ITX-i92QA

10th Gen Intel® Xeon W/ Core™ Processor
Mini-ITX motherboard

User Manual

Version 1.0

2023.03

Revision History

Version	Date	Description
1.0	2023.03	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 Union European (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.

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

> 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 B

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

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.

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%)).

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)

About This User's Manual

This user's manual provides general information and installation instructions about the product. This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this booklet. Please consult your vendor before further handling.

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that comes with the Single Board Computer, whenever components are separated from the system.

Replacing the 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 do not hesitate to call or e-mail our customer service.

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 years 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.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

Chapter 1

Introduction

1.1 The Product

The ITX-i92QA is a ITX form factor board of 170 mm x 210 mm to offer fast-to-market solutions with a full lineup of different form factors. Support Intel® 10th Generation Xeon W/ Core i3/ i5/ i7/ i9 processors and integrated Intel® Graphics chipset, bringing dual HDMI for dual monitors.

For system configuration, the board is supported by AMI UEFI BIOS. ITX-i92QA is an ideal choice for some demanding industrial control and data communications by its significant processing performance, Intel Xeon W Server Processors and these features:

- Supports Intel® LGA1200 10th Gen. Xeon W/ Core i3/ i5/ i7/ i9 Processor
- 6 x Gigabit Ethernet ports
- 4 x Serial ATA ports and 2 x M.2 M key sockets
- 2 x HDMI port
- 3 x RS-232 ports and two RS-232/422/485 ports
- 4 x USB 3.0 and two USB 2.0

1.2 About This Manual

This user's manual provides general information and installation instructions about the product. This user's manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this booklet. Please consult your vendor before further handling.

1.3 Specifications

System	
CPU	Support Intel® 10th Generation Xeon W/ Core i3/ i5/ i7/ i9 processors in LGA1200 socket
Chipset	Intel PCH W480E
Form Factor	Wide Mini-ITX mother board
Memory	2 x DDR4 DIMM sockets; support ECC
BIOS	AMI BIOS
Watchdog Timer	1~255 levels reset
I/O	
USB Port	4 x USB 3.0/2.0 ports; 2 x USB 2.0 ports
Serial Port	3 x RS-232 ports; 2 x RS-232/422/485 ports
Expansion	1 x PCIex16 slot, support SCDB-3297; 1 x PCIex8 + 2x PCIex4 lanes Riser Card
Storage	4 x Serial ATA port with 600MB/s, (supports RAID 0,1,5,10) 2 x M.2 2280 M-key (Gen3x4, supports NVMe SSD)
LAN	5 x Intel i210AT GbE controllers, 1 x Intel i219LM PHY with iAMT
Display	
Graphic Chipset	Integrated Intel® UHD Graphics
Graphic Interface	2 x HDMI 2.0 port
OS Support	
Windows 10 64-bit Linex Ubuntu	

Mechanical & Environmental	
Power Requirement	Wide range DC input 9 ~ 36V, supports ATX 4-pin
Power Consumption	2.98A@12V (w/ i5-10500TE)
Operating Temp.	0 ~ 60°C (32 ~ 140ºF)
Operating Humidity	10 ~ 95% @ 60°C (non-condensing)
Dimensions (L x W)	170 x 210 mm (6.7” x 8.3”)

1.4 Inside the Package

Before you begin installing your single board, please make sure that the following materials have been shipped:

1 x ITX-i92QA Mini-ITX industrial motherboard

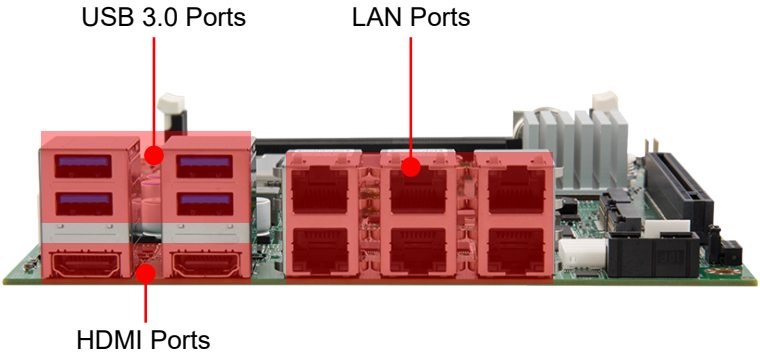
1 x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

Driver Installation

To install the drivers, please visit our website at **www.arbor-technology.com** and download the driver pack from the product page. If you need login access, please contact your local ARBOR sales representative.

1.5 Rear IO Diagram



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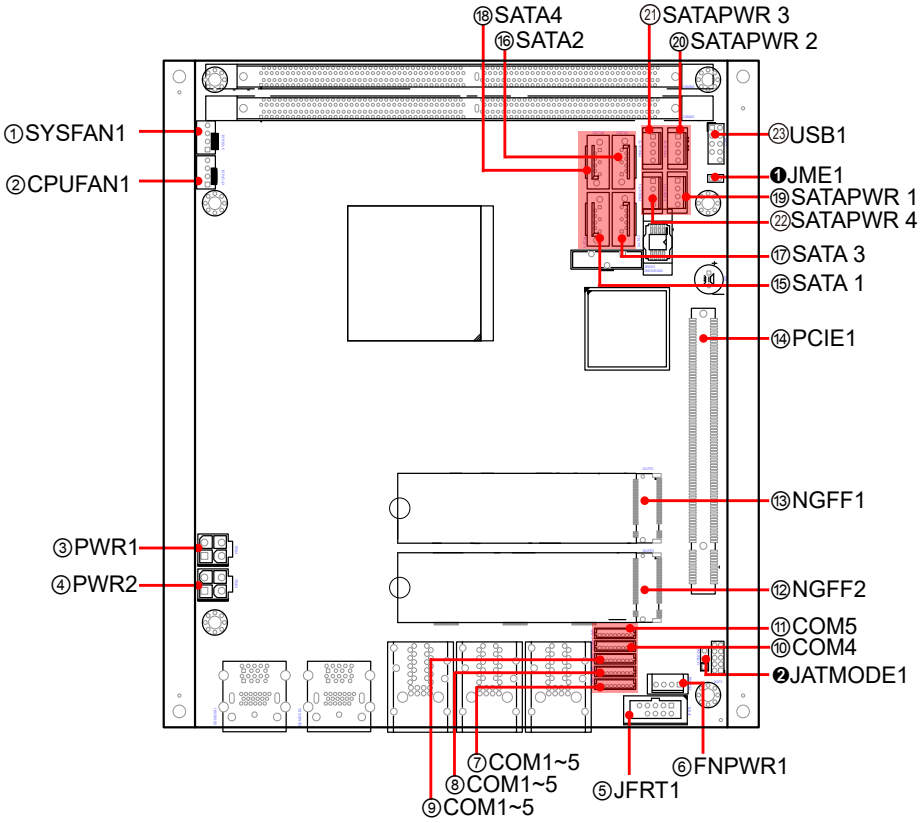
Chapter 2

