iTC-11XX-EXP Series

iTC-1150R-EXP / iTC-1170R-EXP

Fanless Industrial Panel PC with Intel® Elkhart Lake Processor

User's Manual

Version 1.1

P/N: 4018110001110P

2023.05

Revision History

Version	Date	Description
1.0	2023.05	Initial release
1.1	2023.05	Modify the View Angle in 1.3 Specifications

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Copyright Notice

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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.

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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.

Warning

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

FCC Class A

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

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

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

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

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

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

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

SVHC / REACH

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

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

Important Safety Instructions

Read these safety instructions carefully

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

Warning

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

1. Disconnect your Panel 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 Panel PC, whenever components are separated from the system.

Lithium Battery Replacement

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

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

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

Technical Support

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

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

https://www.arbor-technology.com

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.

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

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

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Chapter 1

Introduction

1.1. The Computer

Product Highlights

(*Product appearance varies by model.)

- Intel® Celeron® Processor J6413 (1.5M Cache, up to 3.00 GHz)
- 15" 1024 x 768 XGA LCD display
- 17" 1280 x 1024 SXGA LCD display
- Fanless design w/ Aluminum Front bezel
- Flush front panel w/ IP65 waterproof compliant
- Support 2.5GbE LAN and USB 3.2 Gen1 (5Gbps)
- Rich I/O: 6 x COM/ 2 x LAN/ 4 x USB3.2(5Gbps)/ 8-bit DI/O & dual video output: DisplayPort and DVI-D
- Easy-accessible expansion for storage and wireless module
- 9~36V wide-range DC input with reverse protection
- Support PCIe x 1 (half-length) and PCI 32-bit expansion

1.2. About this Manual

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

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

1.3. Specifications

System		
CPU	Intel® Celeron® J6413 Quad-Core™ Processor 1.80GHz	
Memory	1 x 260 pin DDR4 SO-DIMM socket, supporting 3200MHz SDRAM up to 32GB (4GB DDR4 SO-DIMM pre-installed)	
LAN Chipset	1 x Intel® 225LM controller 1 x Intel® i210 / i211AT controller	
Watchdog Timer	1~255 levels reset	
TPM	Support TPM 2.0	
Storage		
Device	1 x M.2 M-Key 2242/ 2280 (SATAIII only) 1 x 2.5” SSD/ HDD tray	
Audio		
Device	1 x Mic-in / 1 x Line out	
Speaker	2 x 1.5W speakers (optional)	
LCD Display		
Size/Type	iTC-1150R-EXP: iTC-1170R-EXP:	15" TFT LCD Panel 17" TFT LCD Panel
Max. Resolution	iTC-1150R-EXP: iTC-1170R-EXP:	1024 x 768, XGA 1280 x 1024, SXGA
Max. Colors	iTC-1150R-EXP: iTC-1170R-EXP:	16.2M 16.7M
Luminance	iTC-1150R-EXP: iTC-1170R-EXP:	350 cd/m² 350 cd/m²
Touch Screen	iTC-1150R-EXP: iTC-1170R-EXP:	Flat 5-wire Analog Resistive Flat 5-wire Analog Resistive
View Angle (U/D/R/L)	iTC-1150R-EXP: iTC-1170R-EXP:	88°/88°/88°/88° 60°/80°/80°/80°
Power System		
Power Input	DC 9~36V	
Power Consumption	iTC-1150R-EXP: Typical 25W (w/o I/O cards) iTC-1170R-EXP: Typical 40W (w/o I/O cards)	
Remote Control	1x3-pin terminal block for remote control and PWR LED output	
Qualification		
Certification	CE, FCC Class A	

External I/O	
Expansion Bus	1 x Mini PCIe slot (PCIe x1+ USB2.0, Full size) w/ 1 x SIM card slot (for Wireless connection)
	1 x PCIe x1 slot (default, for half-length) or 1 x PCI 32-bit slot (both Riser Cards are included in Standard Accessories)
Serial Ports	2 x DB-9 connectors for RS232/422/485 4 x DB-9 connectors for RS232
USB Ports	4 x Type-A USB 3.2 Gen 1 (5Gbps)
LAN	1 x RJ-45 port for GbE LAN 1 x RJ-45 port for 2.5 GbE LAN
Video Ports	1 x DVI-D connector, supporting Full HD resolution 1 x DisplayPort 1.4 connector, supporting 4K2K resolution
DIO	8 bit Digital I/O
Mechanical	
Mounting Type	Panel mount VESA-75/100 mount (optional)
Chassis	Aluminum front bezel and steel-metal chassis
Dimension (W x H x D)	iTC-1150R-EXP: 367 x 299 x 99 mm iTC-1170R-EXP: 415 x 347 x 100 mm
Weight (Net)	iTC-1150R-EXP: 5.2 kg iTC-1170R-EXP: 6.3 kg
Environmental	
Operating Temp.	-10ºC ~ 55ºC (14°F ~ 131°F)
Storage Temp.	-20ºC ~ 70°C (-4°F ~ 158°F)
Operating Humidity	10 ~ 95% RH @ 55°C (non-condensing)
Vibration	5 ~ 500Hz, 1Grms Random (with SSD)
Shock	Operating 10G, 11ms X,Y,Z axis (with SSD)
OS Support	
Windows®10 (64bit), Windows®11 (64bit)	

1.4. Inside the Package

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

1 x iTC-1150R-EXP / iTC-1170R-EXP
*Product appearance varies by model.

iTC-1150R-EXP / iTC-1170R-EXP Accessory Box

1 x **Accessory Box** that contains the following items:

