FPC-8208-G1

Ruggedized Edge AI Computing Box PC with Intel® 14th Gen Core™ i9/i7/i5/i3 Supporting NVIDIA® 100W GPU

User Manual

Version 1.0

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2026.08

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Revision History

Version	Release Time	Description
1.0	2026.08	Initial release

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Copyright Notice

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Declaration of Conformity

CE

The CE symbol on the computer 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 an 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 manual.
    e. The equipment has been dropped or damaged.
    f. The equipment has obvious signs of breakage.
11. Keep this User 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.

Replacing Lithium Battery

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 manual first at:

http://www.arbor-technology.com

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

E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of one 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.

The vendor disclaims 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. The Computer



- Intel® 14th/13th/12th generation Core™ 35W/65W CPU
- Supports NVIDIA® GeForce® GTX 16 series GPU (up to 100W GPU)
- 9V to 36V DC Input with Power Turn-On/Off Delay & Ignition Power Management
- Supports four independent displays (1 x HDMI, 1 x VGA, 2 x DisplayPort)
- 1 x full-size mPCIe w/SIM slot for Wi-Fi/BT/LTE/GPS
- 1 x M.2 B-Key (2242/3042/3052) w/ SIM slot for 4G/5G/GPS
- 1 x M.2 E-Key (2230) for Wi-Fi / BT
- Front-accessible I/O interface for easy maintenance
- Supports RAID 0/1 configurations
- Supports dTPM2.0 & Windows® 11

1.2. About this Manual

This manual is intended for experienced users and system integrators with a solid understanding of PC hardware. If you are not sure about the description herein, consult your vendor before further handling.

We recommend keeping a copy of this manual for quick reference during future maintenance. Thank you for choosing ARBOR products.

1.3. Specifications

System	
CPU	Intel® 14th/13th/12th Gen Core™ CPU (LGA1700 socket, 35W/65W)
Memory	2 x 262-pin DDR5 SO-DIMM sockets, supporting 5600 MHz SDRAM up to 96 GB
Chipset	Intel® Q670E
Graphics	Integrated Intel® HD Graphics
SATA	2 x Serial ATA ports with 600MB/s HDD transfer rate
LAN Chipset	2 x Intel® WGI226LM 2.5GbE LAN 1 x Intel® WGI210AT GbE controller 1 x Intel® WGI219LM GbE controller w/ iAMT
Watchdog Timer	1~255 levels reset
TPM	Supports dTPM2.0
I/O	
Serial Port	2 x RS-232/422/485 by DB-9 connector (COM1~2)
	2 x RS-232 by DB-9 connector (COM3~4)
USB Port	8 x USB-A 3.2 Gen2 (10Gbps) ports
	2 x USB-A 3.2 Gen1 (5Gbps) ports
LAN	2 x RJ-45 GbE LAN ports (include PHY port*1)
	2 x RJ-45 2.5GbE LAN ports
Video Port	1 x VGA, resolution up to 1920 x 1200
	2 x DP1.4a, resolution up to 7680 x 3840 @60Hz
	1 x HDMI 2.1, resolution up to 7680 x 3840 @60Hz
Selectable Port	1 x DB25 connector for DIO (8 in/8 out) port or LPT port (either one, default is DIO)
Audio	2 x 3.5mm Audio Jack for Mic-in and Line-out
Expansion Bus	1 x full-size mini-PCIe (PCIe Gen3 x1 + USB2.0) w/ 1 x SIM slot for Wi-Fi/ BT/LTE/GPS module
	1 x M.2 B-Key 2242/3042/3052 (PCIe Gen3 x1 + USB3.0 + USB2.0) w/ 1 x SIM slot for 4G/5G/GPS module
	1 x M.2 E-Key 2230 (PCIe Gen3 x1 + USB2.0) for Wireless
	2 x PCIe x4 slot
	1 x PCIe x16 slot (via x8 lanes) Support up to 100W GPU
Environmental	
Operating Temp.	-20 ~ 70°C (-4 ~ 158°F), ambient w/ air flow (w/ 35W TDP CPU, fanless) -20 ~ 55°C (-4 ~ 131°F), ambient w/ air flow (w/ 65W TDP CPU, fanless) -20 ~ 45°C (-4 ~ 113°F), w/ GTX-1660 GPU
Storage Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10 ~ 95% @ 70°C (non-condensing)

Vibration	3 Grms/ 5~500Hz/ random operation w/ SSD
Shock	Operating 40G (11ms), Non-operating 60G with SSD
Qualification	
Certification	CE, FCC Class A
Power Requirement	
Power Input	DC 9~ 36V input Max. 16A/300W (w/ 4-pin DC input terminal block, combining remote power on/off switch)
Ignition Switch	2-pin terminal block: IGN, GND
Power Consumption	MAX 65W (w/35W TDP CPU, w/o I/O card) MAX 95W (w/65W TDP CPU, w/o I/O card)
Storage	
Type	1 x M.2 M-Key 2242/2280 (PCIe Gen4 x4 + SATA) for storage
	2 x 2.5" SATA HDD/SSD; supports RAID 0/1
Mechanical	
Button	1 x Power Button with dual LED color (Red in standby, Green in Power-on)
Others	4 x Antenna holes
Construction	Aluminum alloy
Mounting	Wall-mount
Weight	7.35 kg (16.20 lb)
Dimensions (W x H x D)	225 x 190 x 292 mm (8.86” x 7.48” x 11.50”)
OS Support	
Windows 10 IoT / Windows 11 IoT Linux (Ubuntu 22.04)	
Ordering Information	
FPC-8208-G1	Ruggedized Edge AI Computing Box PC with Intel® 14th Gen Core™ i9/i7/i5/ i3 w/ expansion fan and PEG 8-pin power cable Supporting NVIDIA® 100W GPU

1.4. Inside the Package

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



1 x FPC-8208-G1



1 x Accessory Box that contains the following items:

- 1 x Information Card
- 1 x Terminal Block and screw accessory Kit
- 1 x Heat-Sink Plate
- 2 x SATA cable
- 1 x GPU cable

1.5.1. Optional Accessories

The following items are normally optional, but some vendors may include them as a standard package, or some vendors may not carry all the items.

WMK-7000	Wall-mount kit for FPC-7XXX Series	
PAC-120W6B-FSP-ES	120W AC/DC 19V adapter kit w/ 2-pin/ 3-pin/ 4-pin block	
PAC-180W6C-FSP-ES	180W AC/DC 19V adapter kit w/ 2-pin/ 3-pin/ 4-pin block	
PAC-280W6C-MW	280W AC/DC 24V adapter kit w/ 2-pin/ 3-pin/ 4-pin block	

1.5.2. Optional Configuration (CTOS* Kit)

Customize the computer to meet your requirements by selecting one or more components from the list below to be fabricated to the computer.

WiFi-RT1550	Realtek RTL8852CE M.2 2230 Wi-Fi 6E + BT 5.4 Module Kit (w/ 2 x 30cm RF Cable)	
ANT-T15	1 x Wi-Fi 6E Tri-band 2.4G/5G/6G Dipole Antenna Kit	
Core™ i9-14900	Intel® 14th Gen Core™ i9-14900 processor, 36M, 2G	
Core™ i9-14900T	Intel® 14th Gen Core™ i9-14900T processor, 36M, 1.1G	
Core™ i7-14700	Intel® 14th Gen Core™ i7-14700 processor, 33M, 2.1G	
Core™ i7-14700T	Intel® 14th Gen Core™ i7-14700T processor, 33M, 1.3G	
Core™ i5-14500	Intel® 14th Gen Core™ i5-14500 processor, 11.5M, 2.6G	
Core™ i5-14500T	Intel® 14th Gen Core™ i5-14500T processor, 24M, 1.7G	
Core™ i3-14100	Intel® 14th Gen Core™ i3-14100 processor, 12M, 3.5G	
Core™ i3-14100T	Intel® 14th Gen Core™ i3-14100T processor, 12M, 2.7G	
MK-5C-8G/16G/32G/48G	DDR5-4800/5600 8GB/16GB/32GB/48GB SDRAM DIMM Kit	
FAN-4020	Fan kit (40 x 40 x 20 mm, L=250mm, 2P)	

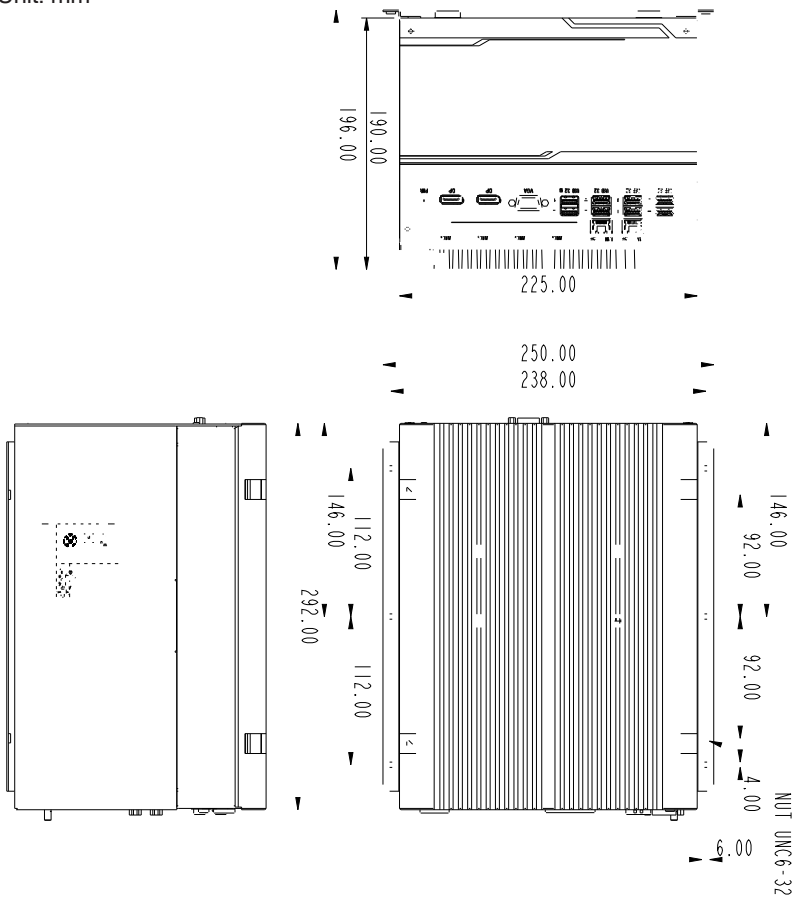
**CTOS means Configuration-to-Order Service.*