Board Overview

2.1 Motherboard Internal Diagram - Top Side



2.2 Jumper and Connector

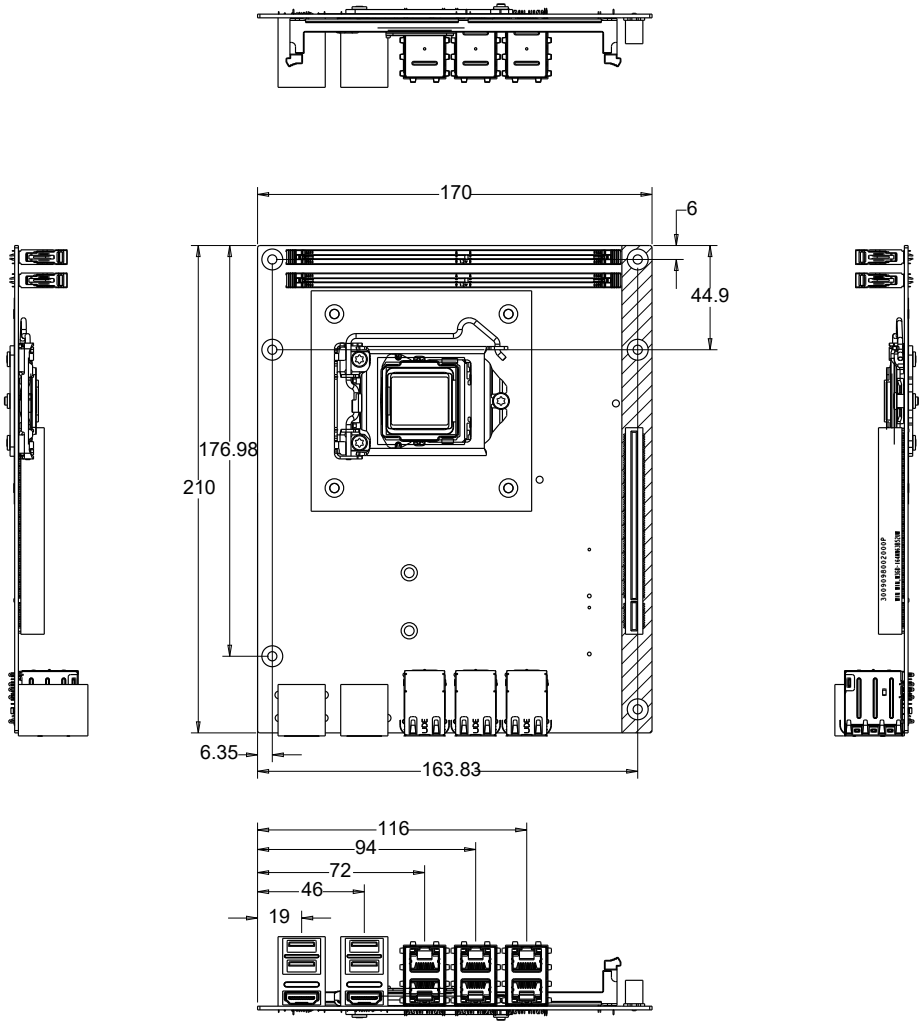
Jumper

P/N	Name	Description
❶JME	Clear CMOS Jumper	2-pin Block
❷JATMODE1	AT/ATX Type Selection	2-pin Block

Connector

P/N	Name
①SYSFAN	System Fan Connector
②CPUFAN	CPU Fan Connector
③PWR1	DCIN 9~36V Power input Connector
④PWR2	DCIN 9~36V Power input Connector
⑤JFRT1	Switches and Indicators
⑥FNPWR1	FRONT PANEL power connector
⑦COM1~5	RS232/RS422/RS485 Serial Port: COM1, 2 RS232 Serial Port: COM3-5
⑧NGFF2	M.2 M KEY PCI-E CONNECTOR 2
⑨NGFF1	M.2 M KEY PCI-E CONNECTOR 1
⑩PCIE1	PCI-E x16 SLOT
⑪SATA 1/2/3/4	Serial ATA connector Channel 0~3
⑫SATAPWR 1~4	Serial ATA power connector 1~4
⑬USB1	USB2.0 HUB port 1-2

2.3 Dimensions



Unit: mm

Chapter 3

Hardware Installation

3.1 Jumpers & Connectors Quick Reference

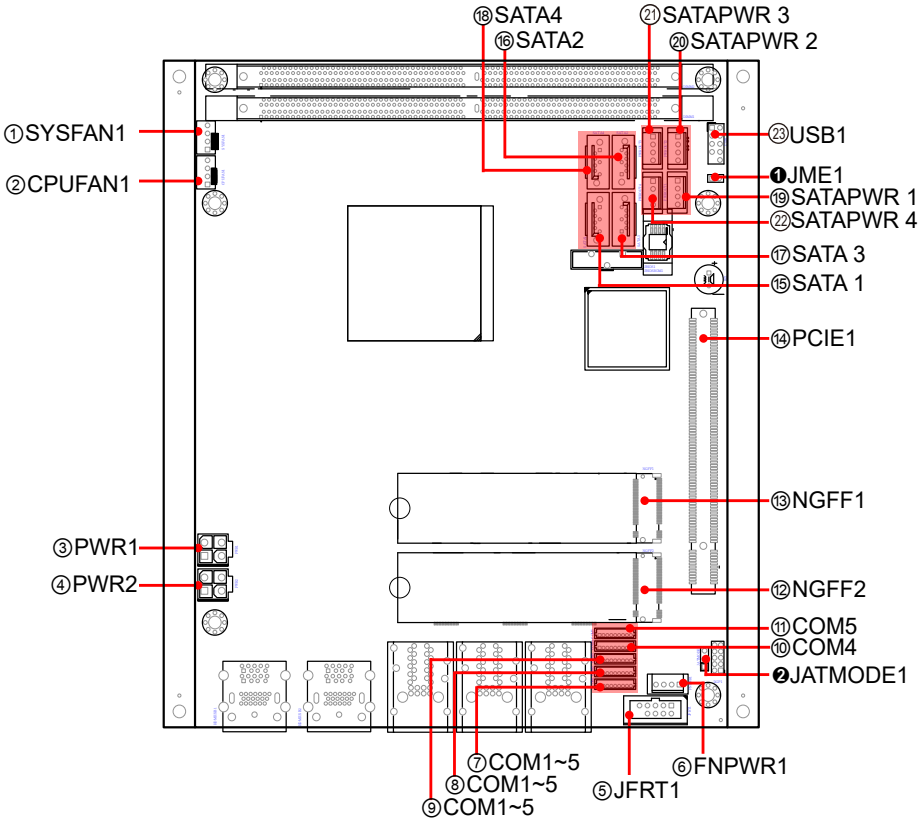
Jumper

P/N	Name	Description
❶JME	Clear CMOS Jumper	2-pin Block
❷JATMODE1	AT/ATX Type Selection	2-pin Block

Connector

P/N	Name
①SYSFAN	System Fan Connector
②CPUFAN	CPU Fan Connector
③PWR1	DCIN 9~36V Power input Connector
④PWR2	DCIN 9~36V Power input Connector
⑤JFRT1	Switches and Indicators
⑥FNPWR1	FRONT PANEL power connector
⑦~⑪COM1~5	RS232/RS422/RS485 Serial Port: COM1, 2 RS232 Serial Port: COM3-5
⑫NGFF2	M.2 M KEY PCI-E CONNECTOR 2
⑬NGFF1	M.2 M KEY PCI-E CONNECTOR 1
⑭PCIE1	PCI-E x16 SLOT
⑮⑯⑰⑱SATA 1/2/3/4	Serial ATA connector Channel 0~3
⑲⑳㉑㉒SATA-PWR 1~4	Serial ATA power connector 1~4
㉓USB1	USB2.0 HUB port 1-2

3.2 Jumpers & Connectors Location



3.2 Connectors and Headers
3.2.1 Jumpers

❶ JME1

Function: Clear CMOS Selection

Jumper Type: 2.00mm pitch, 1x3-pin header

Setting:

Pin	Description	
1-2	Clear CMOS	

❷JATMODE1

Function: AT/ATX Type Selection

Jumper Type: onboard 3-pin 2.0 mm header

Setting:

Pin	Description	
1-2	*ATX	
2-3	AT	

Note: *Default setting: Keep ATX mode for default setting.

