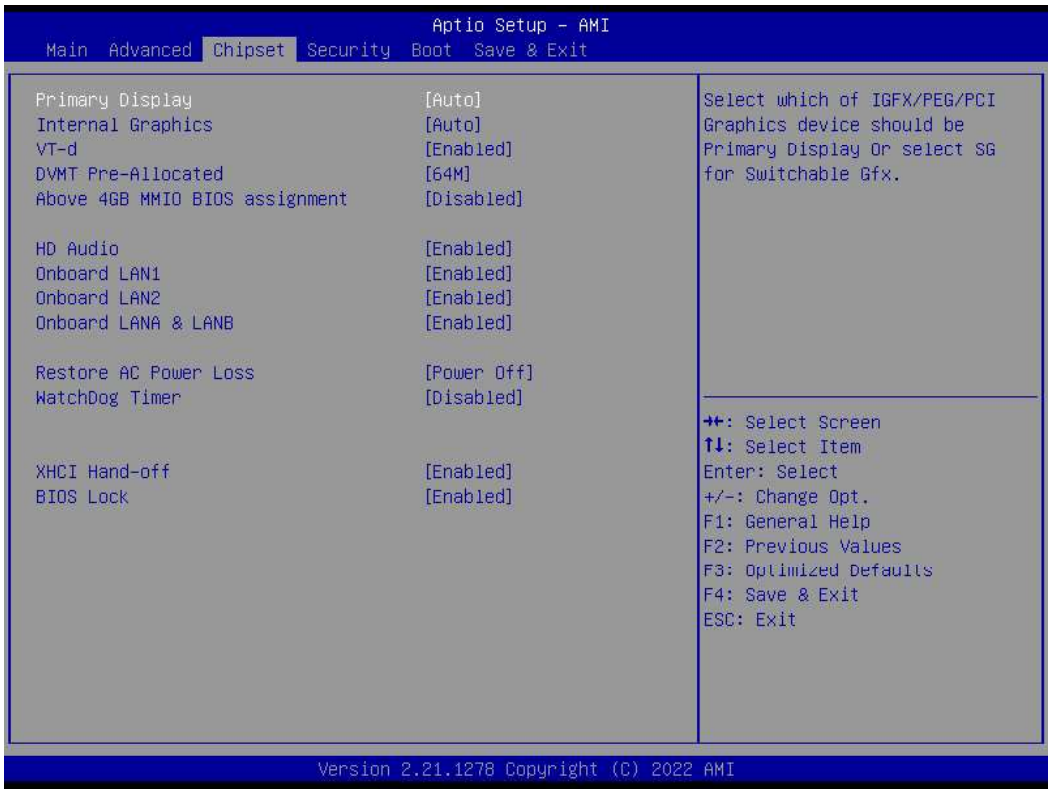
2.8 NVMe Configuration



2.9 Offboard SATA Controller Configuration

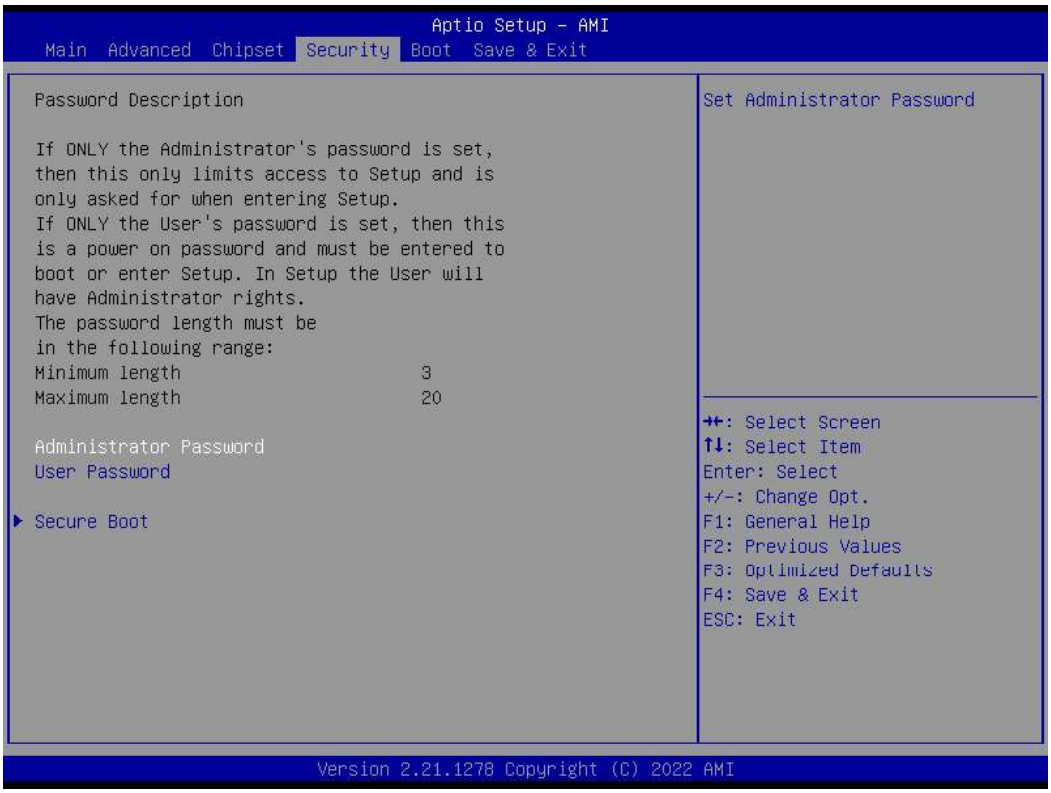


3 Chipset



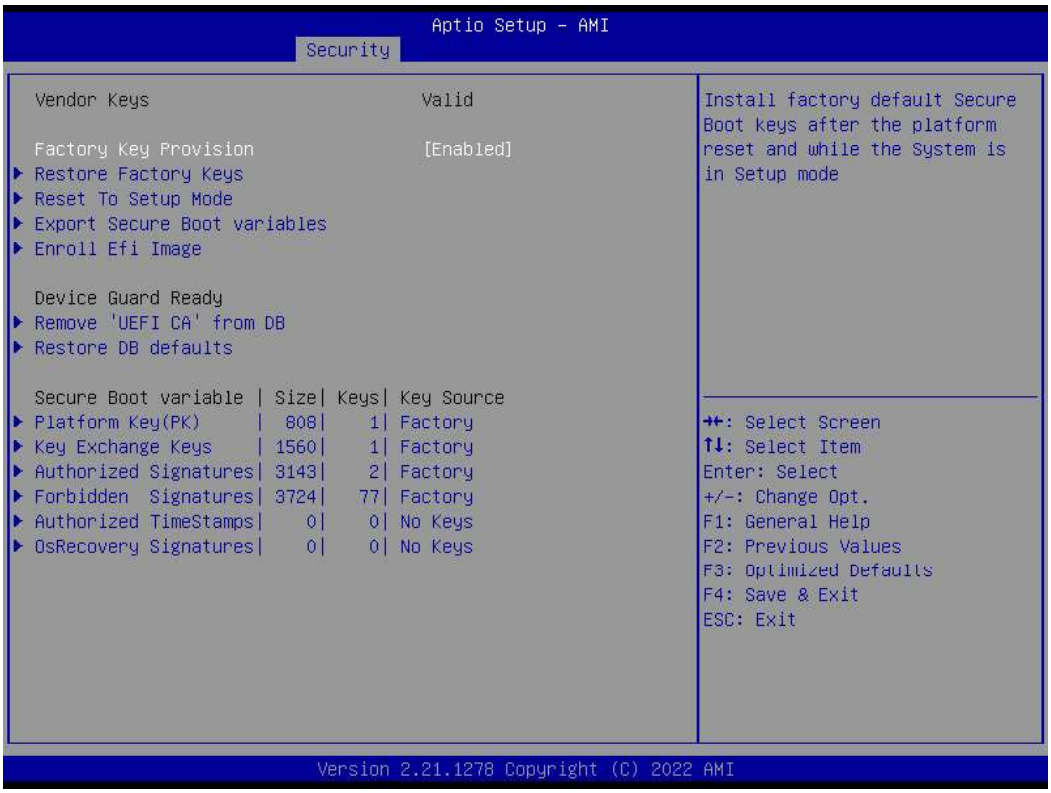
Item	Description
Primary Display	**Auto : When detects PCIe Graphic card, primary display will set to PCIe (Default setting)** **IGFX : Force IGFX Graphic card as the primary display device** **PEG : Force PEG Graphic card as the primary display device**
Internal Graphics	Enables or disables the onboard graphics function **Auto : Detects display device automatically (Default setting)** **Enabled : Enables onboard graphics** **Disabled : Disables onboard graphics**
VT-d	**Enabled : Enables VT-d function (Default setting)** **Disabled : Disables VT-d function**
DVMT Pre-Allocated	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor **Option items : 32M , 64M(Default setting), 128M, 256M**
Above 4GB MMIO BIOS assignment	Enable or disable to re-allocate memory space for device cards when more than one external graphic cards installed. (This function could be only used under 64 bit operating system with above 4 GB address space) **Enabled : Enables Above 4GB MMIO BIOS assignment function** **Disabled : Disables Above 4GB MMIO BIOS assignment function (Default setting)**
HD Audio	Enable/Disable onboard audio controller **Enabled : Enables onboard audio controller (Default setting)** **Disabled : Disables onboard audio controller**
Onboard LAN1 **Onboard LAN2** **Onboard LANA & LANB**	Enable/Disable onboard LAN controller **Enabled : Enables onboard LAN controller (Default setting)** **Disabled : Disables onboard LAN controller**
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occured **Power off : Do not power on when the power is back (Default setting)** **Power on : System power on when the power is back** **Last state : Restore the system to the state before power loss occures**
Watchdog Timer	Enable/Disable Watchdog Timer function **Disabled : Disabled Watchdog Timer function (Default setting)** **30s : delay watchdog for 30 seconds.** **60s : delay watchdog for 60 seconds.**
XHCI Hand-off	Enable/Disable XHCI Hand-off function **Enabled : Enables XHCI Hand-off function (Default setting)** **Disabled : Disables XHCI Hand-off function**
BIOS Lock	Enable/Disable BIOS Lock function **Enabled : Enables BIOS Lock function (Default setting)** **Disabled : Disabled BIOS Lock funtion**