- User Manual
- 4 x M3*4L screws (for 2.5" SSD/ HDD tray)
- Panel-mount Clamps w/ screws (clamps and M4*18L screws)
- 10-pin plug (for D I/O)
- 1 x Rubber O-ring
- 3-pin plug x 2 (one for DC input block; one for Remote Control block)
- 1 x PCIex1 & 1 x PCI Riser Cards

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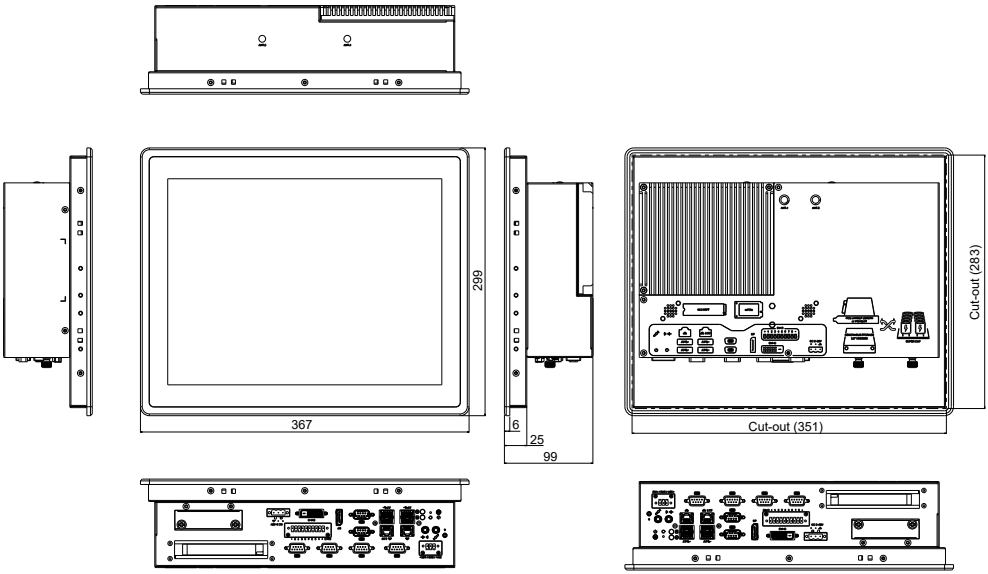
Chapter 2

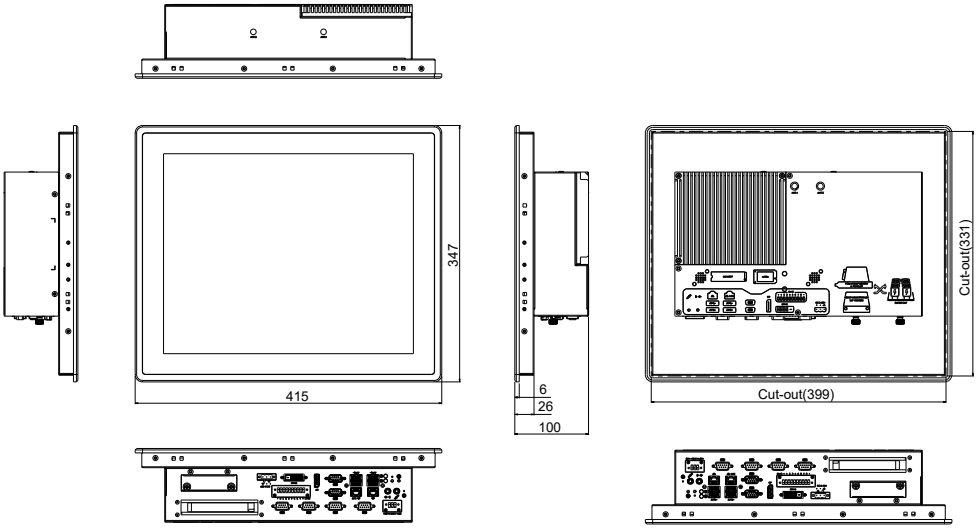
Getting Started

2.1. Dimensions

iTC-1150R-EXP



iTC-1170R-EXP



2.2. Tour the Computer

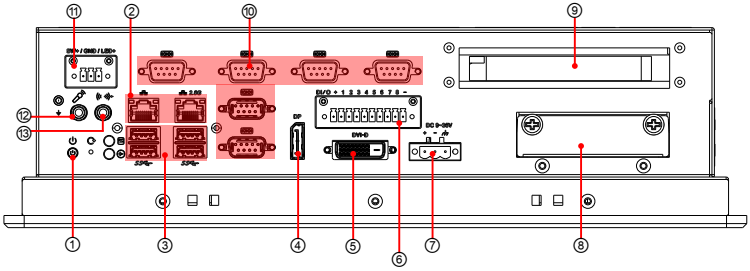
Take a look around the computer and find the external controls and connectors.

2.2.1. Front View

*Product appearance varies by model.