3.2.2 Connectors

①SYSFAN

Function: Smart FAN connector

Jumper Type: WAFER,4*1,2.54mm,1-WALL,HSG3/4

Pin definition:

Pin	Description
1	GND
2	+12V
3	FANIN
4	FANCTL

②CPUFAN

Function: Smart FAN connector

Jumper Type: WAFER,4*1,2.54mm,1-WALL,HSG3/4

Pin definition:

Pin	Description
1	GND
2	+12V
3	FANIN
4	FANCTL

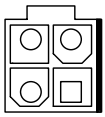
③④PWR1/PWR2

Function: Power input

Jumper Type: ATX-4P,CVILUX,CP-01304130

Pin definition:

Pin	Description
1	GND
2	GND
3	VIN: 9~36V
4	VIN: 9~36V



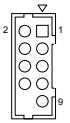
⑤JFRT1

Function: Switches and Indicators

Jumper Type: 2x5-10P BOX HEADER

Pin definition:

Pin	Description	Pin	Description
1	HDD_LED+	2	SYSPWR_LED+
3	HDD_LED-	4	SYSPWR_LED-
5	GND	6	PWRBTN
7	RESET	8	GND
9	+5V		



⑥FNPWR1

Function: FRONT PANEL power connector

Jumper Type: 2x5-10P BOX HEADER

Pin definition:

Pin	Description
1	5V
2	GND
3	GND
4	12V

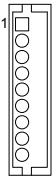
⑦⑧COM1, COM2

Function: COM1 /COM2 (RS232\RS422\RS485)

Jumper Type: 1*9P, WAFER-4WALL, ACES,86801-090L

Pin definition:

Pin	Description	Pin	Description
1	DCD	6	CTS
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD		



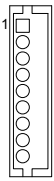
⑨⑩⑪COM3~COM5

Function: COM3 /COM4 /COM5 (RS232C)

Jumper Type: 1*9P,WAFER-4WALL,ACES,86801-090L

Pin definition:

Pin	Description	Pin	Description
1	DCD	6	CTS
2	DSR	7	DTR
3	RXD	8	RI
4	RTS	9	GND
5	TXD		

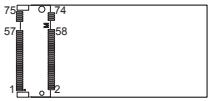


⑫⑬NGFF1, NGFF2

Function: M.2 M KEY PCI-E CONNECTOR

Jumper Type: NGFF CARD,75P,BLACK,KEY M

Pin definition: The pin assignments conform to the industry standard.

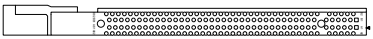


⑭PCIE1

Function: PCI-E x16 SLOT

Jumper Type: The pin assignments conform to the industry standard.

Pin definition:

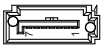


⑮⑯⑰⑱SATA 1/2/3/4

Function: Serial ATA Connector

Jumper Type: On-board Stabdard 7-pin Serial ATA Connector

Pin definition: The pin assignments conform to the industry standard.



⑲⑳㉑㉒PWROUT1\2\3\4

Function: SATA Power

Jumper Type: 1*4P,WAFER-1WALL,TECHBEST,AD04900041152

Pin definition:

Pin	Description	Pin	Description
1	+5V	3	GND
2	GND	4	+12V

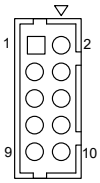
㉓USB1

Function: USB 2.0 connector

Jumper Type: 2.00mm pitch 2x5(-9)pin wafer connector

Pin definition:

Pin	Description	Pin	Description
1	USB +5V	6	USB +5V
2	USB-	7	USB-
3	USB+	8	USB+
4	GND	9	GND
5	GND	10	GND



Chapter 4

BIOS

4. Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

Note: The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

4.1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <Del> to enter Setup

4.2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:

4.3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press "**Delete**" once the power is turned on.

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

4.4 Menu Bars

There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Security	Password settings
Boot	To change boot settings
Save & Exit	Save setting, loading and exit options.

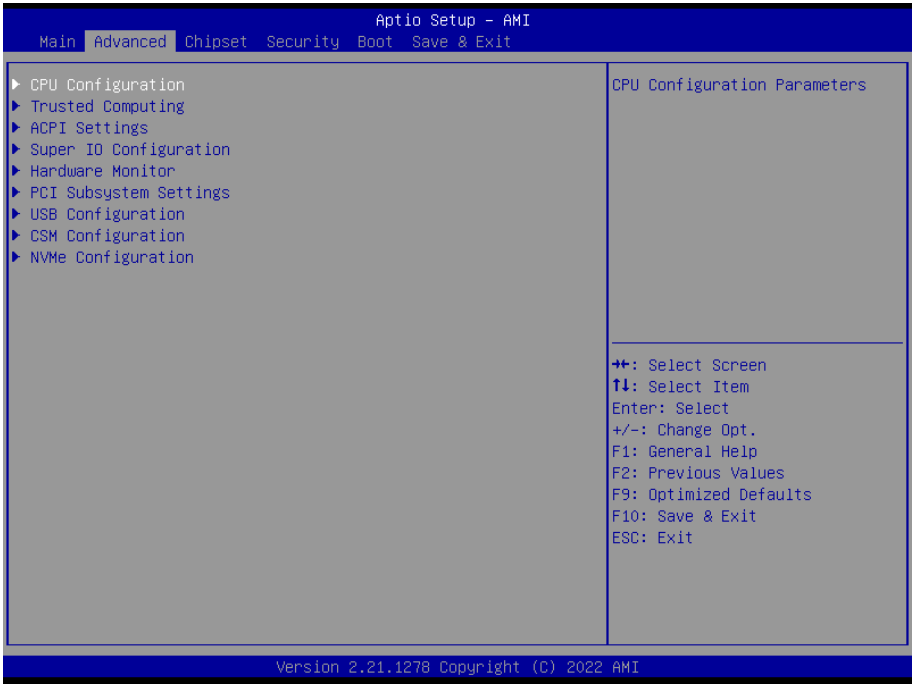
User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

4.6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.

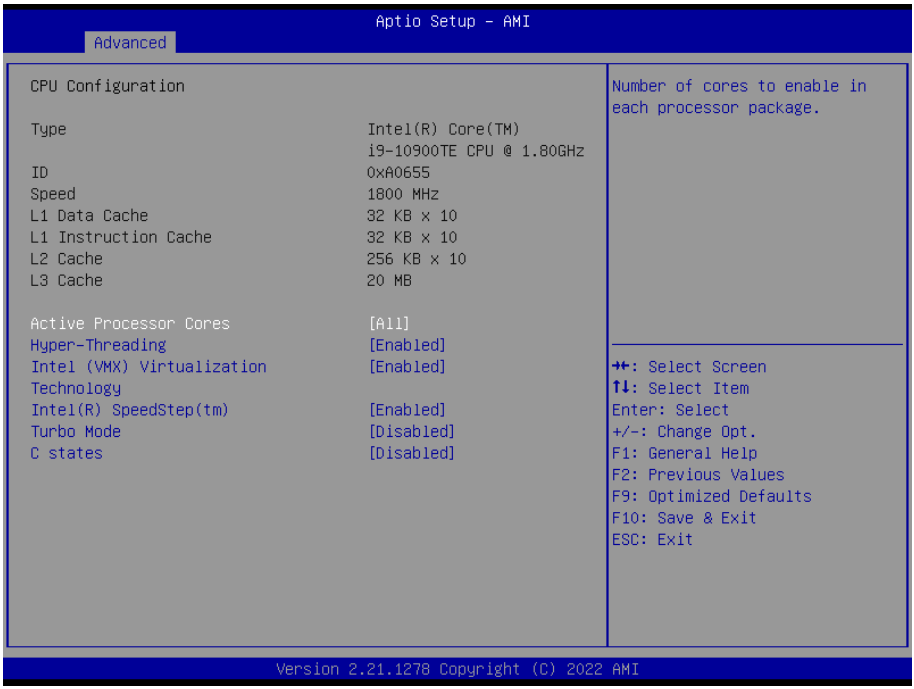
Setting	Description
System Date	Set the date. Please use [Tab] to switch between data elements.
System Time	Set the time. Please use [Tab] to switch between time elements.