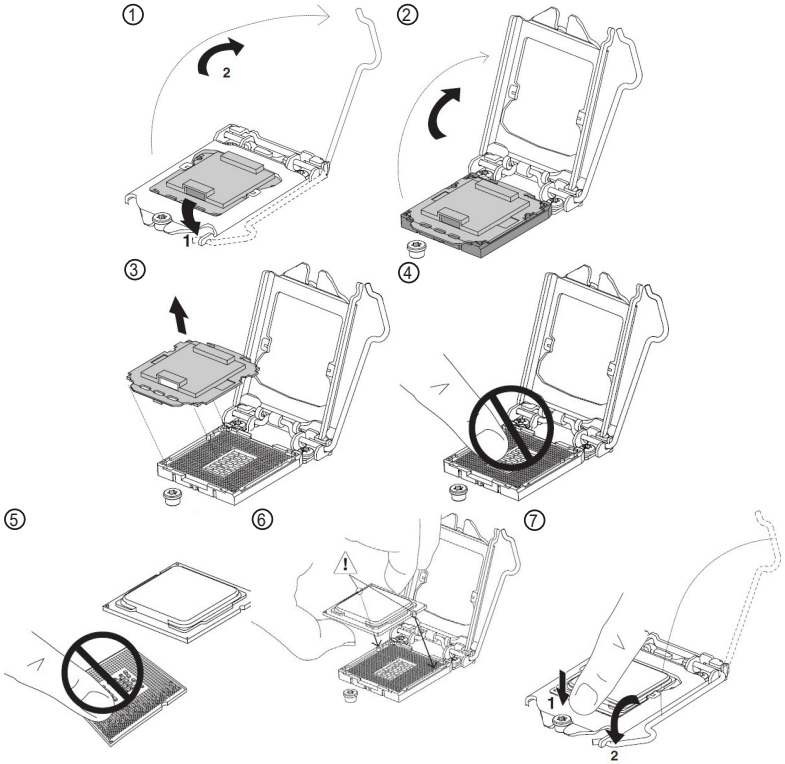
Chapter 2

System Overview

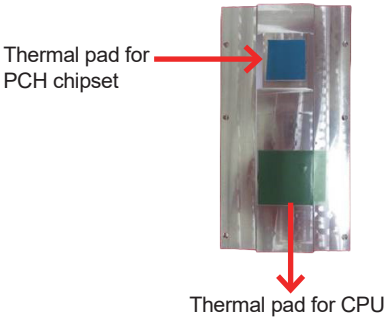
2.1. Dimensions

Unit: mm

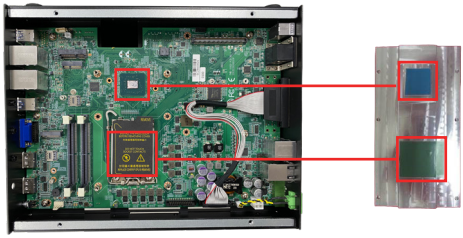




3. Find the heat sink in the accessory box. Remove the protective film before applying the heat sink.



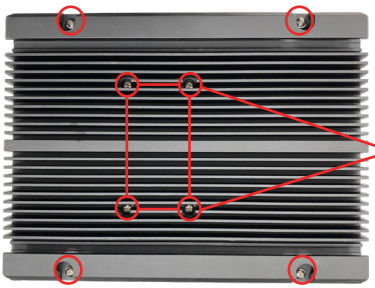
4. Place the heat sink on the CPU and PCH. Make sure that the thermal pad is in complete contact with the PCH chipset and the CPU to avoid overheating problems. If not, it may cause the system to become unresponsive, unstable or damaged.



5. Secure the heat sink with screws.

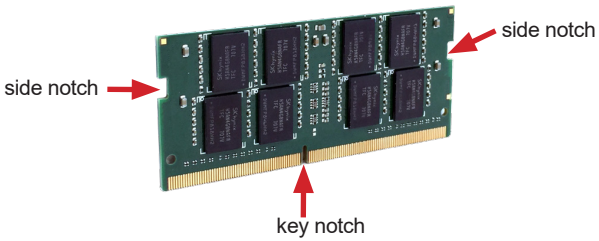


6. Restore the top cover to the computer by fastening the 8 screws as shown below. Note that the 4 screws in the middle are used to secure the top cover to the heat sink. Make sure they are tightened to ensure the heat dissipation.



4.1.3. Install/Uninstall Memory Modules

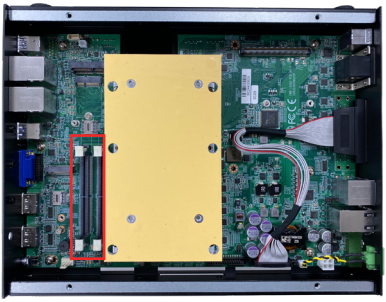
The main board has two memory module (DIMM) sockets. Increase memory capacity to make programs run faster on the system. The memory module should be a 262-pin DDR5 with a “key notch” off the centre among the pins, which enables the memory module for particular applications. There are notches at each left and right side of the memory module to help fix the module in the socket.



To install a DDR5 memory module:

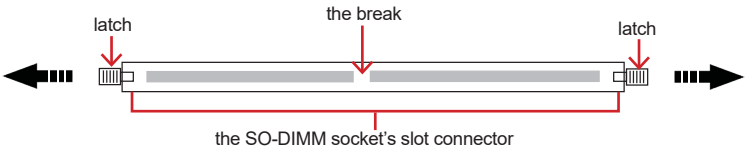
1. Remove the top cover from the computer as described in 4.1.1.1. Remove Top Cover on page 32.

2. Locate the SO-DIMM sockets on the main board.



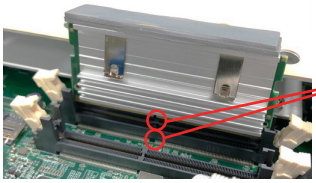
The SO-DIMM sockets are vertical type, and each socket has two latches for fixing the memory modules. The memory module can only be installed by one direction due to the notch.

3. Pull back both latches from the socket.

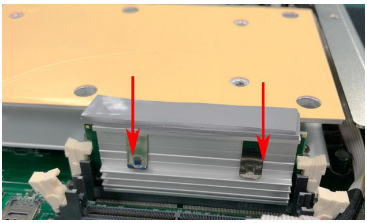


Vertical-type SO-DIMM socket (overview)

4. Confront the memory module's edge connector side at the SO-DIMM socket. Position the memory module at the SO-DIMM socket, with the memory module's key notch aligned at the break of the SO-DIMM's slot connector.



5. Vertically plug the memory module to the SO-DIMM socket. "Fully" plug the memory module until both latches auto-lock the memory module in place.

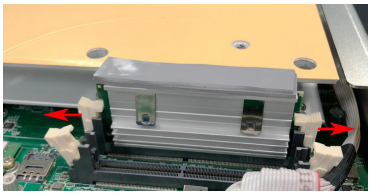


6. Restore the top cover to the computer.

To uninstall a DDR5 memory module:

1. Pull back both latches from the SO-DIMM socket.

   The DDR5 memory module will be auto-released from the socket.

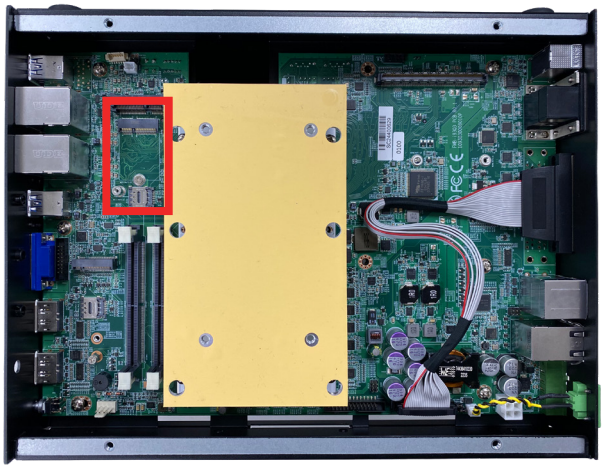


2. Remove the memory module.
3. Restore the top cover to the computer.

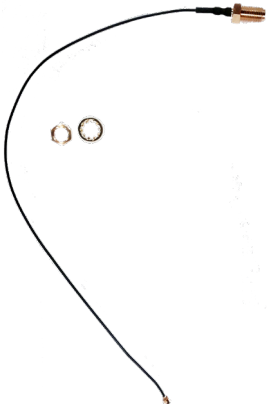
4.1.4. Install Wi-Fi Module

1. Remove the top cover from the computer as described in Section 4.1.1.1. Remove Top Cover on page 32.

2. Locate the **M.2 E-Key** socket for wireless module.



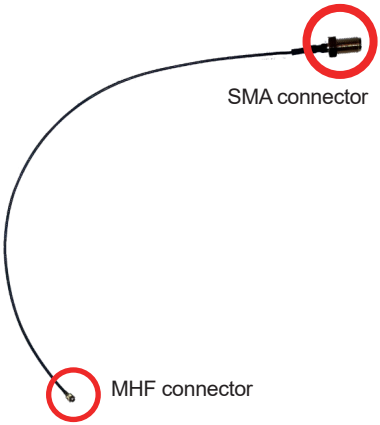
3. Prepare the optional Wi-Fi module kit. The module is a **M.2 E-Key** socket form factor, with two U.FL connectors, one is “MAIN“, and the other is “AUX“.



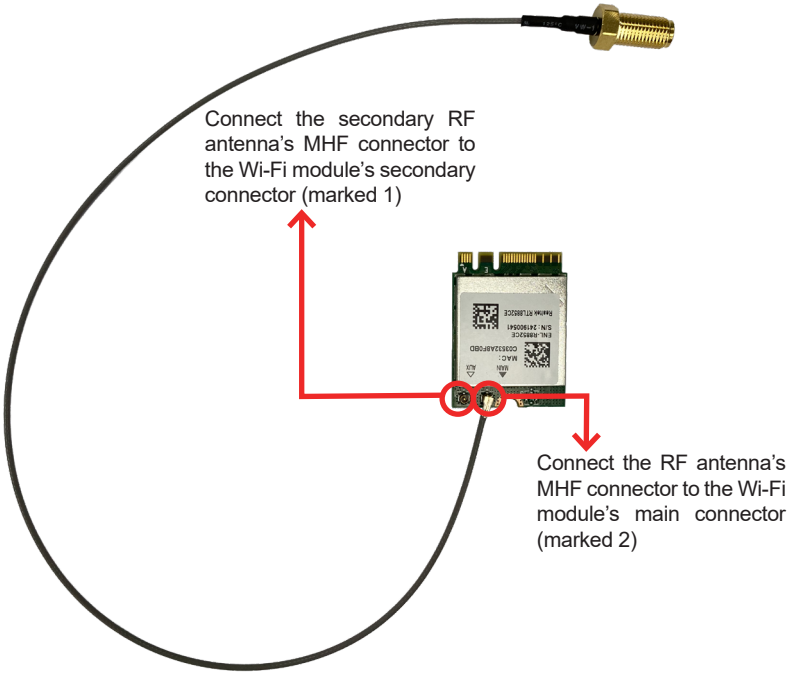
Two U.FL connectors, one is “MAIN” (marked 2), the other is “AUX” (marked 1).



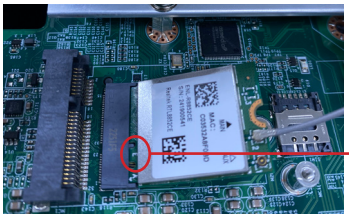
4. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.



5. Connect the RF antenna's MHF connector to the Wi-Fi module's main connector marked 2. If you are going to connect a secondary antenna, connect it to the connector marked 1.



6. Plug the Wi-Fi module to the socket's connector by a slanted angle. Fully plug the module, and note the notch on the wireless module should meet the break of the connector.



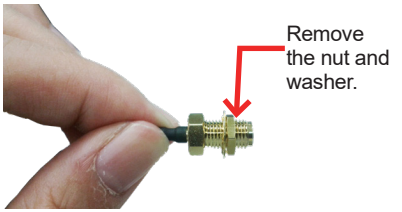
7. Press the module down and fix the module in place using one screw.

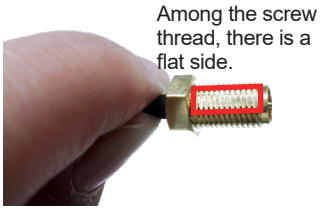


8. Locate the SMA antenna holes on front panel. Remove the plastic plug to make an antenna hole. Keep the plastic plug for any possible restoration in the future.



9. From the other end of the RF antenna, which is an SMA connector, remove the washer and the nut. Note the SMA connector has the form of a threaded bolt, with one flat side.





10. Pull the SMA connector through the above mentioned antenna hole. Note to meet the aforesaid flattened side with the antenna hole's flat side.



Arrange the flat side of the SMA connector to meet the flat side of the antenna hole.

11. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.



Mount the washer and the nut to the SMA connector. Tighten the nut.