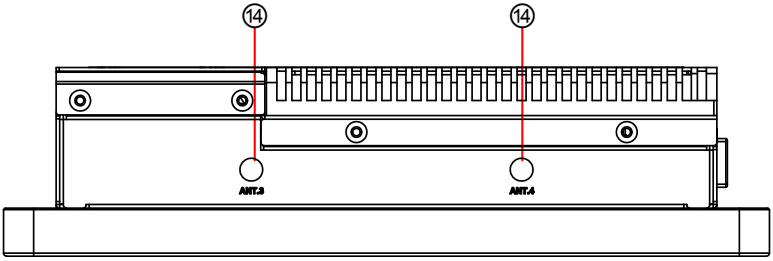
2.2.2. Bottom View

iTC-1150R-EXP/iTC-1170R-EXP



2.2.3. Top View

iTC-1150R-EXP/iTC-1170R-EXP



iTC-iTC-1150R-EXP / iTC-1170R-EXP

No.	Description
①	Power button
②	2 x RJ-45 GbE port
③	4 x Type-A USB 3.0/2.0 ports
④	1 x DisplayPort 1.4 connector, supporting 4K2K resolution
⑤	1 x DVI-D connector, supporting Full HD resolution
⑥	8 bit Digital I/O
⑦	3-pin terminal block for Power Input
⑧	1 x 2.5” SSD/ HDD tray
⑨	Expansion Card slot
⑩	COM1, COM2, RS-232/422/485 selectable
⑪	1x3-pin terminal block for remote control and PWR LED output
⑫	1 x Mic-in
⑬	1 x Line out
⑭	SMA Antenna Holes for optional WiFi Function

2.3. I/O Definition

⑥ 8 bit Digital I/O

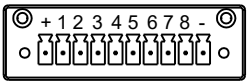
Function: Digital I/O Connector

Connector Type:

Pin Assignment:

Pin	Desc.	Pin	Desc.
+	DIO_POWER	5	GPIO81
1	GPIO80	6	GPIO83
2	GPIO82	7	GPIO85
3	GPIO84	8	GPIO87
4	GPIO86	-	GND

DI/O



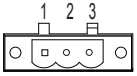
⑦ PWRIN1

Function: Power input terminal block

Connector Type: 1x3-pin Terminal block

Pin Assignment:

Pin	Desc.
1	Power Input +
2	Power Input -
3	Earth Ground



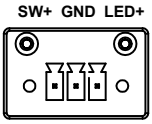
⑪ 3-pin terminal block

Function: 3-pin terminal block for remote control and PWR LED

Connector Type: 1x3-pin Terminal block

Pin Assignment:

Pin	Desc.
1	Power button+
2	GND
3	LED+



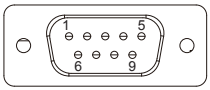
⑩ COM1, COM2 and RS232

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

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

Pin Assignment:

	Pin	Desc.	Pin	Desc
RS-232	1	DCD	6	DSR
	2	RXD	7	RTS
	3	TXD	8	CTS
	4	DTR	9	RI
	5	GND		
RS-422	1	COM_422 TX-		
	2	COM_422 TX+		
	3	COM_422 RX+		
	4	COM_422 RX-		
	5	GND		
RS-485	1	COM_485 D-		
	2	COM_485 D+		
	5	GND		



2.4. Driver Installation Note

Windows 10 64-Bit

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.

Device	Driver Path
Audio	Audio\0006-64bit_Win7_Win8_Win81_Win10_R279.exe
Ethernet	Ethernet\Wired_driver_26.3_x64.exe
Graphic	Graphic\Installer.exe
Intel_CSE	Intel_CSE\SetupME.exe
Intel_HID Event Filter	Intel_HID Event Filter\Installer\Setup.exe
Intel_Serial IO	Intel_Serial IO\616361_serialIO_driver_Windows10_64bit_ElkhartLake_RelNotes.pdf (Please check page 12 of RelNotes.pdf file to install the driver)
PenMount Touch Driver	PenMount Touch Driver\Setup.exe (Only apply to iTC-1121R / iTC-1150R and iTC-1170R Series)

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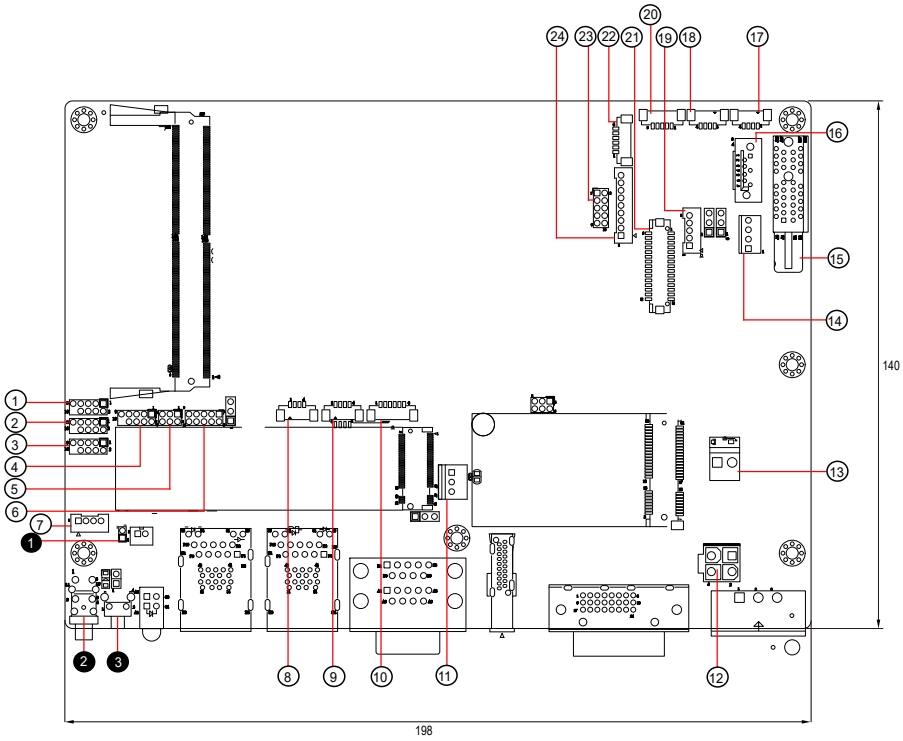
Chapter 3