4.7 Advanced Menu



Setting	Description
CPU Configuration	See 4.7.1 CPU Configuration on page 24
Trusted Computing	See 4.7.2 CPU Trusted Computing on page 26
ACPI Settings	See 4.7.3 ACPI Settings on page 27
Super IO Configuration	See 4.7.4 Super IO Configuration on page 28
Hardware Monitor	See 4.7.5 Hardware Monitor on page 31
PCI Subsystem Settings	See 4.7.6 PCI Subsystem Settings on page 32
USB Configuration	See 4.7.7 USB Configuration on page 33
CSM Configuration	See 4.7.8 CSM Configuration on page 35
NVMe Configuration	See 4.7.9 NVMe Configuration on page 36

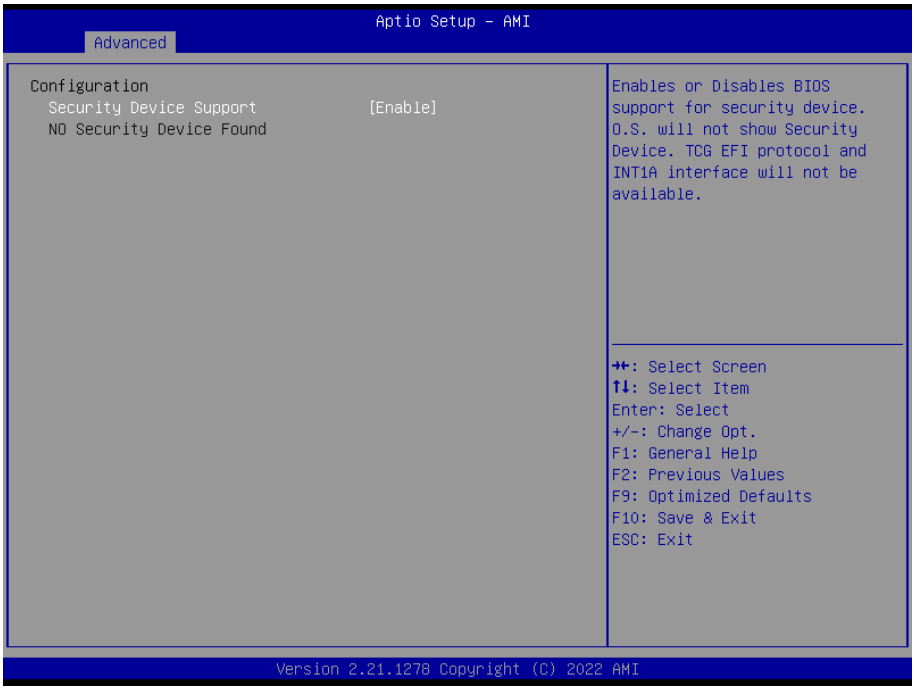
4.7.1 CPU Configuration



Setting	Description
Active Processor Cores	Number of cores to enable in each processor package. ► Options: **All** (default), **1~9**
Hyper-threading	**Enabled** (default) for Windows and Linux (OS optimized for Hyper-Threading Technology) and **Disabled** for other OS (OS not optimized or Hyper-Threading Technology). When disabled only one thread per enabled core is enabled.

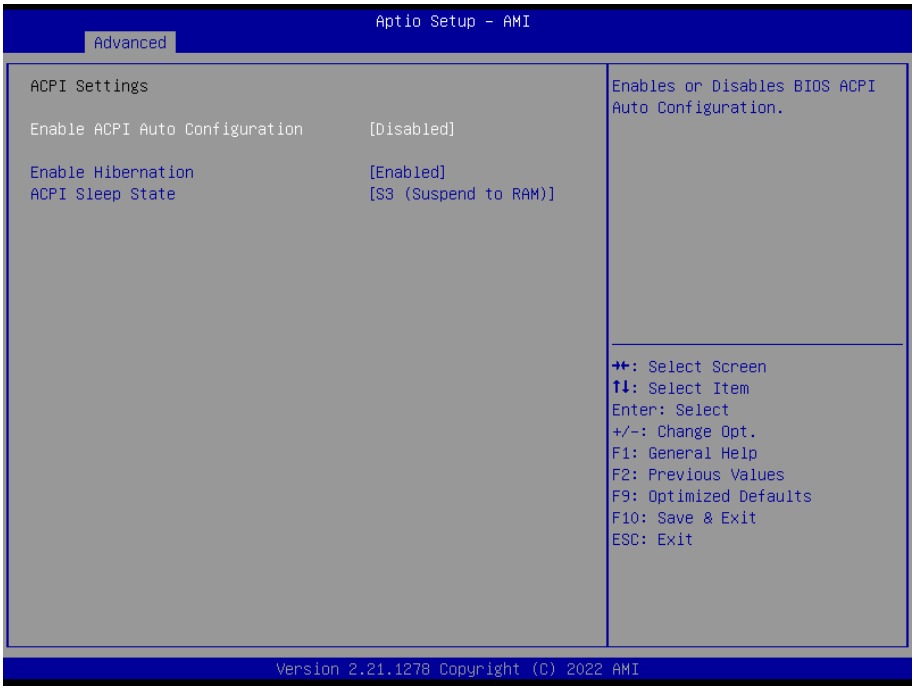
Intel (VMX) Virtualization	**Enable** or **Disable** Intel virtualization technology. When enabled, a VMM can utilize the additional hardware capabilities provide by Vanderpool Technology. ► Options: **Enabled** (default) or **Disabled**
Intel(R) SpeedStep(tm)	This item allows more than two frequency ranges to be supported. The optional settings are: [**Disabled**]; [**Enabled**](default).
Turbo Mode	**Enable**/ **Disable**(default) processor Turbo Mode(requires Intel Speed Step or Intel Speed Shift to be available and enabled).
C States	**Enable** /**Disable** (default) CPU C States