12. Have the external antenna(s). Screw and tightly fasten the antenna(s) to the SMA connector.

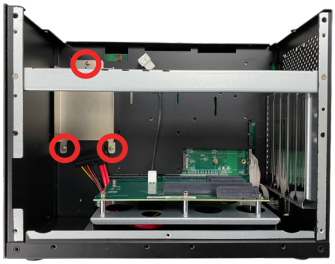


4.1.5. Install SATA Storage Devices

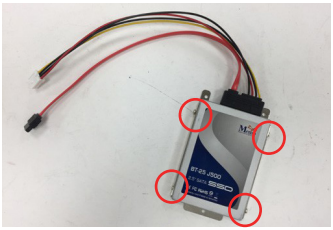
4.1.5.1. Install Internal SATA Storage Device

1. Remove the bottom cover from the computer as described in Section 4.1.1.2. Remove the Bottom Cover on page 34.

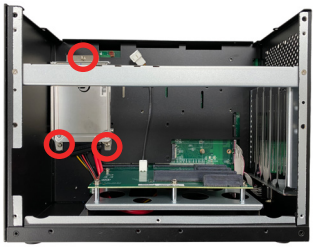
2. Find the HDD/SSD brackets inside the computer. Loosen and remove the screws as marked in the illustration below. Then dismount the brackets from the computer.



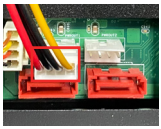
3. Attach the SATA cable and the HDD/SSD storage device. Slide the HDD/SSD storage device into the bracket and fix the storage device in place by fastening the 2 screws on both side of the bracket. Up to two HDD/SSD can be installed in the bracket (1+1 stacked)



4. Install the bracket with the storage device back into the computer by refastening the 3 screws.



5. Connect the SATA power cable and signal cable.
   Note: If the second SATA storage device is connected, please connect the second SATA power cable and signal cable to SATA2 and PWROUT2 connector.



power cable



signal cable

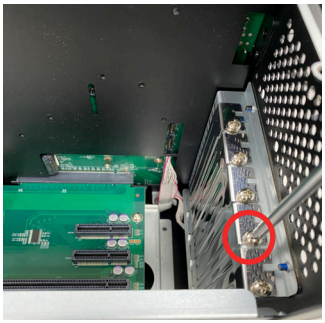
6. Restore the bottom cover to the computer.

4.1.6. Install PCI Express Cards.

To install a PCI Express card:

1. Remove the bottom cover from the computer as described in Section 4.1.1.2. Remove the Bottom Cover on page 34.

2. Remove the slot protection plate, and then install a PCIe card into the computer.



3. Use a cross head screwdriver to tighten the screws to secure the PCIe card and then restore the bottom cover to the computer.

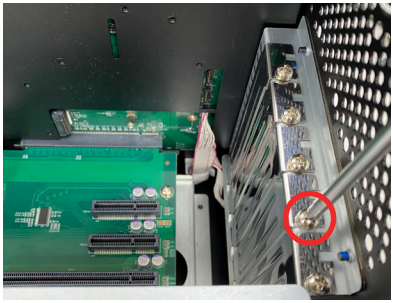
4.1.7. Install Graphic Card

To install a graphic card:

1. Remove the top and side cover from the computer.

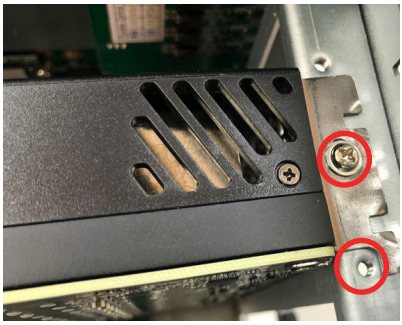
2. Locate the PCIe slot on the riser board, and loosen the screw that secure the expansion slot bracket, and then you can install a graphic card to this expansion slot.



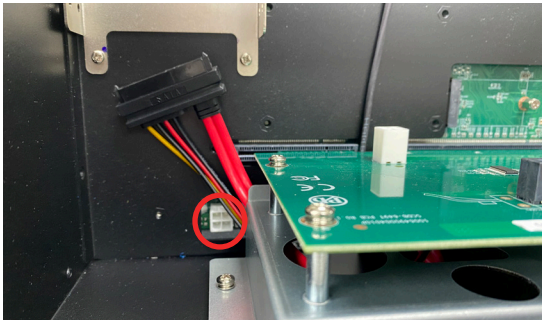


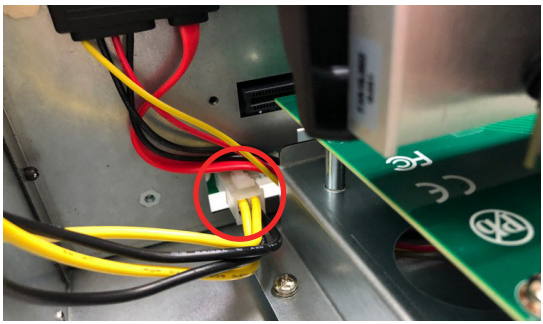


3. Use a cross head screwdriver to tighten the screws to secure the graphic card.



4. Locate the 4-PIN VGA card power connector on the main board and connect the graphic card power cable to the computer.



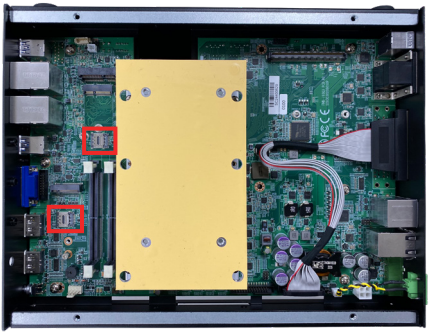


4.1.8. Install/Uninstall SIM Card

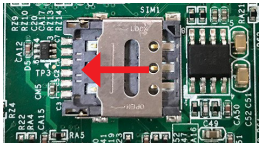
This section will guide you through the SIM card installation steps:

1. Remove the top cover from the computer as described in 4.1.1.1. Remove Top Cover on page 32.

2. Locate the SIM card slot on the main board.



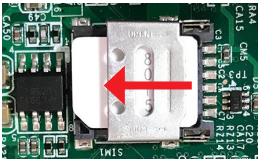
3. Slide the SIM card holder cover towards the OPEN edge and then lift the cover to open it.



4. Insert the SIM card into the card holder as shown below.



5. Close the SIM card holder door and slide the door to the LOCK edge to lock into place.



To uninstall the SIM card:

1. Slide the SIM card holder cover towards the OPEN edge and lift the cover to open it.
2. Remove the SIM card.
3. Close the SIM card holder door and slide the door to the LOCK edge.

4.2. Ground the Computer

Follow the instructions below to ground the computer to earth / ground. Be sure to follow every grounding requirement in your place.

> **Warning** Whenever the unit is installed, the ground connection must always be made first of all and disconnected lastly.

1. See the illustration below. Remove the ground screw from the rear panel.
2. Attach a ground wire to the rear plate with the screw.



4.3. Wire DC-in Power Source

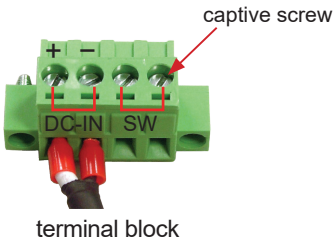
4.3.1. Automation Mode

Follow the instructions below for connecting the computer to a DC-input power source.

Warning Only trained and qualified personnel are allowed to install or replace this equipment.

1. Before wiring, make sure the power source is disconnected.
2. Find the terminal block in the accessory box.
3. Use the wire-stripping tool to strip a short insulation segment from the output wires of the DC power source.
4. Identify the positive and negative feed positions for the terminal block connection. See the symbols printed on the rear panel indicating the polarities and DC-input power range in voltage.
5. Insert the exposed wires into the terminal block plugs. Only wires with insulation should extend from the terminal block plugs. Note that the polarities between the wires and the terminal block plugs must be positive to positive and negative to negative.
6. Use a slotted screwdriver to tighten the captive screws. Plug the wired terminal block firmly into the receptacle.



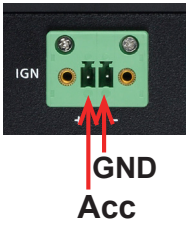


4.3.2. Vehicle Application Mode

Follow the instructions below for connecting the computer to a vehicle power source.

1. Make sure JACCON1 jumper is open for vehicle power mode. (Refer to Section 3.2.1. Jumpers on page 18).

2. For vehicle application, DC power Input wiring pin configuration is as below. Please connect the Acc pin with your car Acc, and the device will be activated when you turn your ignition key to Acc.



Power on/off delay table (setting by BIOS):

Item	Power on	Power off
1	manually operated	manually operated
2	manually operated	shutdown after 30 seconds
3	manually operated	shutdown after 60 seconds
4	manually operated	shutdown after 90 seconds
5	4 seconds power-on latency	manually operated
6	4 seconds power-on latency	shutdown after 30 seconds
7	4 seconds power-on latency	shutdown after 60 seconds
8	4 seconds power-on latency	shutdown after 90 seconds
9	8 seconds power-on latency	manually operated
10	8 seconds power-on latency	shutdown after 30 seconds
11	8 seconds power-on latency	shutdown after 60 seconds
12	8 seconds power-on latency	shutdown after 90 seconds
13	16 seconds power-on latency	manually operated
14	16 seconds power-on latency	shutdown after 30 seconds
15	16 seconds power-on latency	shutdown after 60 seconds
16	16 seconds power-on latency	shutdown after 90 seconds

For the Power on/off delay setting in the BIOS, please see the description in Section 5.5. Boot on page 84.

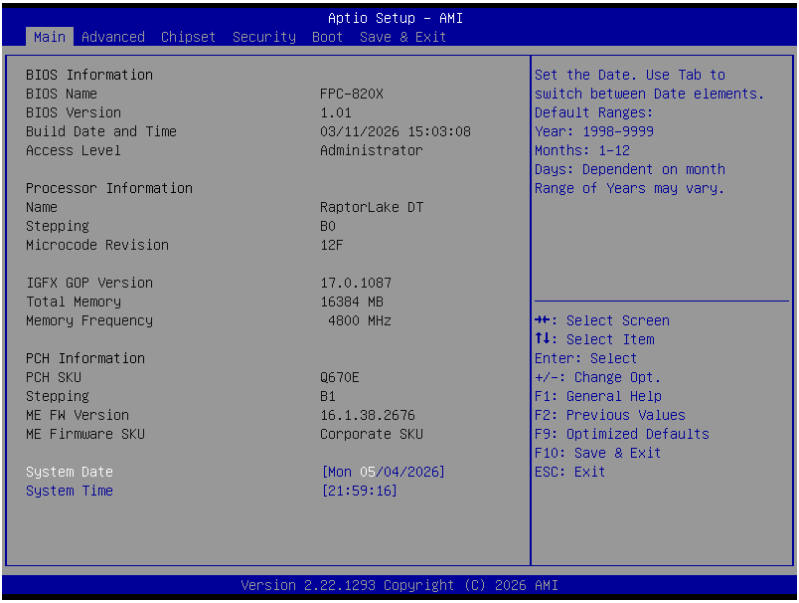
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Chapter 5

BIOS

The BIOS Setup utility is featured by American Megatrends Inc 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.