Engine of the Computer

3.1. Board Layout



Pin Headers

Label	Description
❶JBAT1	CMOS Settings

Buttons

Label	Description
❷SW1	Power Button
❸CN3	Reset Button

Connectors

Label	Description
①②③④ CN12, CN11, CN14, CN13	COM Ports
⑤JPIC1	PIC programming pin header
⑥CN15	Digital I/O Connector
⑦CN2	Remote button and LED
⑧⑨CN8, CN9	USB Connector
⑩CN4	SMBUS Connector
⑪FAN1	FAN Connector
⑫JPOWER1	Power Input connector
⑬JPOWER2	Power Output connector
⑭SATAPWR	SATA Power Connector
⑮PCIe1	PCIe Connector
⑯SATA1	Serial ATA Connector
⑰⑱CN6, CN7	USB Connector
⑲INV1	LVDS Back light Connector
⑳TPC1	Resistive Touch Connector
㉑LVDS1	LVDS Connector
㉒CN16	AUDIO Connector
㉓DGP1	Debug Port
㉔CN5	HDA Connector

3.2. Pin Header

3.2.1. Pin Header

❶ JBAT1

Function: Clears/keeps CMOS
Jumper Type: 2.00 mm pitch 1x2-pin header
Setting:

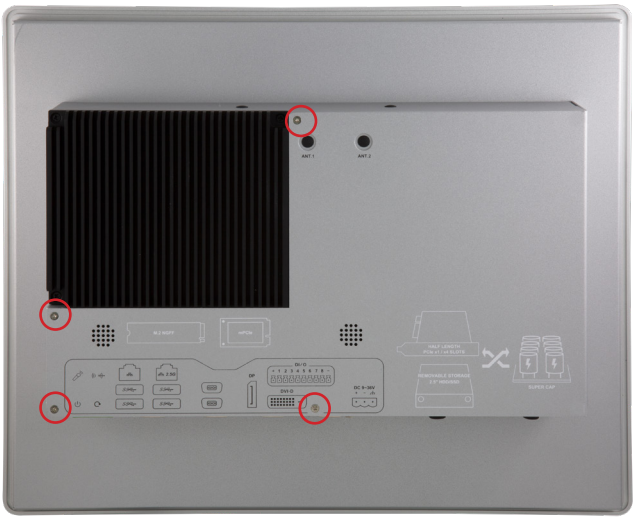
Pin	Description	
Short	Clears CMOS	1 2
Open	Keeps CMOS (default)	1 2

Chapter 4

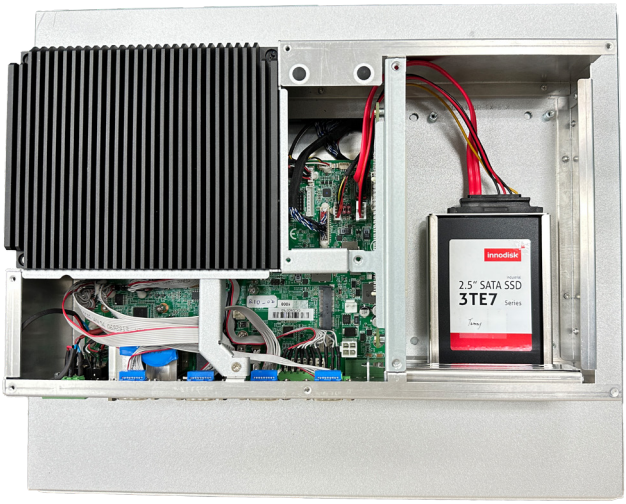
Installation & Maintenance

4.1.1 Remove the Rear Cover from the device

1. Loosen and remove the 6 screws securing the computer's rear and side cover.

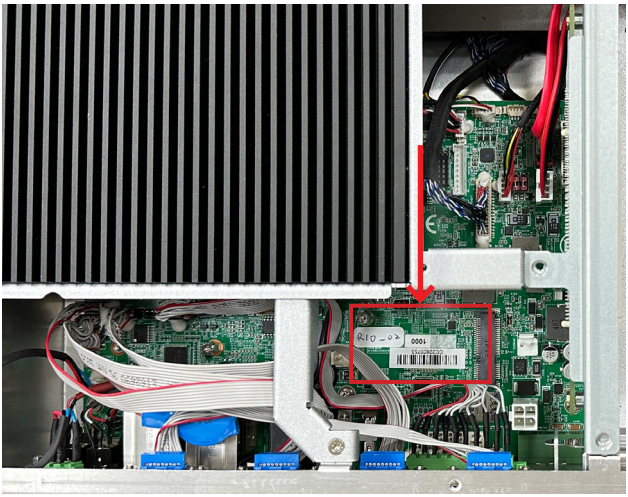


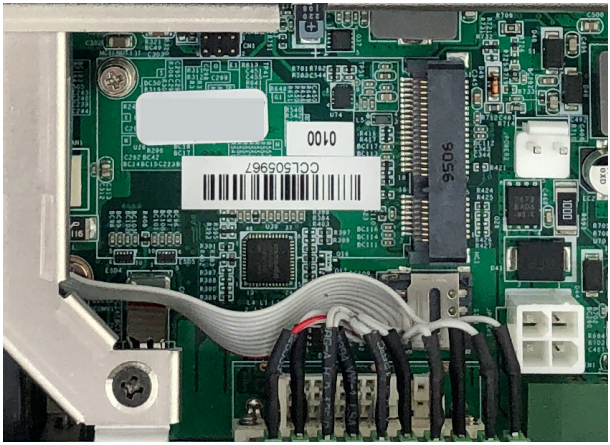
2. Dismount the rear cover from the computer. The inside of the computer comes to vierw.