4.7.2 CPU Trusted Computing



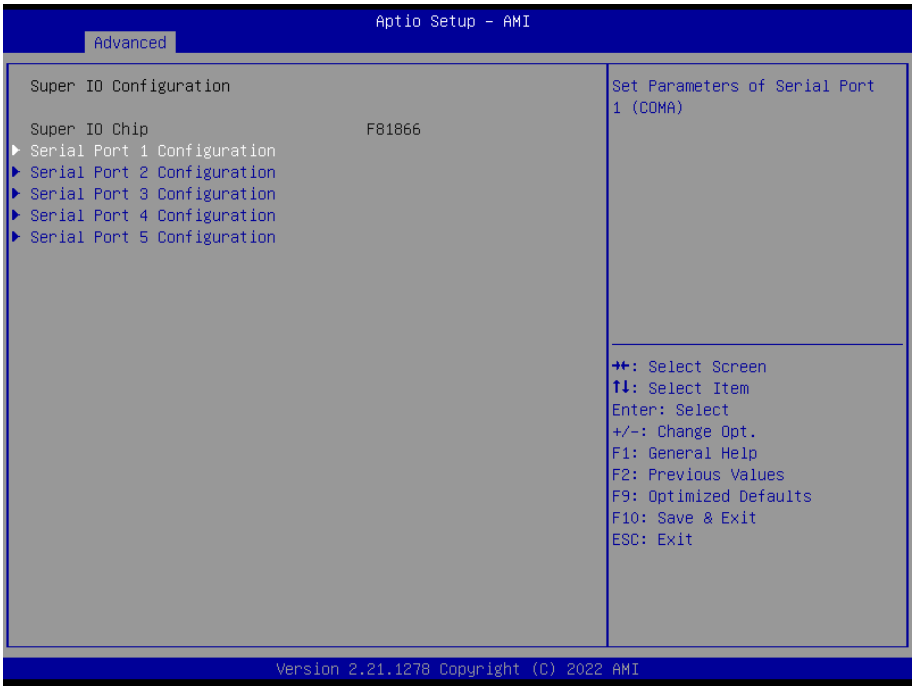
Setting	Description
Security Device Support	**Enable** (default) or **Disable** BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

4.7.3 ACPI Settings



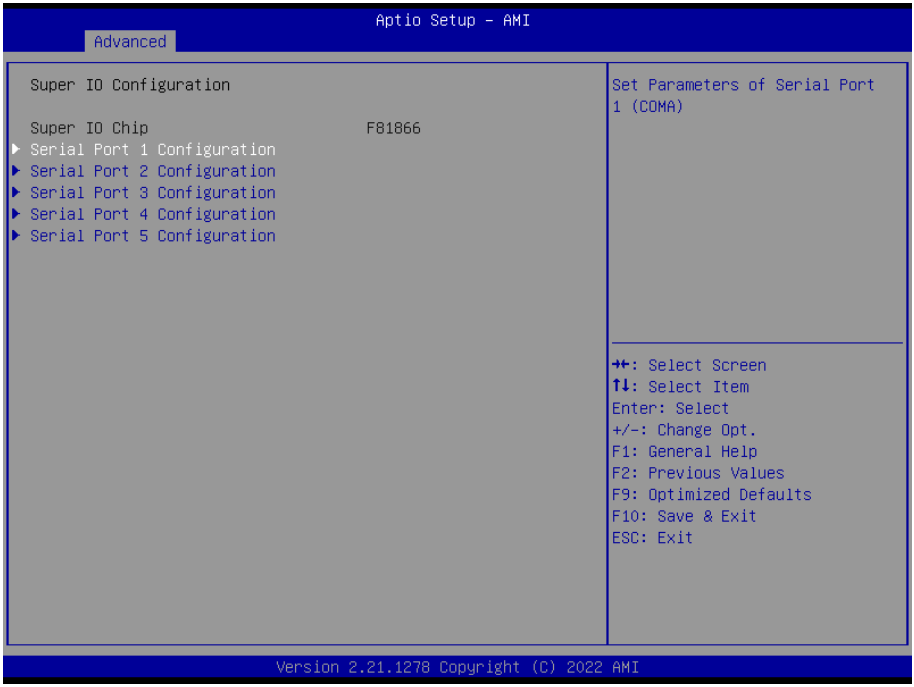
Setting	Description
Enable ACPI Auto Configuration	**Enable** or **Disable**(default) BIOS ACPI Auto configuration.
Enable Hibernation	**Enable** (default) or **Disable** System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the highest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

4.7.4 Super IO Configuration



Setting	Description
Serial Port 1/2/3/4/5 Configuration	See next page.

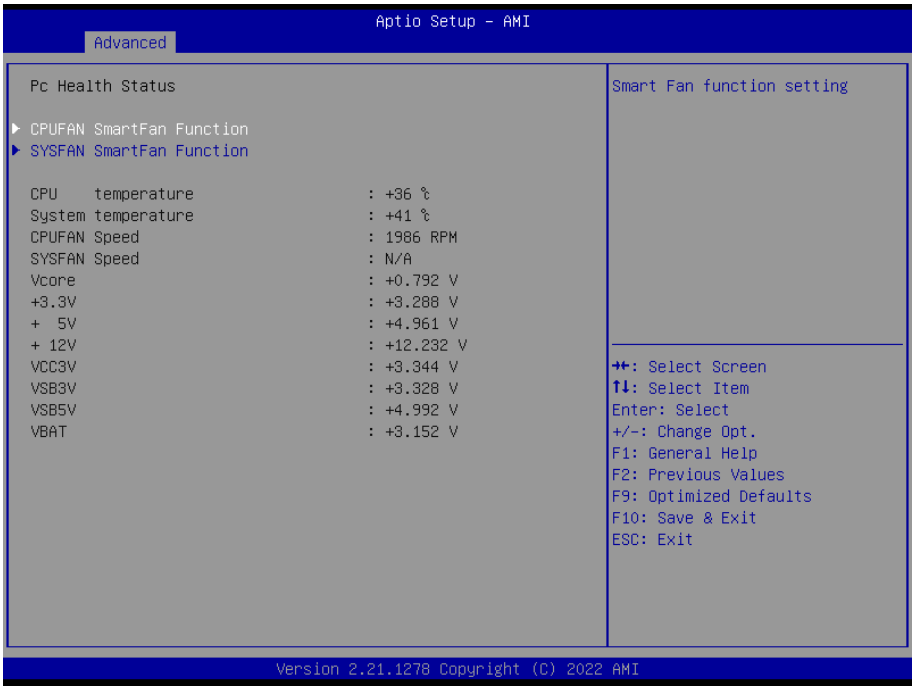
Serial Port 1/2/3/4/5 Configuration



Setting	Description
Serial Port	**Enable** (default) or **Disable** Serial Port (COM).

Mode Select	► Options for Serial Port 1 Configuration: Serial Port:**Enable** (default) or **Disable** Serial Port (COM). Options for Serial Port 1 Mode Configuration: Mode Select: **RS-232 / RS-422 / RS-485 / RS-422 Termination Resitor / RS-485 Termination Resitor** ► Options for Serial Port 2 Configuration: Serial Port:**Enable** (default) or **Disable** Serial Port (COM). Options for Serial Port 2 Mode Configuration: Mode Select: **RS-232 / RS-422 / RS-485 / RS-422 Termination Resitor / RS-485 Termination Resitor** ► Options for Serial Port 3 Configuration: Serial Port:**Enable** (default) or **Disable** Serial Port (COM). ► Options for Serial Port 4 Configuration: Serial Port:**Enable** (default) or **Disable** Serial Port (COM). ► Options for Serial Port 5 Configuration: Serial Port:**Enable** (default) or **Disable** Serial Port (COM).