The featured settings are:

Menu	Description
Main	See 5.1. Main on page 58
Advanced	See 5.2. Advanced on page 59
Chipset	See 5.3. Chipset on page 73
Security	See 5.4. Security on page 82
Boot	See 5.5. Boot on page 84
Save & Exit	See 5.6. Save & Exit on page 86

Key Commands

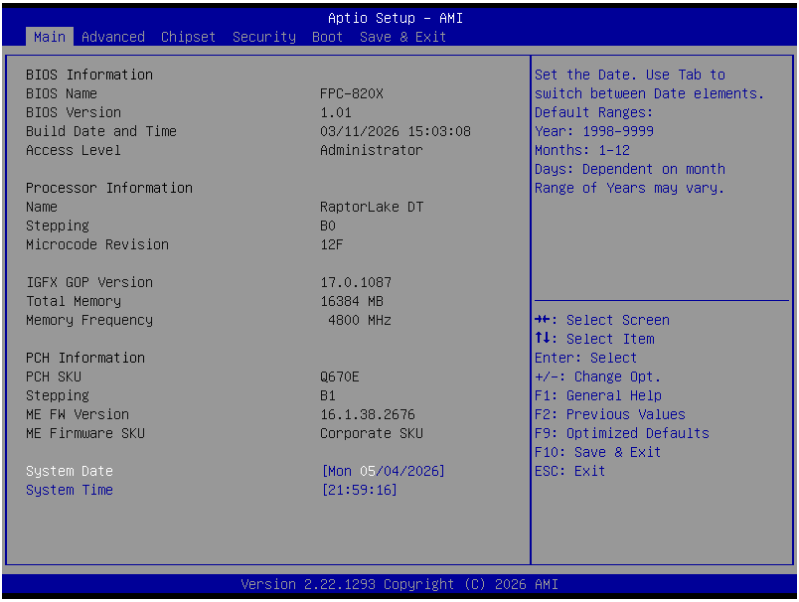
The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to navigate within the utility and use the utility.

Keystroke	Function
← →	Moves left/right between the top menus.
↓ ↑	Moves up/down between highlight items.
Enter	Selects an highlighted item/field.
Esc	▸ On the top menus: Use **Esc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to exit discarding changes. ▸ On the submenus: Use **Esc** to quit current screen and return to the top menu.
Page Up / +	Increases current value to the next higher value or switches between available options.
Page Down / -	Decreases current value to the next lower value or switches between available options.
F1	Opens the **Help** of the BIOS Setup utility.
F2	Previous values
F9	Optimized defaults
F10	Exits the utility saving the changes that have been made. (The screen then prompts a message asking you to select **Yes** or **No** to exit saving changes.)

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.

5.1. Main

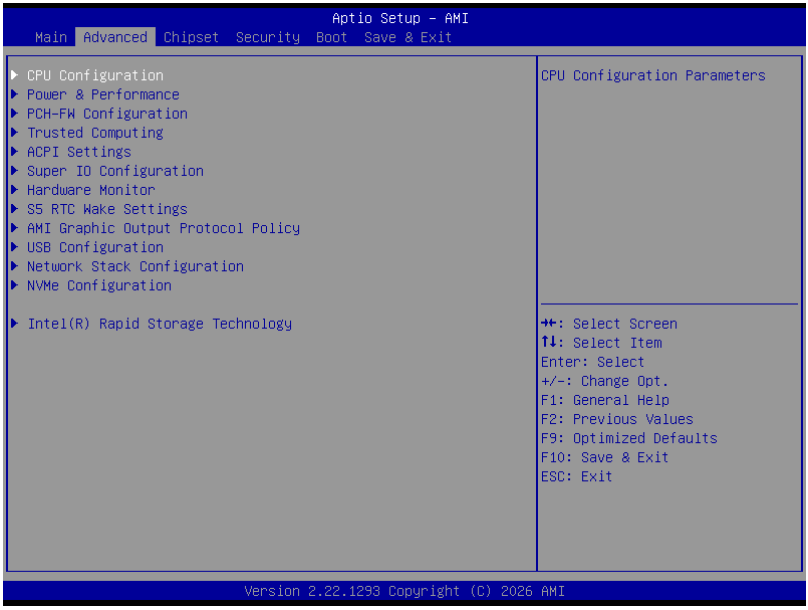
The **Main** menu features the settings of **System Date** and **System Time** and displays some BIOS info.



The featured settings are:

Setting	Description
System Date	Set the system date. Use Tab to switch between Date elements. Note that the 'Day' automatically changes when you set the date. ► The date format is: **Day:** Sun to Sat **Month:** 1 to 12 **Date:** 1 to 31 **Year:** 1998 to 9999
System Time	Set the system time. Use Tab to switch between Time elements. ► The time format is: **Hour:** 00 to 23 **Minute:** 00 to 59 **Second:** 00 to 59

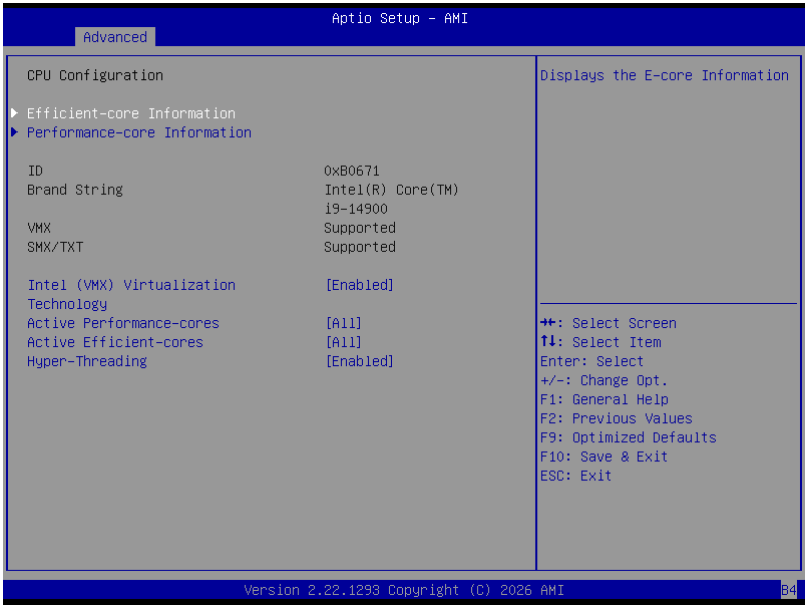
5.2. Advanced



The featured settings and submenus are:

Setting	Description
CPU Configuration	See 5.2.1. CPU Configuration on page 60
Power & Performance	See 5.2.2. Power & Performance on page 61
PCH-FW Configuration	See 5.2.3. PCH-FW Configuration on page 62
Trusted Computing	See 5.2.4. Trusted Computing on page 63
ACPI Settings	See 5.2.5. ACPI Settings on page 64
Super IO Configuration	See 5.2.6. Super IO Configuration on page 65
Hardware Monitor	See 5.2.7. Hardware Monitor on page 66
S5 RTC Wake Settings	See 5.2.8. S5 RTC Wake Settings on page 67
AMI Graphic Output Protocol Policy	See 5.2.9. AMI Graphic Output Protocol Policy on page 68
USB Configuration	See 5.2.10. USB Configuration on page 69
Network Stack Configuration	See 5.2.11. Network Stack Configuration on page 70
NVMe Configuration	See 5.2.12. NVMe Configuration on page 71
Intel(R) Rapid Storage Technology	See 5.2.13. Intel(R) Rapid Storage Technology on page 72

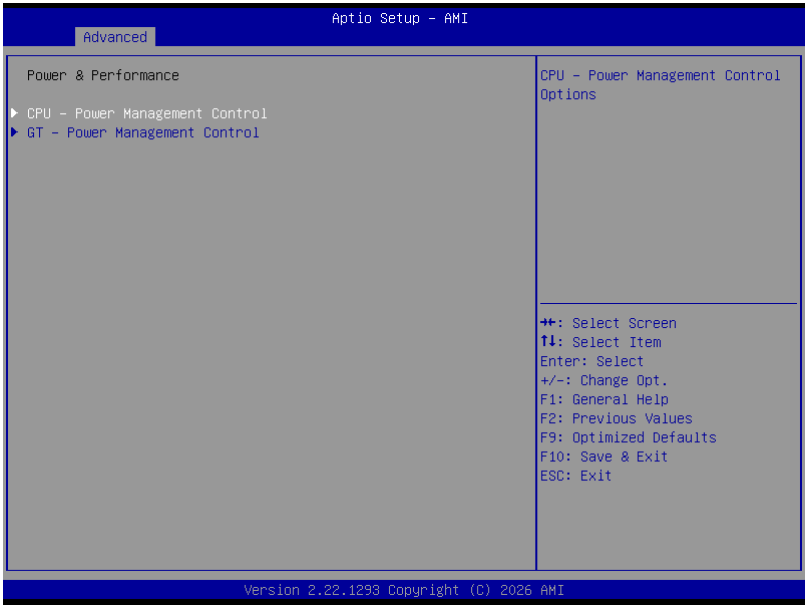
5.2.1. CPU Configuration



The featured settings are:

Setting	Description
Efficient-core Information	Displays the E-core Information.
Performance-core Information	Displays the P-core Information.
Intel (VMX) Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. ► Options: **Enabled** (default) or **Disabled**
Active Performance-cores	Number of P-cores to enable in each processor package. ► Options: **0~7, ALL** (default)
Active Efficient-cores	Number of E-cores to enable in each processor package. ► Options: **0~15, ALL** (default)
Hyper-Threading	Enable or Disable Hyper-Threading Technology. ► Options: **Enabled** (default) or **Disabled**

5.2.2. Power & Performance

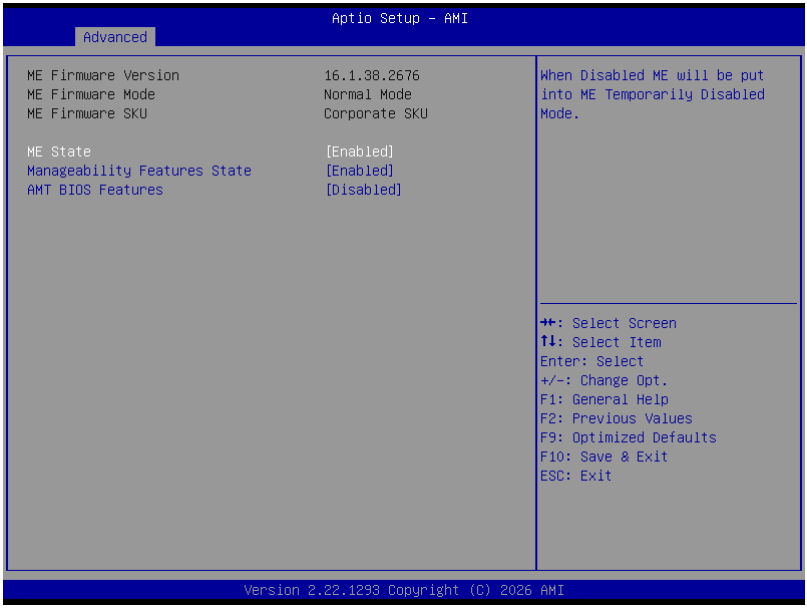


The featured settings are:

Setting	Description
CPU - Power Management Control	CPU - Power Management Control Options Boot performance mode: ► Options: Boot performance mode: **Max Battery, Max Non-Turbo Performance, Turbo Performance** Intel(R) SpeedStep(tm): ► Options: **Disabled, Enabled** Intel(R) Speed Shift Technology: ► Options: **Disabled, Enabled** Per Core P State OS control mode: Enable/Disable Per Core P states OS control mode. ► Options: **Disabled, Enabled** Turbo Mode: ► Options: **Disabled, Enabled** View/Configure Turbo Options: ► View/Configure Turbo Ratio Limit Options C States: Enable/Disable CPU Power Management ► Options: **Disabled, Enabled**

GT - Power Management Control	RC6(Render Standby): Check to enable render standby ► Options: **Disabled / Enabled**(Default) Maximum GT frequency: Maximum GT frequency limited by the user. ► Options: **Default Max Frequency**(Default), **100Mhz~1200Mhz** Disable Turbo GT Frequency: Enabled/Disabled GT Frequency. ► Options: **Disabled**(Default) **/ Enabled**