4.1.2. Install Wi-Fi Module

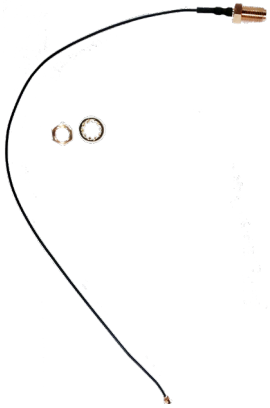
1. Locate the **Mini PCIe** socket for wireless module. Note the socket has a break among the connector.





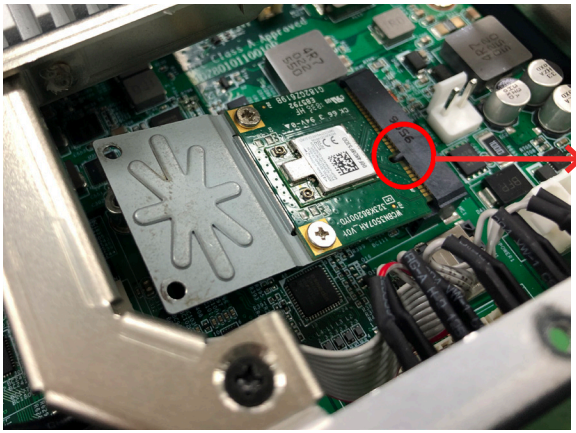
2. Connect the antenna to your wireless module. The wireless module comes with two U.FL connectors - one is “1“ and the other is “0“. Always follow the connections below for best signal reception.

   If you are using only one antenna, connect the antenna's MHF end to the connector labeled "1".

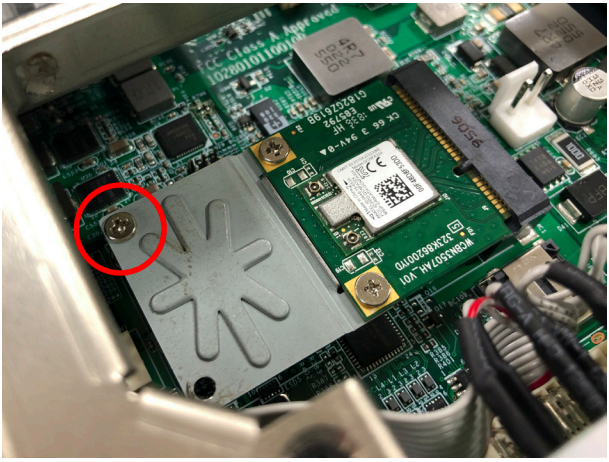


Two U.FL connectors, one is “MAIN” (marked 2), the other is “AUX” (marked 1).

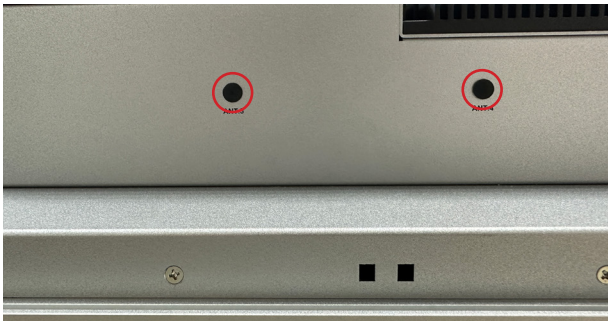
3. Then plug the Wi-Fi module to the socket's connector by a slanted angle. Fully insert the module, and note that the notch on the wireless module should meet the break of the connector.



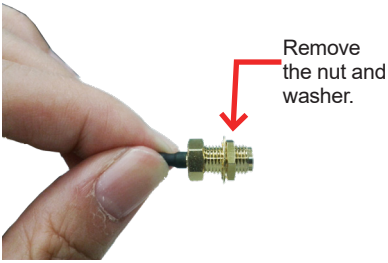
4. Press the module down and fix the module in place using the screw.

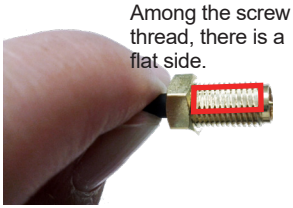


5. Remove a plastic plug from the computer's bottom side to make an antenna hole. Keep the plastic plug for any possible restoration in the future.

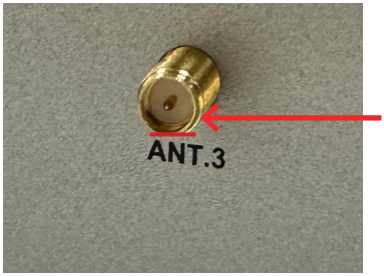


6. From the SMA end of the RF antenna, remove the washer and the nut. Save the washer and nut for later use. Note that the SMA connector is in the form of a threaded bolt, with one flat side.