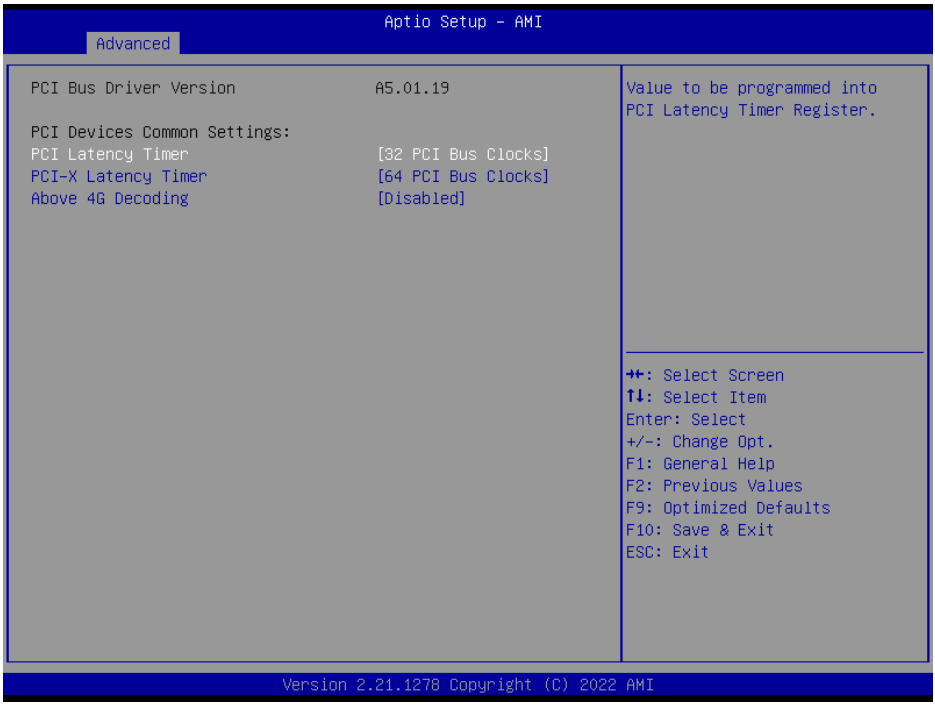
4.7.5 Hardware Monitor



Access this submenu to monitor the hardware status.

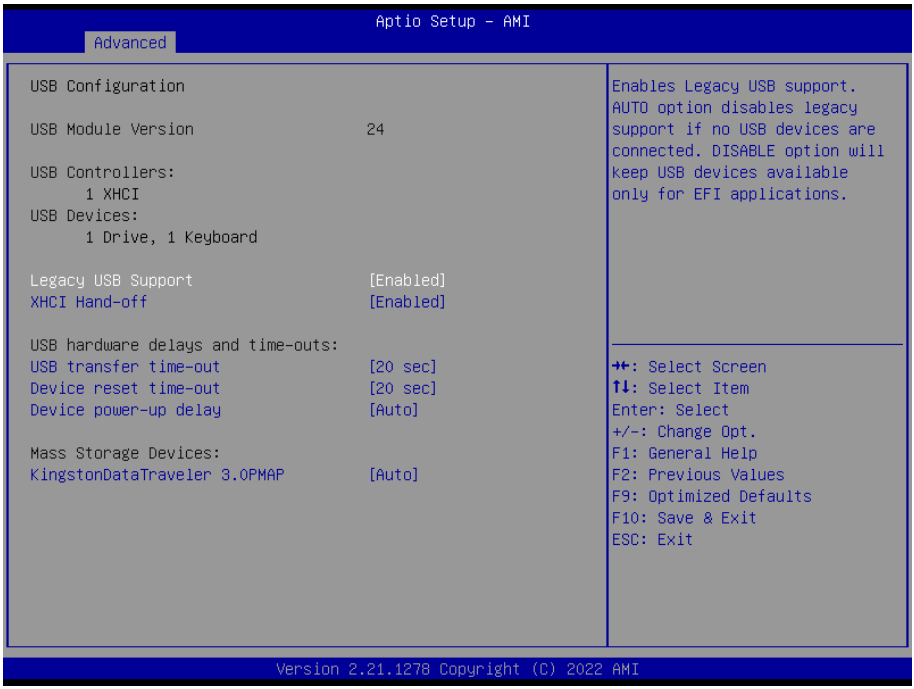
Setting	Description
CPUFAN SmartFan Function	Press [Enter] to make settings for SmartFan Configuration: **SmartFAN Mode** / **Manual Mode**
SYSFAN SmartFan Function	Press [Enter] to make settings for SmartFan Configuration: **SmartFAN Mode** / **Manual Mode**.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. ► Options: **Suspend Disabled** and **S3 (Suspend to RAM)** (default).

4.7.6 PCI Subsystem Settings



Setting	Description
PCI Latency Timer	Value to be programmed into PCI Latency timer Register. ► **32/64/96/128/160/192/224/248** PCI Bus Clocks ► Default: **32 PCI Bus Clocks**
PCI-X Latency Timer	Value to be programmed into PCI-X Latency Timer Register. ► **32/64/96/128/160/192/224/248** PCI Bus Clocks ► Default: **64 PCI Bus Clocks**
Above 4G Decoding	**Enable**/**Disable**(default) 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

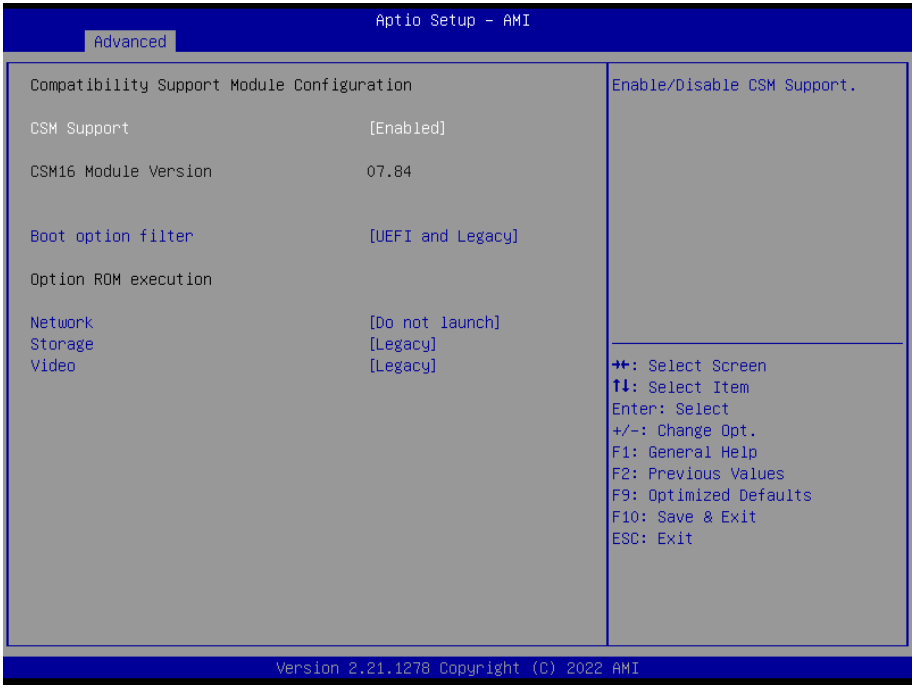
4.7.7 USB Configuration



Setting	Description
Legacy USB Support	Sets legacy USB support. ► Options: **Enabled** (default), **Disabled** and **Auto**. **AUTO** option disables legacy support if no USB devices are connected. **Disable** option will keep USB devices available only for EFI applications.
XHCI Hand-off	**Enable** (default) or **Disable** XHCI Hand-off This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB hardware delay and time-out	