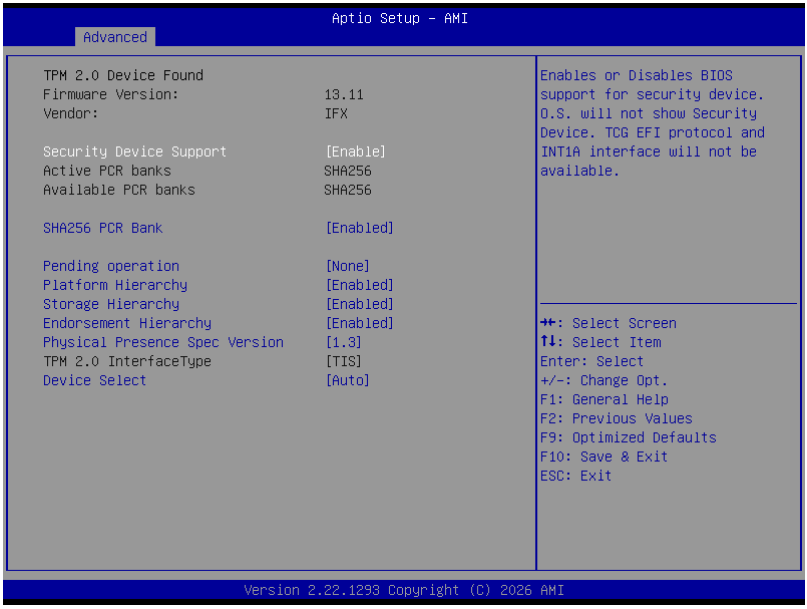
5.2.3. PCH-FW Configuration



The featured settings are:

Setting	Description
ME State	When Disabled ME will be put into ME Temporarily Disabled Mode. ► Options: **Enabled** (default) or **Disabled**
Manageability Features State	Enable/Disable Intel(R) Manageability features. ► Options: **Enabled** (default) or **Disabled**
AMT BIOS Features	When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. ► Options: **Enabled** or **Disabled** (default)

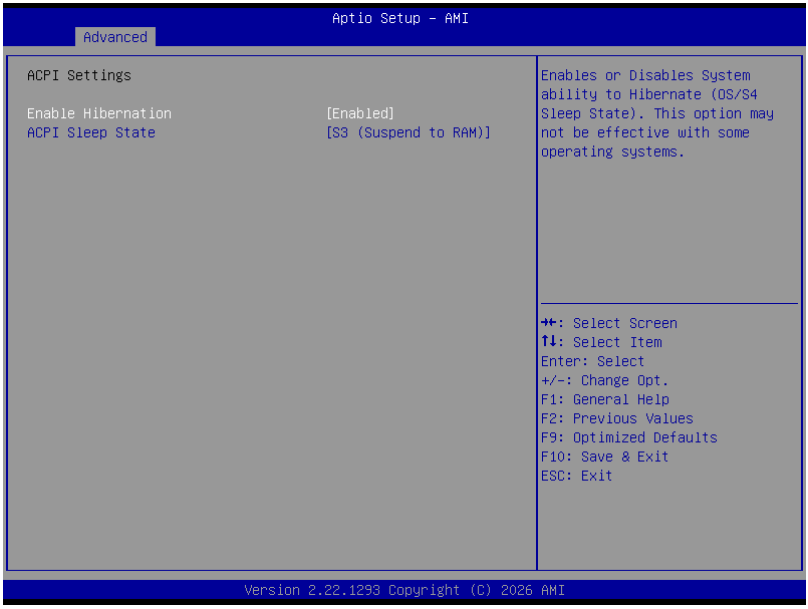
5.2.4. Trusted Computing



The featured settings are:

Setting	Description
Security Device Support	Enables or disables BIOS support for security device. OS will not show Security Device. ► Options: **Enabled** (Default) / **Disabled**
SHA256 PCR Bank	Enables or disables SHA256 PCR Bank. ► Options: **Enabled** (Default) / **Disabled**
Pending operation	Schedule an operation for the security device. ► Options: **None** (Default) / **TPM Clear**
Platform Hierarchy	Enables or disables Platform Hierarchy. ► Options: **Enabled** (Default) / **Disabled**
Storage Hierarchy	Enables or disables Storage Hierarchy. ► Options: **Enabled** (Default) / **Disabled**
Endorsement Hierarchy	Enables or disables Endorsement Hierarchy. ► Options: **Enabled** (Default) / **Disabled**
Physical Presence Spec Version	This item select to tell O.S. to support PPI Spec Version 1.2 or 1.3. ► Options: **1.3** (Default) / **1.2**
Device Select	TPM 1.2 will restruct support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both the default set to TPM 2.0 devices if not found, TPM1.2 devices will be enumerated. ► Options: **Auto** (Default) / **TPM1.2** / **TPM2.0**

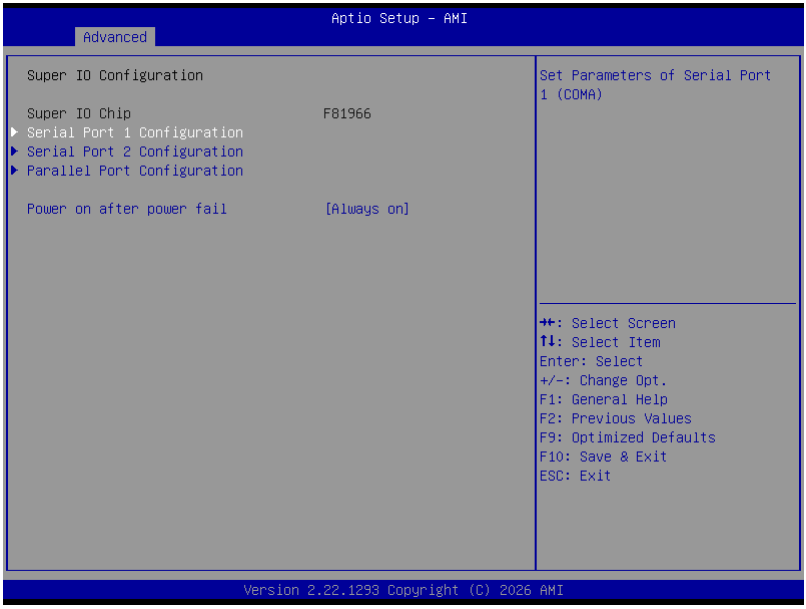
5.2.5. ACPI Settings



The featured settings are:

Setting	Description
Enable Hibernation	**Enables** (default) or **Disables** System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some Operating Systems.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. ► Options: **Suspend Disabled** and **S3 (Suspend to RAM)** (default)

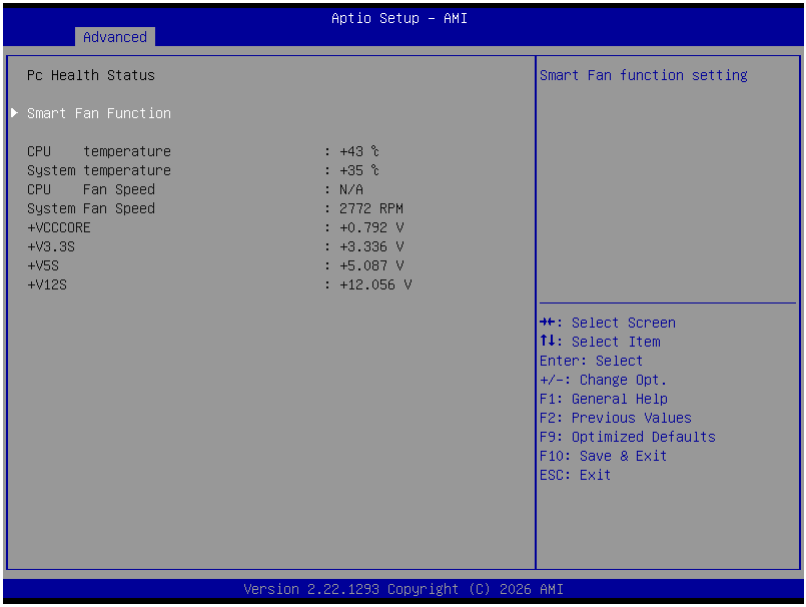
5.2.6. Super IO Configuration



The featured settings are:

Setting	Description
Serial Port 1 Configuration	Serial Port: Enable or disable serial port (COM) ► Options: **Disabled , Enabled** (Default) Mode Select: Select RS-232 or RS-422 or RS-485 ► Options: **RS-232** (Default), **RS-422**, **RS-422 Termination Resistor**, **RS-485**, **RS-485 Termination Resistor**
Serial Port 2 Configuration	Serial Port: Enable or disable serial port (COM) ► Options: **Disabled, Enabled** (Default) Mode Select: Select RS-232 or RS-422 or RS-485 ► Options: **RS-232** (Default), **RS-422**, **RS-422 Termination Resistor, RS-485**, **RS-485 Termination Resistor**
Parallel Port Configuration	Parallel Port: Enable or disable Parallel Port (LPT/LPTE) ► Options: **Disabled, Enabled** (Default) Device Mode: Change the Printer Port mode ► Options: **STD Printer Mode** (Default), **SPP Mode**, **EPP-1.9 and SPP Mode, EPP-1.7 and SPP Mode**, **ECP Mode, ECP and EPP 1.9 Mode, ECP and EPP 1.7 Mode**
Power on after power fail	Specify what state to go to when power is re-applied after a power failure (G3 state) ► Options: **Always on** (Default)**, Always off**

5.2.7. Hardware Monitor

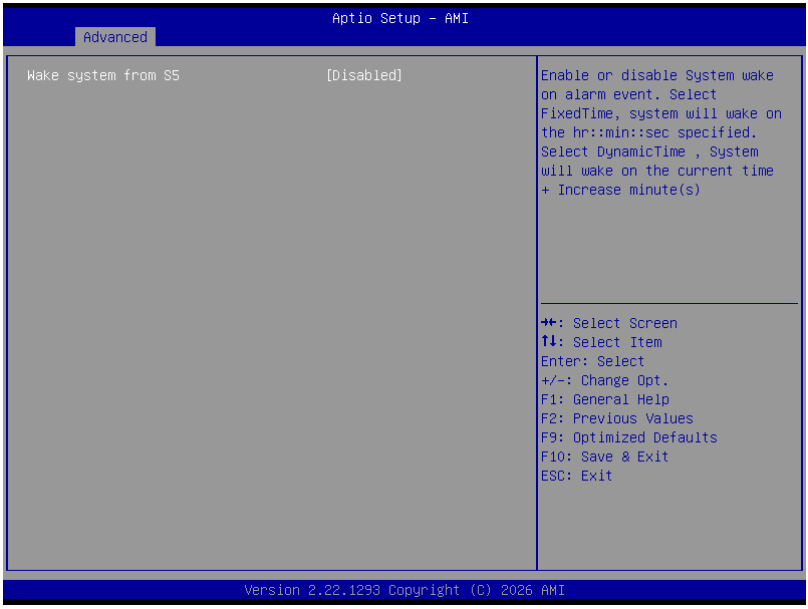


The featured settings are:

Setting	Description
Smart Fan Function	**CPU Smart Fan Configuration** FAN_MODE: FAN1 output mode selection. ► Options: **Auto** (Default), **Manual** Boundary 1~4 & Speed 1~5: **System Smart Fan Configuration** FAN_MODE: FAN2 output mode selection. ► Options: **Auto** (Default), **Manual** Boundary 1~4 & Speed 1~5:

Note: The Smart Fan function only applies to SKUs equipped with Smart Fan support. If your SKU doesn't come with smart fan, ignore these settings.