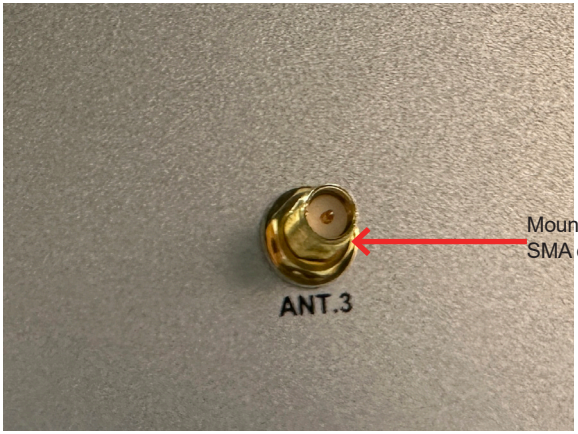




7. Pass the SMA connector through the above mentioned antenna hole. Make sure that you align the connector's flat side with the antenna hole's flat side.



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



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

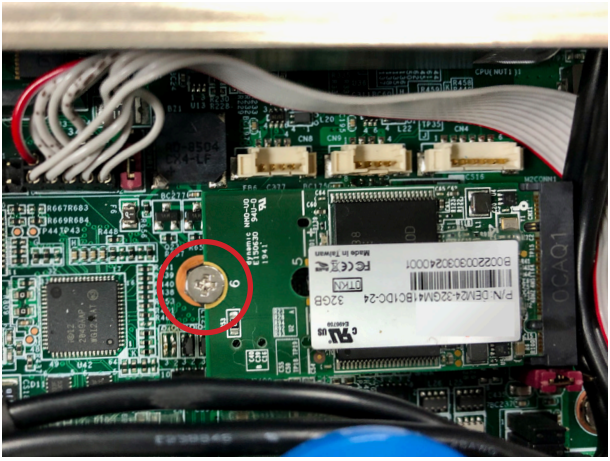
10. Restore the rear cover to the computer.

4.1.3 Install the M.2 SSD Module

1. Locate the **SSD** socket. Note that the socket has a break among the connector. The module's key notch should meet the connector's break.

2. Confront the SSD module’s edge connector with the socket's connector. Align the module’s key notch with the connector's break and fully plug the module.

3. Press the module down and fix the module in place with one screw.

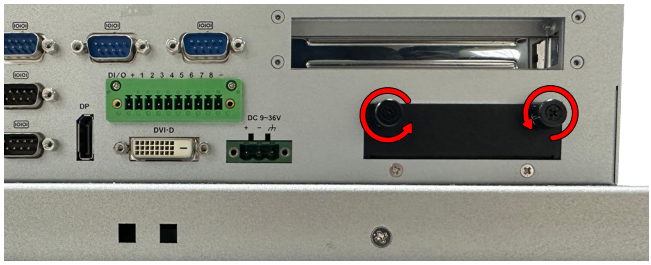


4. Restore the rear cover to the computer.

4.1.4. Install SSD or HDD (iTC-1150R-EXP / iTC-1170R-EXP)

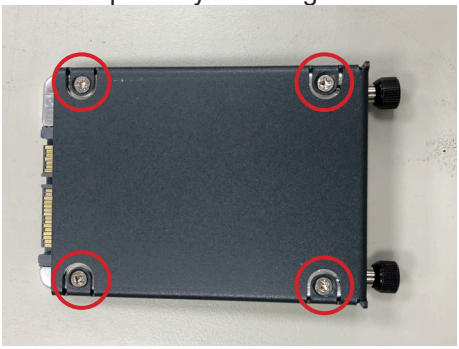
The iTC-1150R-EXP / iTC-1170R-EXP comes with one 2.5" drive bays for 2.5” HDD or SSD storage device. To install 2.5” HDD or SSD to the computer,

1. Locate the 2.5" drive bays inside the computer. Loosen and remove the screws that locks the door and take the bracket out of computer.



2. Slide the HDD/SSD storage device into the bracket.

3. Fix the storage device in place by fastening the four screws of the bracket.



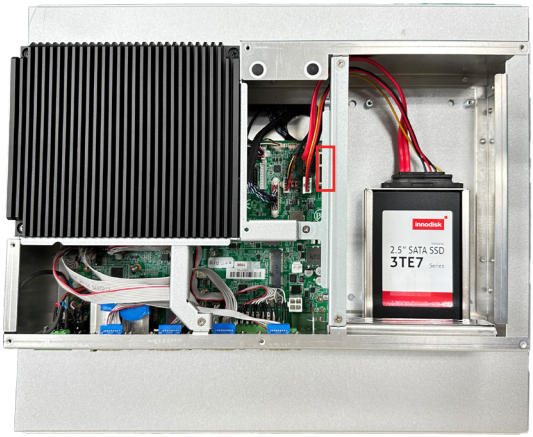
4. Slide the bracket back to the computer and fasten screws.

4.1.5. Install PCIe Expansion Cards (iTC-1150R-EXP / iTC-1170R-EXP)

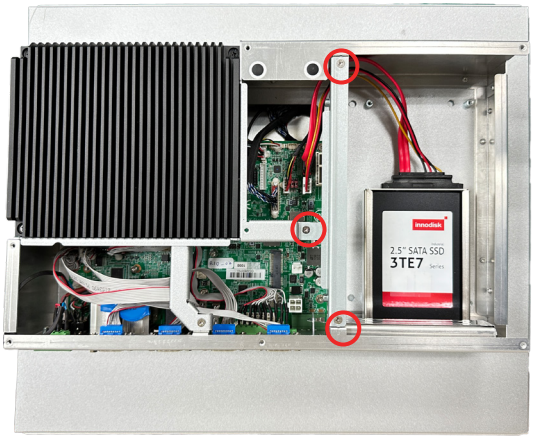
The iTC-11xx-EXP series comes with one PCIe expansion slot for external device. To install PCI/ PCIe expansion cards to the computer,