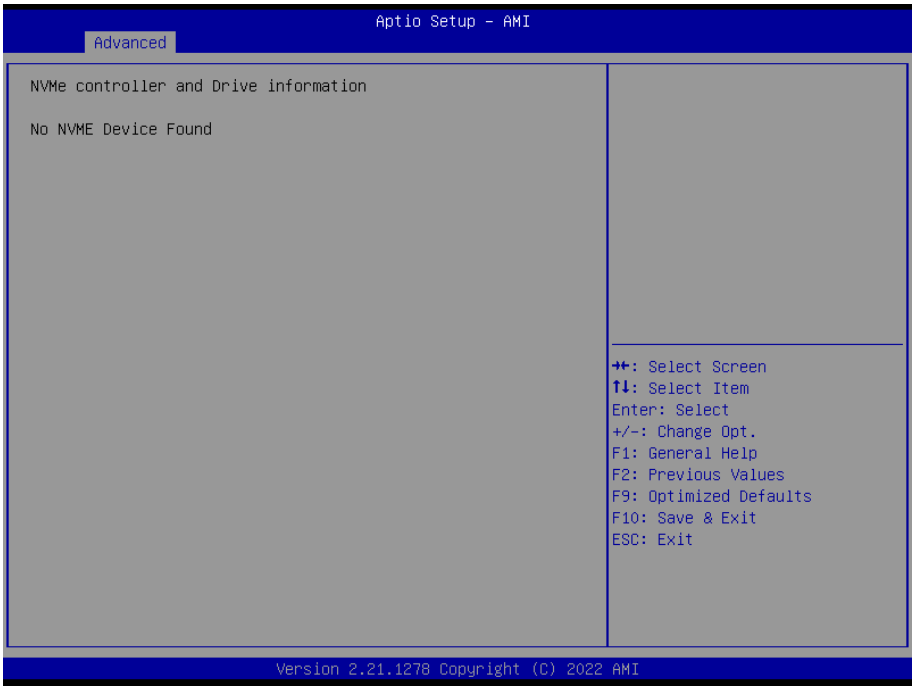
USB Transfer time-out	Use this item to set the time-out value for control, bulk, and interrupt transfers. ▸ Options available are: **1 sec, 5 sec, 10 sec, 20 sec** (default)
Device reset time-out	Use this item to set USB mass storage device start unit command time-out. ▸ Options available are: **10 sec, 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. ▸ Options available are: **Auto** (Default): 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor. **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.

4.7.8 CSM Configuration



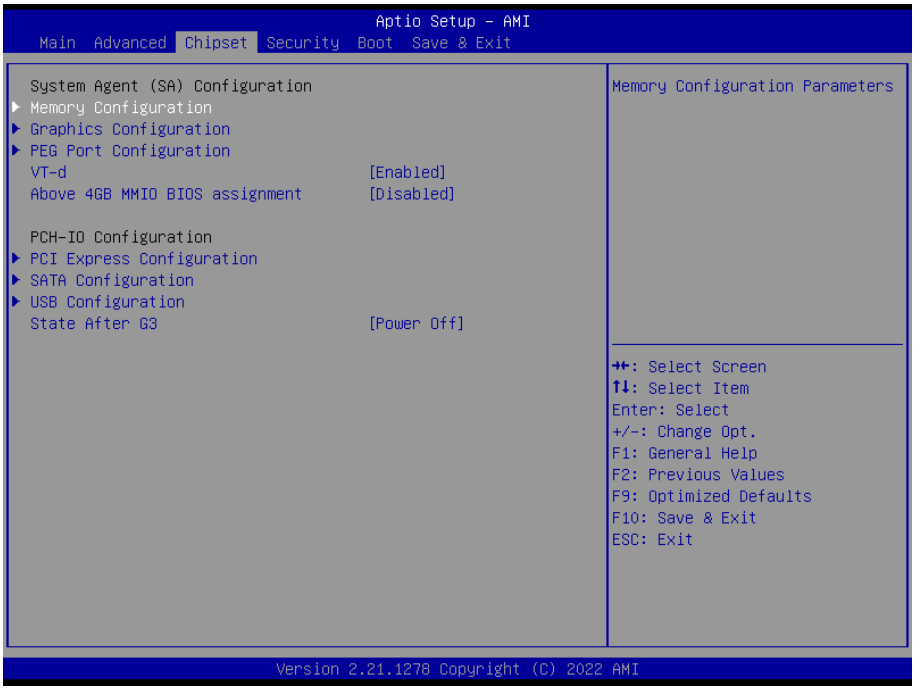
Setting	Description
CSM Support	**Enable** (default) or **Disable** CSM Support.
Boot option filter	Control the Legacy/UEFI ROMs priority. ► Options: **UEFI and Legacy** (default), **Legacy only** and **UEFI only**
Network	Control the execution of UEFI and Legacy PXE OpROM ► Options: **Do not lauch** (default), **UEFI** and **Legacy**
Storage	Control the execution of UEFI and Legacy Storage OpROM ► Options: **Do not lauch**, **UEFI** and **Legacy** (default)
Video	Control the execution of UEFI and Legacy Video OpROM ► Options: **Do not lauch**, **UEFI** and **Legacy** (default)

4.7.9 NVMe Configuration



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

4.8 Chipset



Setting	Description
Memory Configuration	Access this submenu to view the memory configuration.

Graphic Configuration	► Primary Display Options are: **Auto**(default), **IGFX**, **PEG**, and **PCI**. ► Internal Graphics Options are: **Auto**(default), Disabled, Enabled ► GTT Size Options are: **2MB**/**4MB**/**8MB**(default) ► Aperture Size Options are: **128MB**/**256MB**(default)/**512MB**/**1024MB**/**2048MB** ► DVMT Pre-Allocated **32M** is the default. ► DVMT Total Gfx Mem Options are: **128M**/**256M**(default)/**MAX**
PEG Port Configuration	PEG port options Enable Root Port: Enable or Disable the root port. PEG 0:1:0 ► Options: **Auto** (default), **Enabled** and **Disabled**. Max Link Speed: Configure PEG 0:1:0 Max Speed ► Options: **Auto**(default)**, Gen1, Gen2** and **Gen3** PEG 0:1:1 ► Options: **Auto** (default), **Enabled** and **Disabled**. Max Link Speed: Configure PEG 0:1:1 Max Speed ► Options: **Auto**(default)**, Gen1, Gen2** and **Gen3** PEG 0:1:2 ► Options: **Auto** (default), **Enabled** and **Disabled**. Max Link Speed: Configure PEG 0:1:2 Max Speed ► Options: **Auto**(default)**, Gen1, Gen2** and **Gen3**

VT-d	**Enable** (default) or **Disable** VT-d function
Above 4GB MMIO BIOS assignment	**Enable** or **Disable** (default) Above 4GB MmemoryMapped BIOS assignment. This is automatically enabled when Aperture Size is set to 2048MB. See
PCH-IO Configuration	
PCI Express Configuration	See 4.8.1 PCI Express Configuration on page 40
SATA And RST Configuration	See 4.8.2 SATA Configuration on page 40
USB Configuration	See 4.8.3 USB Configuration on page 40
State After G3	Specify what state to go to when power is re-applied after a power failure (G3 state). ► Options available are **Power On** (default), **Power Off** and **Last State**.