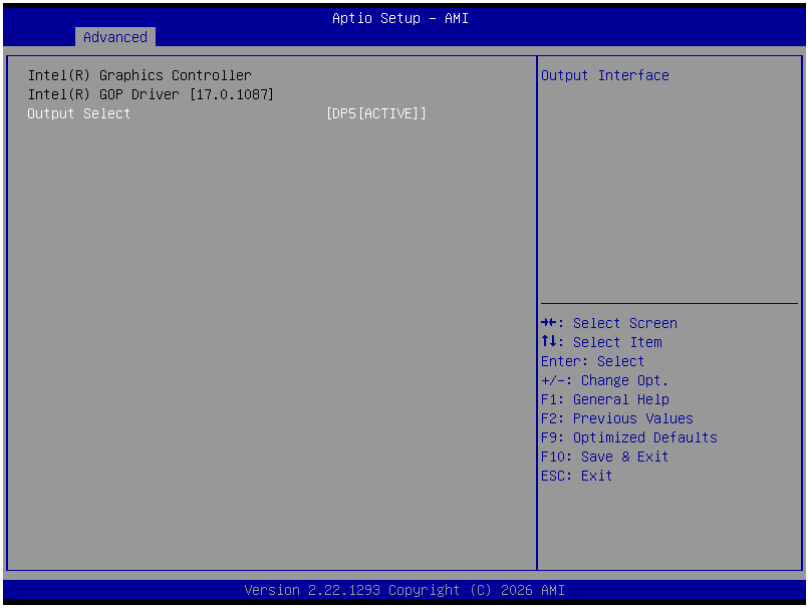
5.2.8. S5 RTC Wake Settings



The featured settings are:

Setting	Description
Wake System from S5	**Enable** or **Disable** (default) system wake on alarm event. ► Options available are: **Disabled** (default) **Fixed Time:** System will wake on the hr::min::sec specified. **DynamicTime:** If selected, you need to set **Wake up minute increase** from 1 - 5. System will wake on the current time + increase minute(s).

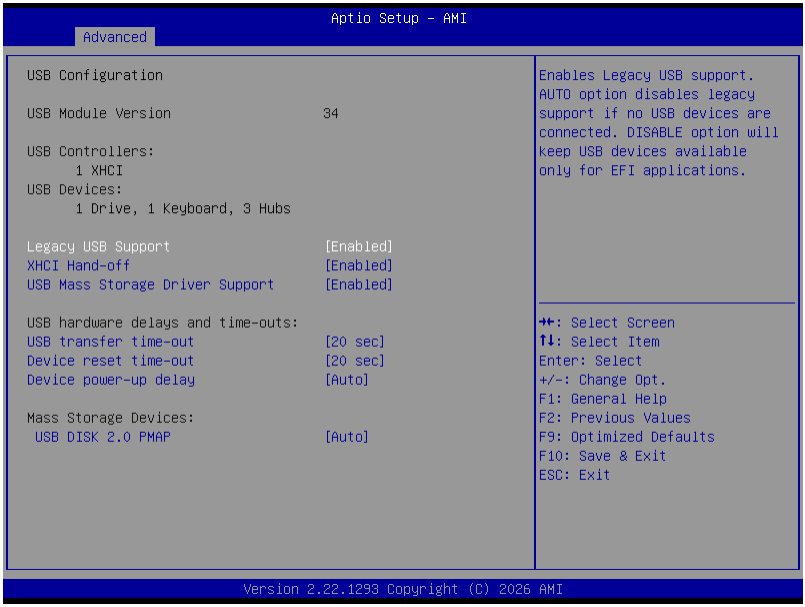
5.2.9. AMI Graphic Output Protocol Policy



The featured settings are:

Setting	Description
Output Select	Output Interface selection.

5.2.10. USB Configuration

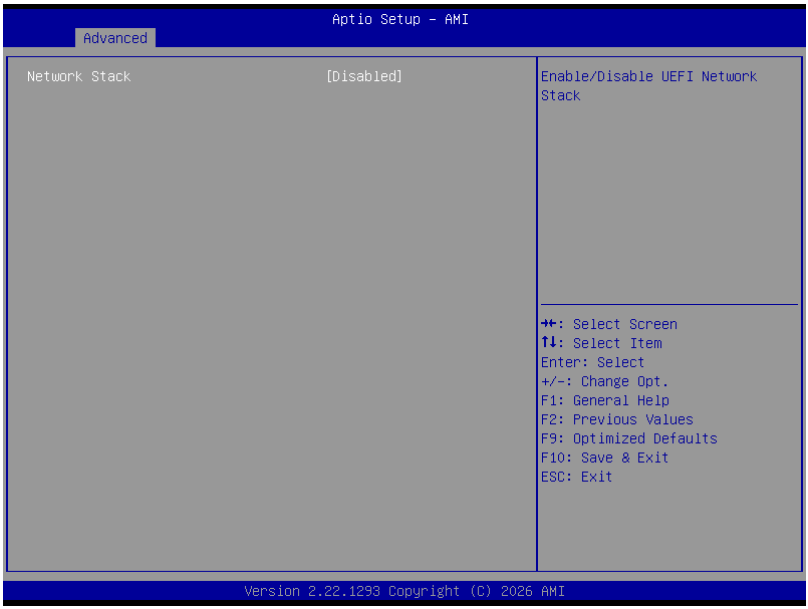


The featured settings are:

Setting	Description
Legacy USB Support	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. ► The optional settings are: **Enabled** (default) **/ Disabled / Auto**
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. ► The optional settings are: **Enabled** (default) **/ Disabled**
USB Mass Storage Driver Support	Enables/disables USB Mass Storage Driver Support. ► The optional settings are: **Enabled** (default) **/ Disabled**
USB transfer time-out	Use this item to set the time-out value for control, bulk, and interrupt transfers. ► Options: **1 sec, 5 sec, 10 sec, 20 sec** (default)

Device reset time-out	Use this item to set USB mass storage device start unit command time-out. ► Options: **10 sec, 20 sec** (default)**, 30 sec, 40 sec**
Device power-up delay	Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. ► Options available are: **Auto**: Default **Manual**: Select **Manual** you can set value for the following sub-item: 'Device Power-up delay in seconds', the delay range in from 1 to 40 seconds, in one second increments.

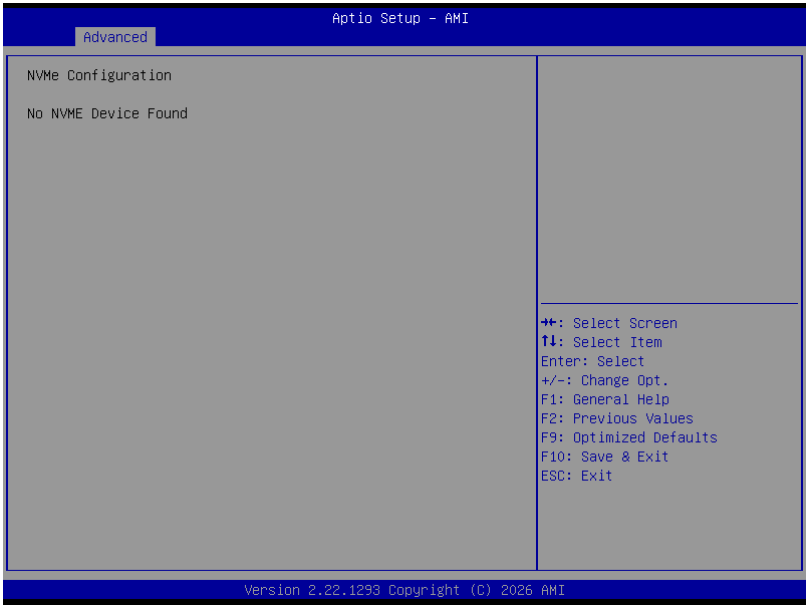
5.2.11. Network Stack Configuration



The featured settings are:

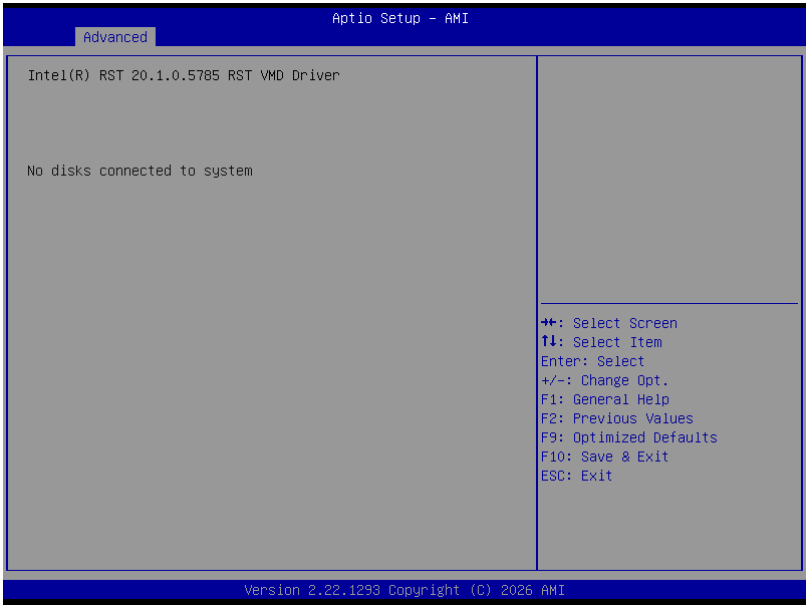
Setting	Description
Network Stack	Enable or Disable (default) UEFI network stack

5.2.12. NVMe Configuration



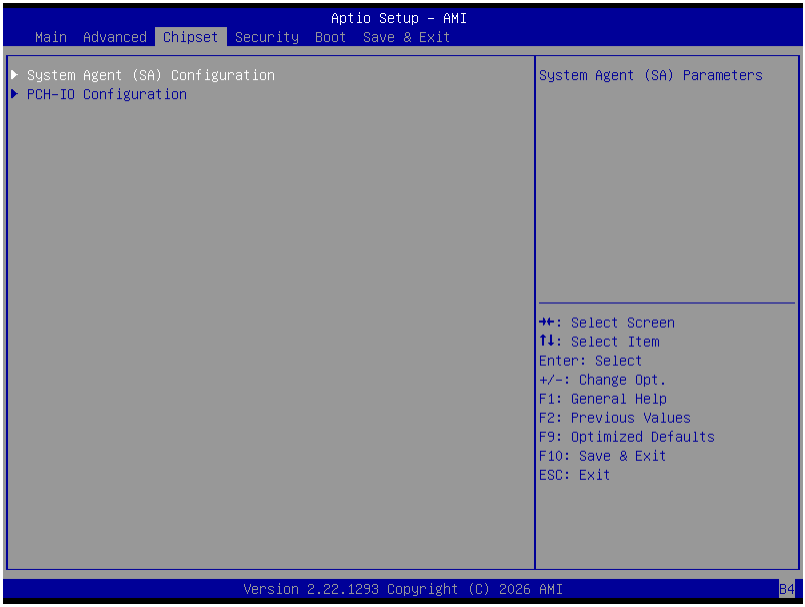
Access this submenu to view the NVMe controller and driver information.

5.2.13. Intel(R) Rapid Storage Technology



Access this submenu to view the Intel RST VMD driver information.