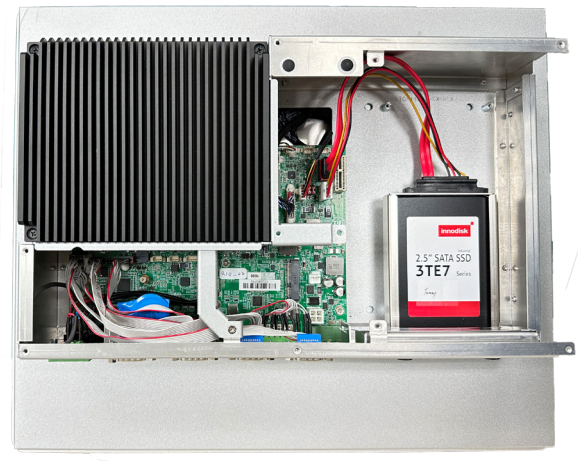
1. Remove the rear cover from the computer as described in 4.1.1 Remove the Rear Cover from the device on page 20

2. Locate the PCIe slot for expansion module. Note the solt has a break among the connector.

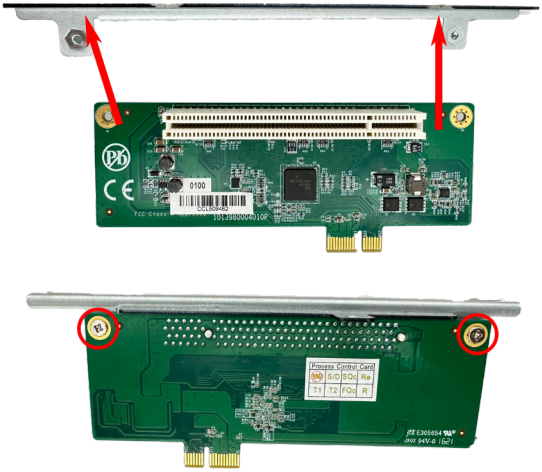


3. Loosen and remove the 3 screws securing the computer's rear bracket and remove the bracket out of the computer.

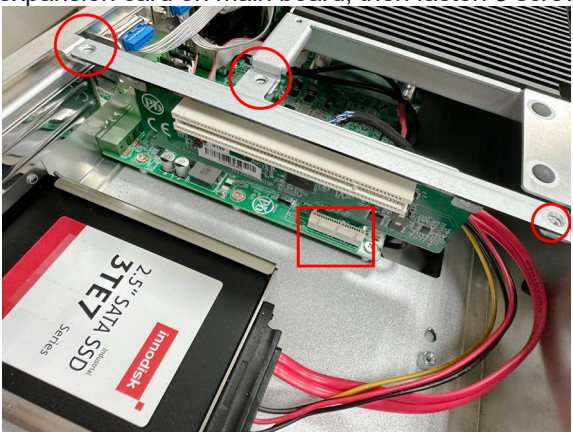

innodisk
2.5" SATA SSD
3TE7

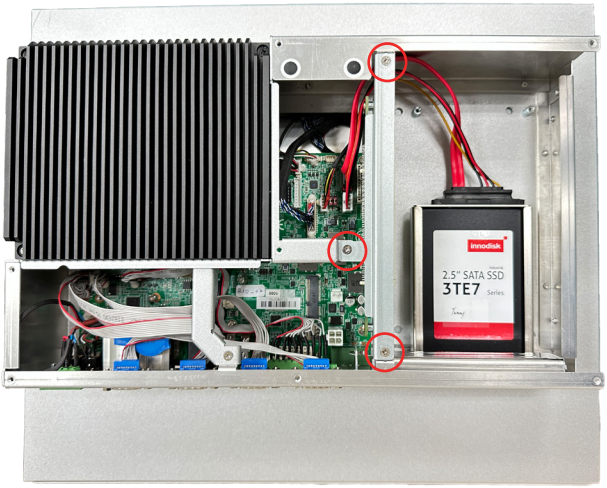

innodisk
2.5" SATA SSD
3TE7

4. Tightly fasten 2 screws to install the expansion card on the bracket.



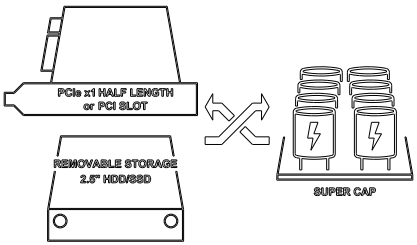
5. Install the expansion card on main board, then fasten 3 screws.





6. Restore the rear cover to the computer.

4.1.6. Expansion of Power Backup Solution



Please note that if the space of 2.5” SSD or PCI/PCIe IO expansion cards was not occupied, the compartment is available to support an optional Power Backup Solution by ARBOR's SuperCap Technology. If any inquiries for our Power Backup Solution are required, do not hesitate to contact your local dealer or distributor immediately.