4.8.1 PCI Express Configuration

Setting	Description
PCIE1, 2	**Enable** (default) or disable PCIE1/2.
ASPM	Disable or set the ASPM level. Force L0s will force all inks to L0s state. “Auto” will allow BIOS to auto configure.”Disable” will disable ASPM. ► Options: **Disabled** (default), **L0s**, **L1**, **L0sL1** and **Auto**.
PCIe Speed	Select PCI Express port speed. ► Options: **Auto** (default), **Gen1**, **Gen2** and **Gen3**

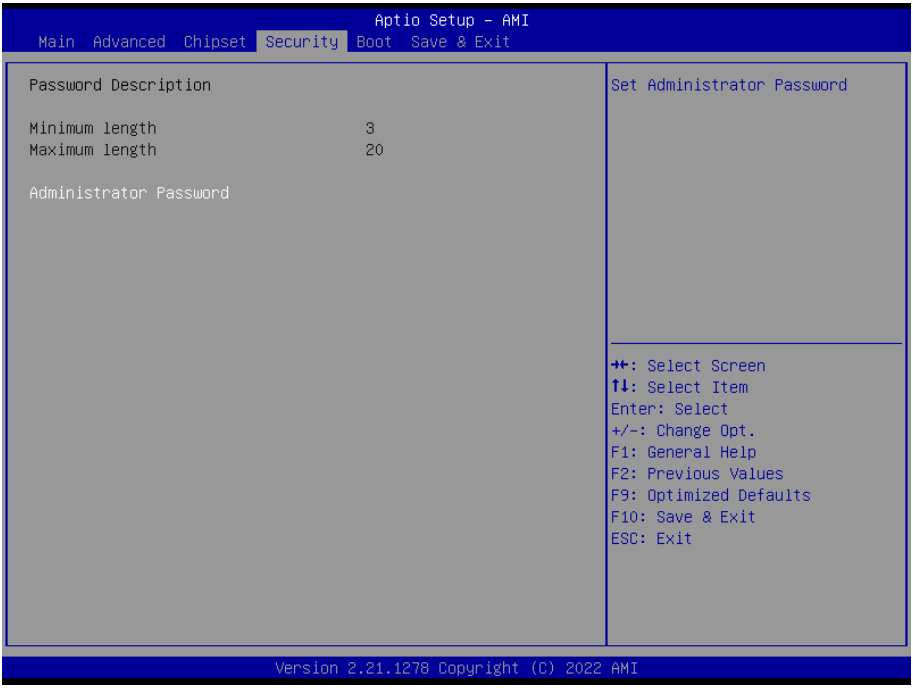
4.8.2 SATA Configuration

Setting	Description
SATA Controller(s)	**Enable** (default) or **disable** SATA Device.
SATA Mode Selection	Determines how SATA controller(s) operate. ► Options: **AHCI** (default) and **RAID**
Port 0/1	**Enable** or **disable**(default) SATA Port.
Hot Plug	**Enable** or **disable** (default) the port as pluggable.
SATA Device Type	Identify the SATA port is connected to Solid State Drive or hard Disk Drive. ► Options: **Hard Disk Drive** and **Solid State Drive** (default).

4.8.3 USB Configuration

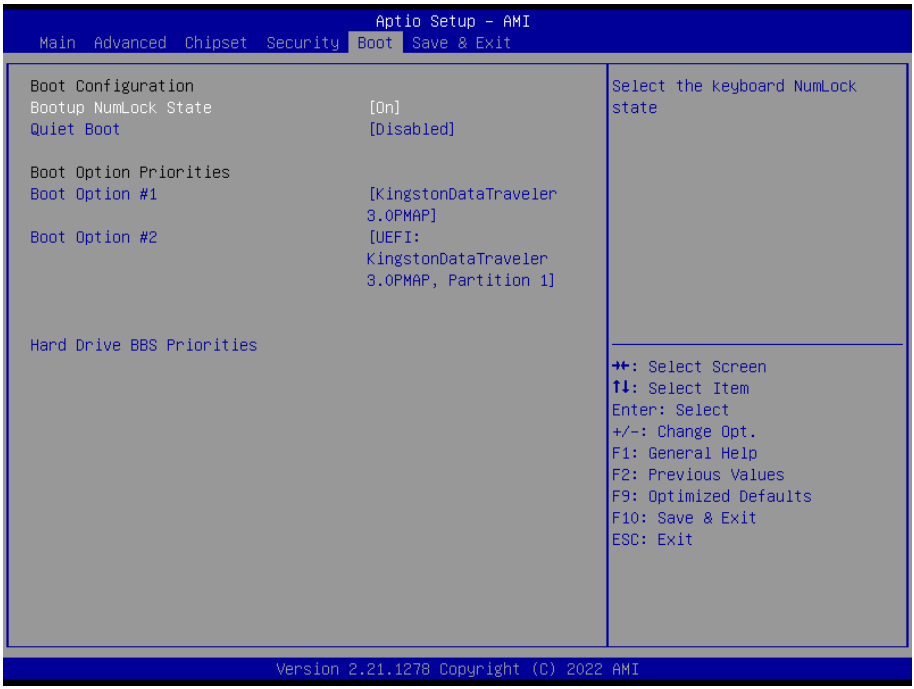
Setting	Description
USB Port Disable Override	Selectively enable/disable (default) the corresponding USB port from reporting a Device Connection to the controller. ► Options: **Disable Link** (default) and **Select Per-Pin**

4.9 Security



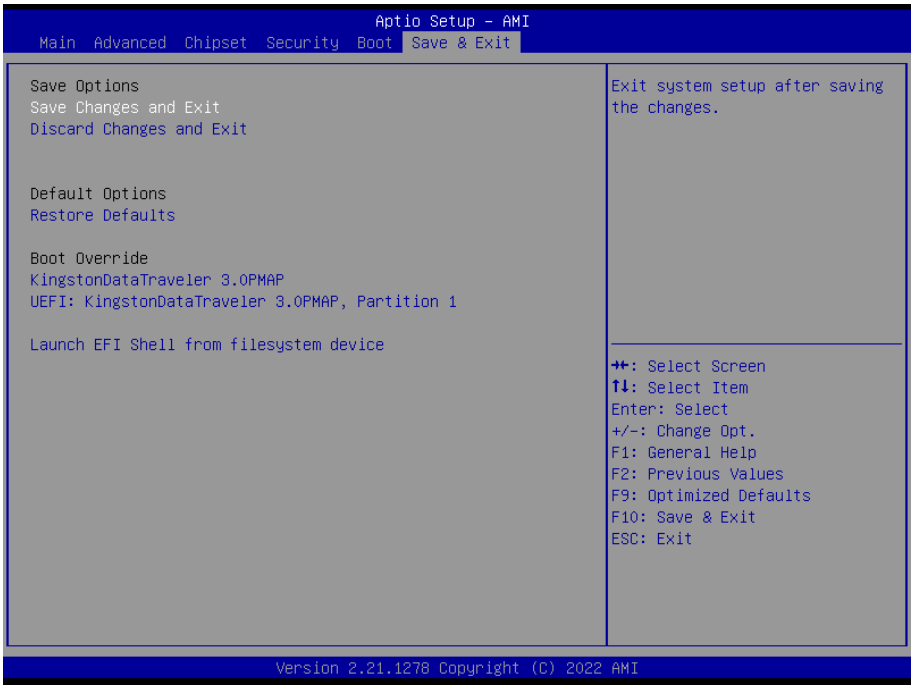
Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. The screen then pops up an **Create New Password** dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

4.10 Boot



Setting	Description
Boot NumLock State	Select the keyboard NumLock state. ► Options: **On** (default) and **Off**.
Quiet Boot	**Enable** or **Disable**(default) Quiet Boot option.
Boot Option Priority	Set the system boot priorities.
Hard Drive BBS Priorities	BBS means “BIOS Boot Specification”. Sets the order of the legacy devices in this group.

4.11 Save & Exit



Setting	Description
Save Changes and Exit	Exit system setup after saving the changes. ► Enter the item and then a dialog box pops up: **Save configuration and exit? (Yes/ No)**
Discard Changes and Exit	Exit system setup without saving the changes. ► Enter the item and then a dialog box pops up: **Quit without saving? (Yes/ No)**
Restore Defaults	Restore/Load Default values for all the setup options. ► Enter the item and then a dialog box pops up: **Load Optimized Defaults? (Yes/ No)**
Launch EFI Shell from filesystem device	Attempts to launch EFI shell application (Shell.efi) from one of the available filesystem devices.