4 Security



Item	Description
Administrator Password	To set up Administrator's password **Minimum length : 3** **Maximum length : 20**
User Password	To set up User's password **Minimum length : 3** **Maximum length : 20**
Secure Boot	Press <Enter> to configure the advanced items

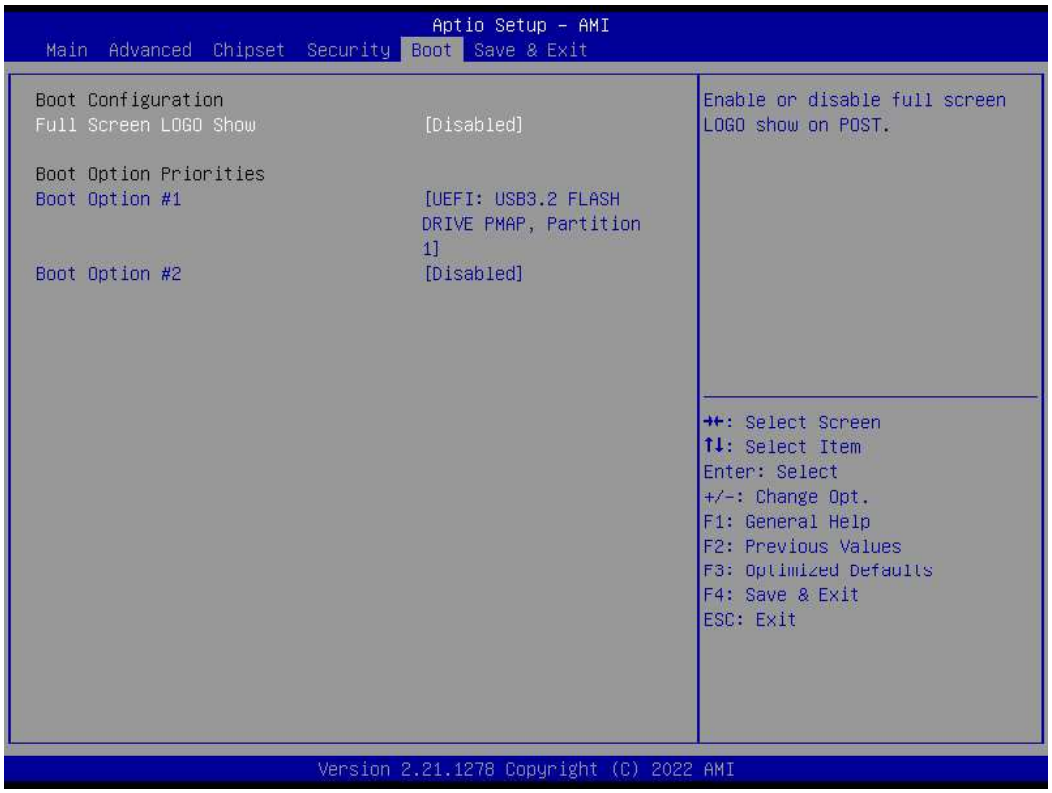
Item	Description
Secure Boot	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates **Enabled : Enables Secure Boot function** **Disabled : Disables Secure Boot function (Default setting)**
Secure Boot Mode	**Standard : Standard mode** **Custom : Custom mode (Default setting)**
Restore Factory Keys	To restore factory settings **Yes : Agree to restore factory settings** **No : Cancel to restore factory settings**
Reset To Setup Mode	**Yes : Agree to setup mode** **No : Cancel to setup mode**
Key Management	Enables expert users to modify Secure boot policy variables without full authentication Press <Enter> to configure the advanced items



Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode **Enabled : Enables Factory Key Provision (Default setting)** **Disabled : Disables Factory Key Provision**
Restore Factory Keys	To restore factory settings **Yes : Agree to restore factory settings** **No : Cancel to restore factory settings**
Reset To Setup Mode	**Yes : Agree to setup mode** **No : Cancel to setup mode**
Export Secure Boot variables	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device
Enroll Efi Image	Allow the image to run in Secure Boot mode
Remove 'UEFI CA' from DB	To remove 'UEFI CA' from database **Yes : Agree to remove 'UEFI CA' from database** **No : Cancel to remove 'UEFI CA' from database**
Restore DB defaults	Restore DB variables to factory defaults **Yes : Agree to restore DB defaults** **No : Cancel to restore DB defaults**

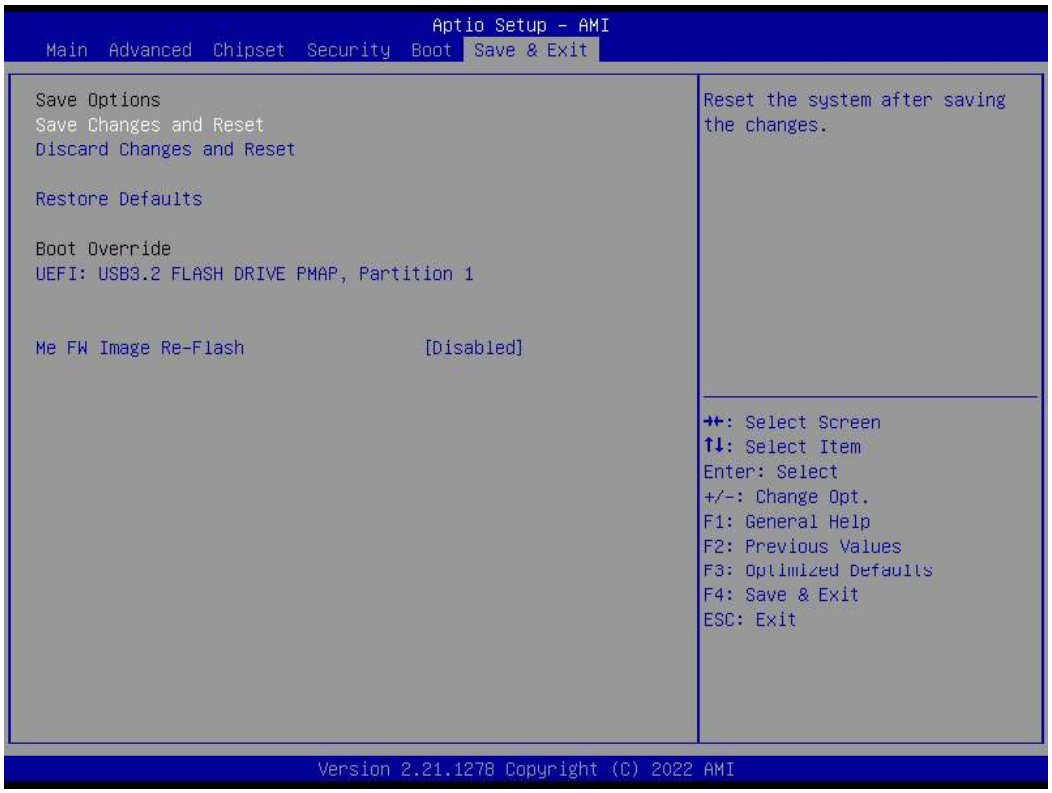
Item	Description
Platform Key (PK)	These items allows you to enroll factory defaults or load Certificates from a file.
Key Exchange Keys	
Authorized Signatures	
Forbidden Signatures	
Authorized TimeStamps	
OsRecovery Signatures	

5 Boot



Item	Description
Full Screen LOGO Show	Enable/Disable full screen LOGO show on POST screen **Enabled : Enables Full screen LOGO Show on POST screen (Default setting)** **Disabled : Disables Full screen LOGO Show on POST screen**
Boot Option #1 **Boot Option #2**	Shows the information of the storage that be installed in the system **Choose/set the boot priority**

6 Save & Exit



Item	Description
Save Changes and Reset	After configuring all the options that you wish to change, choose this option to save all the changes and reboot the system **Yes : Agree to save and reset** **No : Cancel to save and reset**
Discard Changes and Reset	Choose this option to reboot the system without saving any changes **Yes : Agree to discard changes and reset** **No : Cancel to discard changes and reset**
Restore Defaults	Restore/Load default values for all the setup options **Yes : Agree to load optimized defaults** **No : Cancel to load optimized defaults**
Me FW Image Re-Flash	Enable/Disable Me FW image re-flash function **Enabled : Enables Me FW image re-flash function** **Disabled : Disables Me FW image re-flash function (Default setting)**