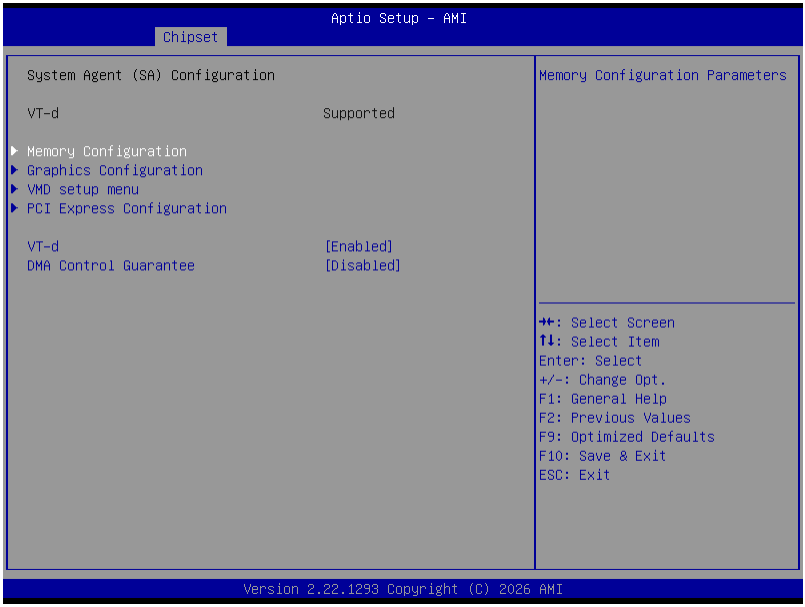
5.3. Chipset



The featured settings are:

Setting	Description
System Agent (SA) Configuration	See 5.3.1. System Agent (SA) Configuration on page 74
PCH-IO Configuration	See 5.3.2. PCH-IO Configuration on page 79

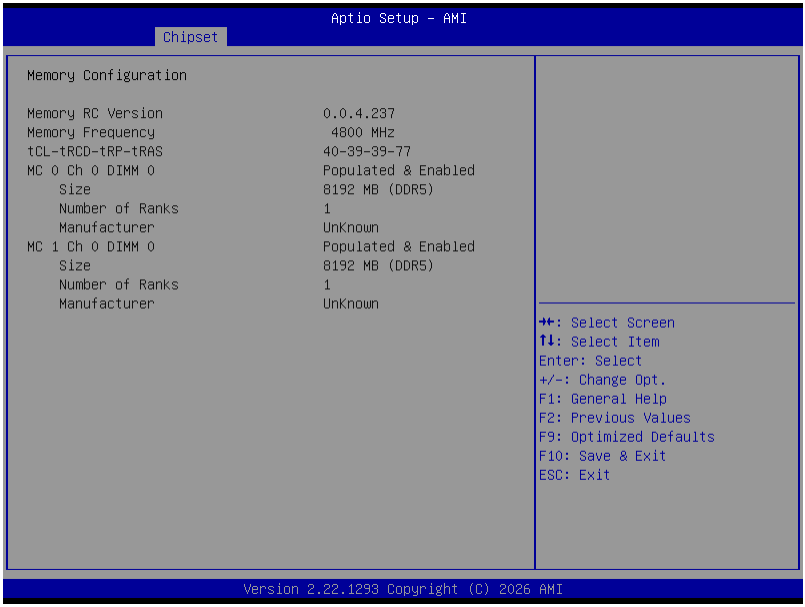
5.3.1. System Agent (SA) Configuration



The featured settings are:

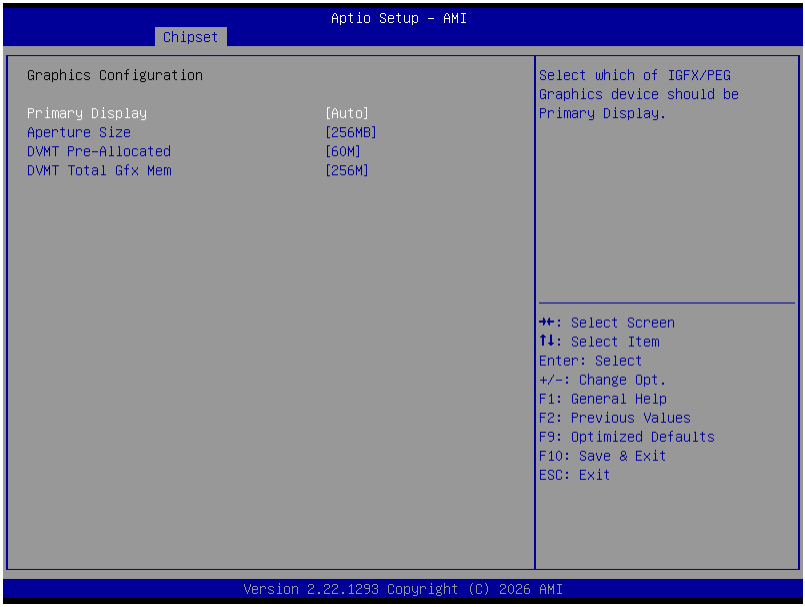
Setting	Description
Memory Configuration	See 5.3.1.1. Memory Configuration on page 75
Graphics Configuration	See 5.3.1.2. Graphics Configuration on page 76
VMD setup menu	See 5.3.1.3. VMD Configuration on page 77
PCI Express Configuration	See 5.3.1.4. PCI Express Configuration on page 78
VT-d	Enable/Disable VT-d capability. ► Options: **Disabled, Enabled**
DMA Control Guarantee	Enable/Disable DMA_CONTROL_GUARANTEE bit. ► Options: **Disabled, Enabled**

5.3.1.1. Memory Configuration



Access this submenu to view the memory configuration.

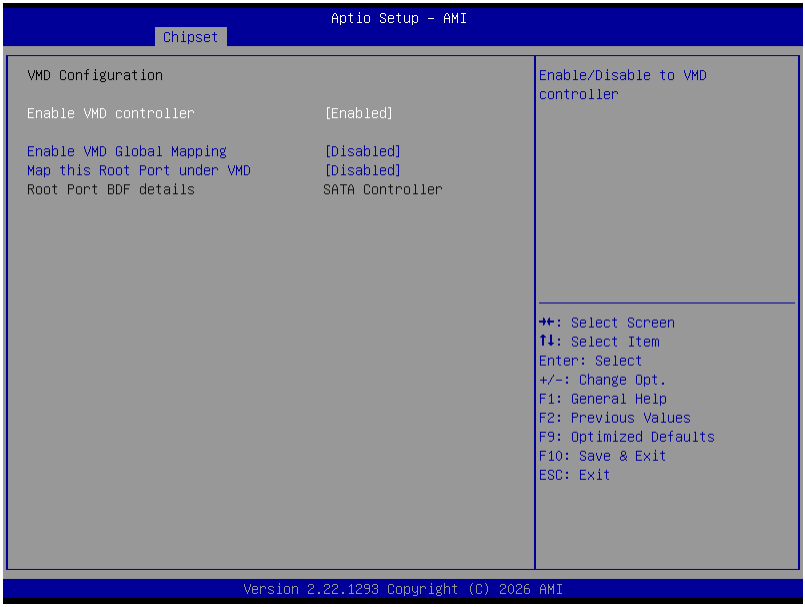
5.3.1.2. Graphics Configuration



The featured settings are:

Setting	Description
Primary Display	Select which of IGFX/PEG Graphics device should be Primary Display. ► Options: **Auto** (default), **IGFX** and **PEG Slot**
Aperture Size	Select the Aperture Size. ► Options: **128MB, 256MB, 512MB, 1024MB** Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting > 2048MB aperture. To use this feature, please disable CSM Support.
DVMT Pre-Allocated	Select the DVMT 5.0 Pre-allocated (Fixed) Graphics Memory size used by the Internal Graphic Device. ► Options: **0M, 32M, 64M, 96M, 128M, 160M, 4M, 8M, 12M,16M, 20M, 24M, 28M, 32M/F7, 36M, 40M, 44M, 48M, 52M, 56M, 60M**
DVMT Total Gfx Mem	Select the DVMT 5.0 Total Graphic Memory size from 128M to MAX used by the Internal Graphics Device. ► Options: **128M, 256M** (default), **MAX**

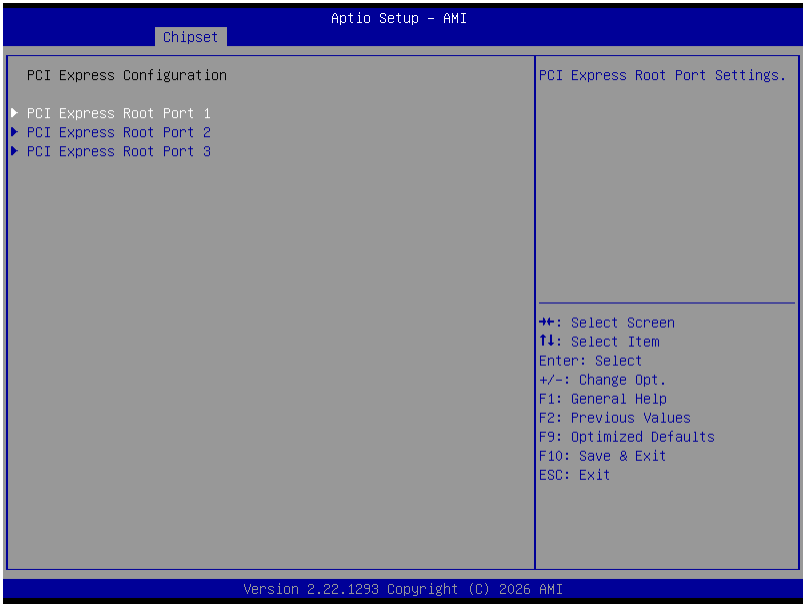
5.3.1.3. VMD Configuration



The featured settings are:

Setting	Description
Enable VMD controller	Enable/Disable to VMD controller. ► Options: **Enabled** (default)**, Disabled**
Enable VMD Global Mapping	Enable/Disable to VMD Global Mapping. ► Options: **Enabled, Disabled** (default)
Map this Root Port under VMD	Map/UnMap this Root Port to VMD. ► Options: **Enabled, Disabled** (default)

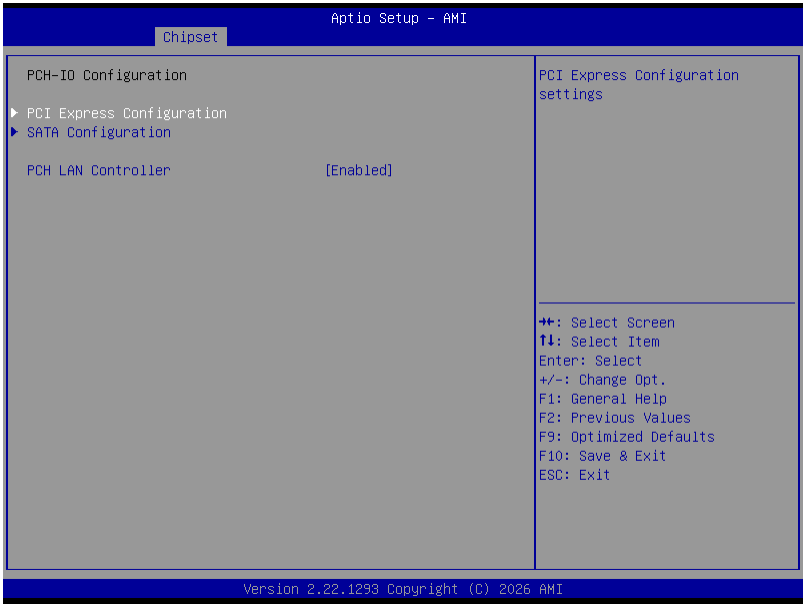
5.3.1.4. PCI Express Configuration



The featured settings are:

Setting	Description
PCI Express Root Port 1~3	Control the PCI Express Root Port. ► Options: **Enabled** (default)**, Disabled**
PCIe Speed	Configure PCIe Speed. ► Options: **Auto, Gen1, Gen2, Gen3, Gen4, Gen5 (Gen5 only for Root Port 2 and 3)**

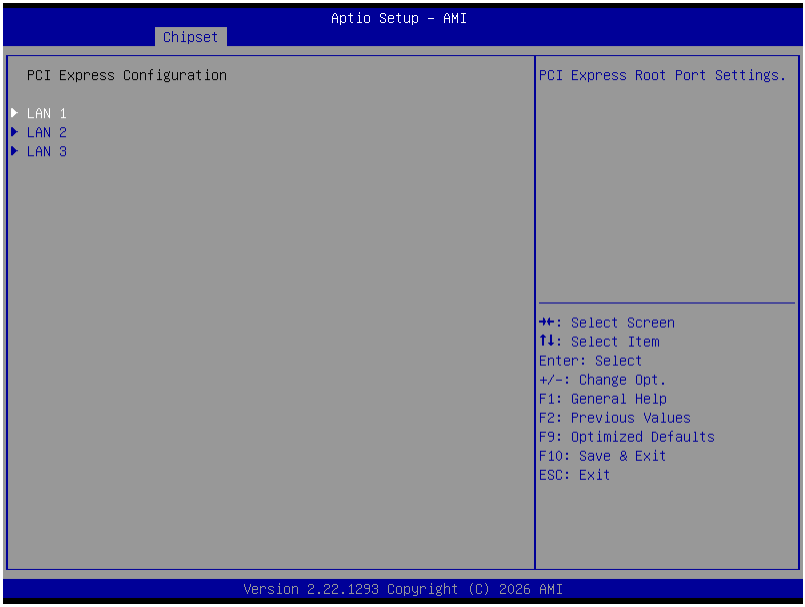
5.3.2. PCH-IO Configuration



The featured settings are:

Setting	Description
PCI Express Configuration	See 5.3.2.1 PCI Express Configuration on page 80
SATA Configuration	See 5.3.2.2. SATA Configuration on page 81
PCH LAN Controller	Enable/Disable onboard NIC. ► Options: **Enabled** (default)**, Disabled**

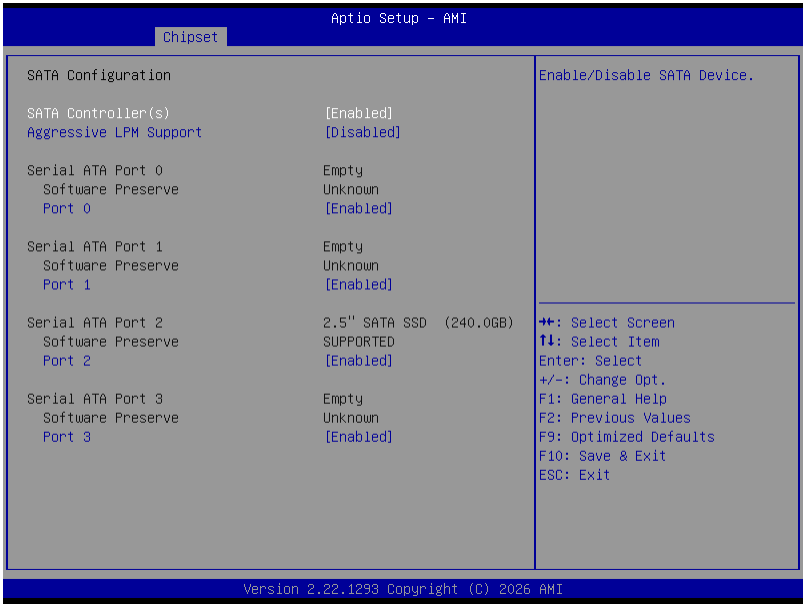
5.3.2.1 PCI Express Configuration



The featured settings are:

Setting	Description
LAN 1 **LAN 2** **LAN 3**	PCI Express Root Port Settings. Press [Enter] to control the PCI Express Root Port. ► Options: **Enabled** (default)**, Disabled**

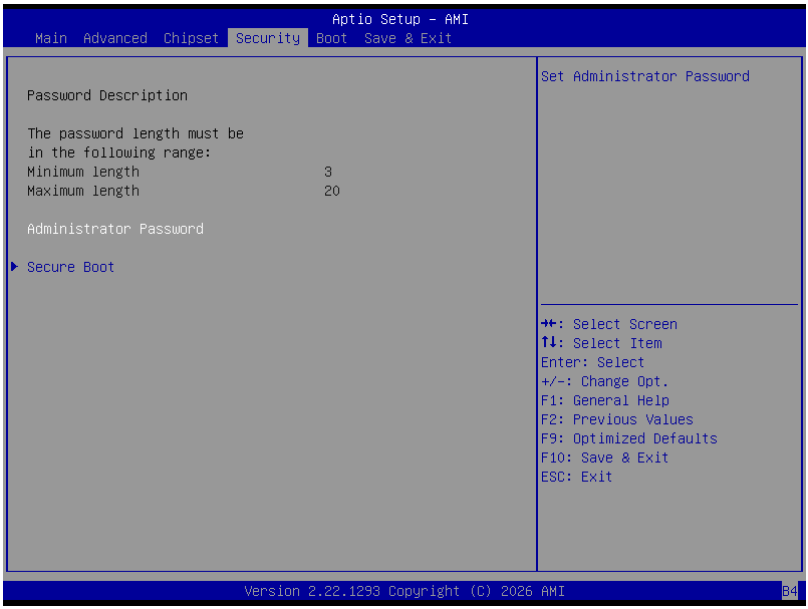
5.3.2.2. SATA Configuration



The featured settings are:

Setting	Description
SATA Controller(s)	Enable or Disable SATA device. ► Options: **Enabled** (default)**, Disabled**
Aggressive LPM Support	Enable PCH to aggressively enter link power state. ► Options: **Enabled, Disabled** (default)
Port 0/1/2/3	Enable or Disable SATA Port. ► Options: **Enabled** (default)**, Disabled**

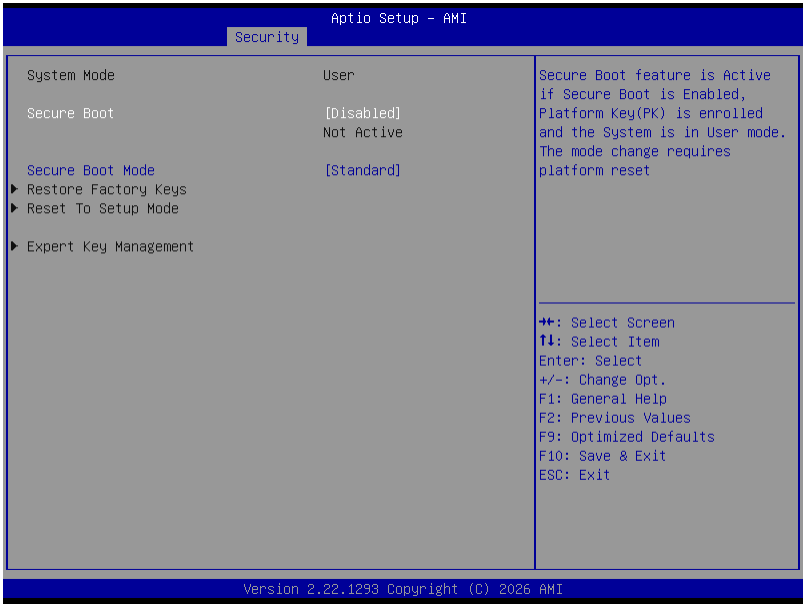
5.4. Security



The featured settings are:

Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. 2. A **Create New Password** dialog box then appears on screen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.
Secure Boot	See 5.4.1. Secure Boot on page 83.

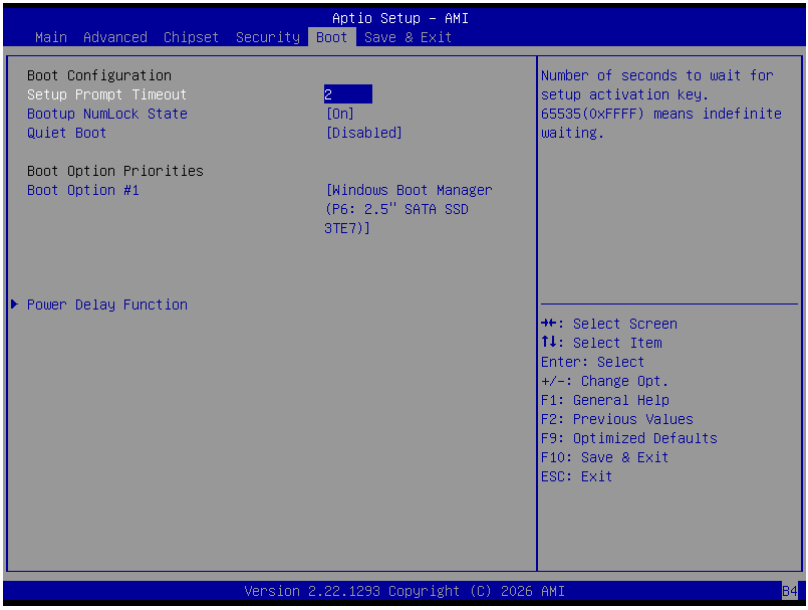
5.4.1. Secure Boot



The featured settings are:

Setting	Description
Secure Boot	**Enable**/**Disable** (default) secure boot.
Secure Boot Mode	Allow users to set the secure boot selector. ► Options: **Standard** (default) /**Custom** mode.
Restore Factory Keys	Force system to restore default secure boot key database.
Reset to Setup Mode	Delete all secure boot key databases.
Expert Key Management	Enables expert users to modify Secure Boot Policy variables without variable authentication.

5.5. Boot

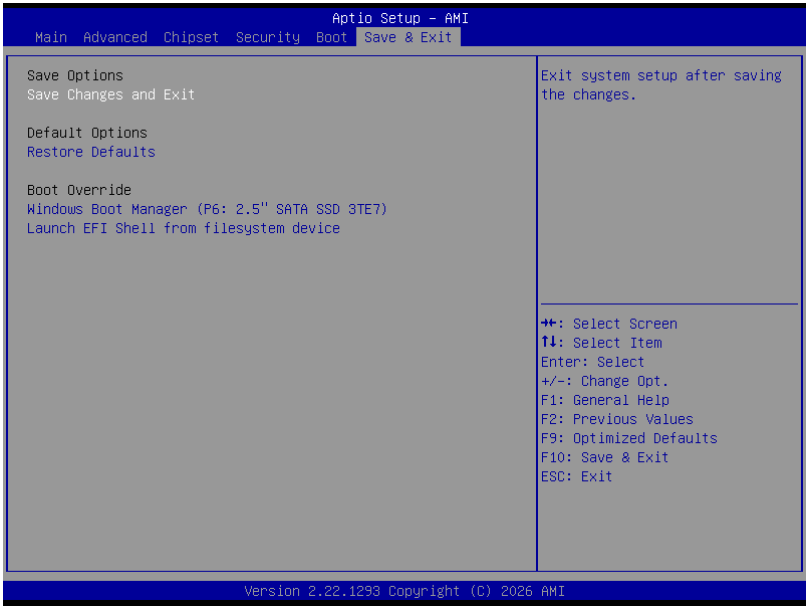


The featured settings are:

Setting	Description
Setup Prompt Timeout	Set how long to wait for the prompt to show for entering BIOS Setup. ► The default setting is **1** (sec). ► Set it to **65535** to wait indefinitely.
Bootup NumLock State	Sets whether to enable or disable the keyboard's NumLock state when the system starts up. ► Options available are **On** (default) and **Off**.
Quiet Boot	Sets whether to display the POST (Power-on Self Tests) messages or the system manufacturer's full screen logo during booting. ► Select **Disabled** to display the normal POST message, which is the default.
Boot Option Priority	Set the system boot priorities.

Power Delay Function	**Power Delay Function** Set the system support power delay function. ► Options: **Enabled:** Support power delay function. **Disabled:** Power on/off manually operated. When **Power Delay Function** is set to **Enabled**, below settings are available: **Power on delay** Select the time which the system will power on. ► Options: **Manually Operator** (default), **04 Seconds**, **08 Seconds** and **16 Seconds**. **Power off delay** Select the time which the system will shutdown. ► Options: **Manually Operator** (default), **30 Seconds**, **60 Seconds** and **90 Seconds**.

5.6. Save & Exit



The featured settings are:

Setting	Description
Save Changes and Exit	Saves the changes and quits the BIOS Setup utility.
Restore Defaults	Restores all settings to defaults. ► This is a command to launch an action from the BIOS Setup utility.
Boot Override	**Boot Override** presents a list in context with the boot devices in the system. ► **Launch EFI Shell from filesystem device:** Attempts to launch EFI Shell Application (Shell.efi) from one of the available filesystem devices.