4.2. Mount the Computer

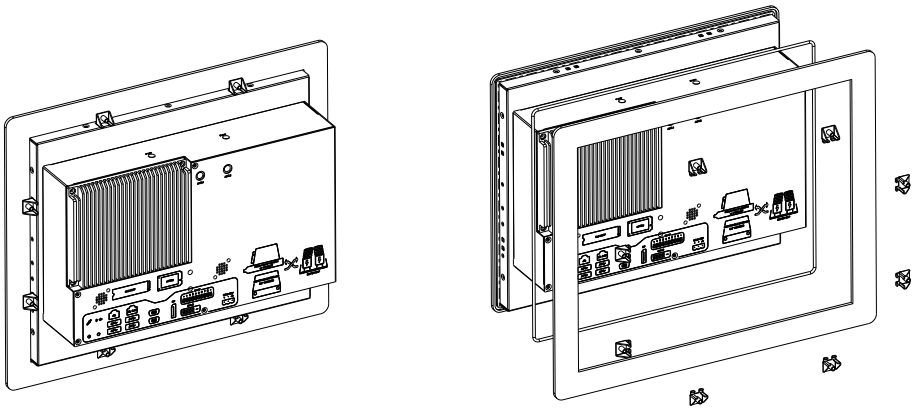
Install the panel PC to where it works by mounting it to a wall.

4.2.1. iTC-1150R-EXP / iTC-1170R-EXP Panel Mounting

1. Have the rubber O-ring included in accessory pack. Put the rubber O-ring on the panel PC.
2. Integrate the panel PC into a correct-sized frame on a wall or other devices.
3. Put the provided clamps into holes around edges of the panel PC then tightly fasten the clamps around edges of the panel PC as the picture below.

Note1: In our case, we took a transparent stand as an example.
Note2: In our case, we took iTC-1170R-EXP for our explanation image.

Panel Mount and Clamps

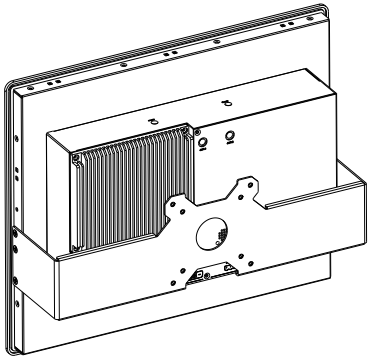


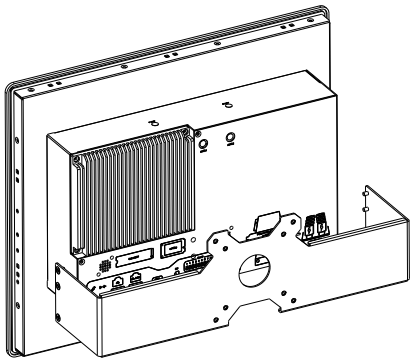
4.2.2. iTC-1150R-EXP / iTC-1170R-EXP VESA Mounting (Optional Accessory)

1. Have the VESA braket included in accessory pack. Put the panel PC into VESA braket.
2. Put the provided VESA-mounting braket into holes around edges of the panel PC.
3. Tightly fasten the VESA-mounting braket around edges.

Note1: In our case, we took iTC-1170R-EXP for our explanation image.

VESA Mount





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Chapter 5

BIOS

The BIOS Setup utility for the iTC-11XX-EXP series are 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.

Menu	Description
Main	See 5.1. Main on page 40
Advanced	See 5.2. Advanced on page 41
Chipset	See 5.3. Chipset on page 109
Boot	See 5.4. Security on page 109
Security	See 5.5. Boot on page 109
Save & Exit	See 5.6. Save & Exit on page 109

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	Set the values to previous values.
F9	Restores all settings to defaults. ► This is a command to launch an action from the BIOS Setup utility.
F10	Exits the utility saving the changes that have been made. (The screen then prompts a message asking you to select **OK** or **Cancel** to exit saving changes.)

Note: Pay attention to the "WARNING" that shows at the left pane onscreen when making any change to the BIOS settings.

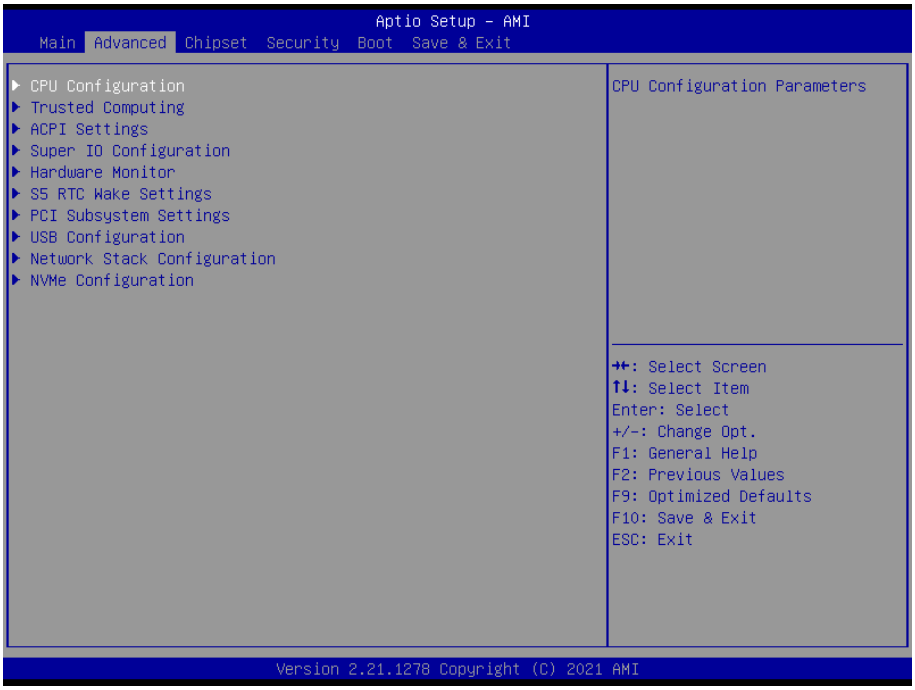
This BIOS Setup utility is updated from time to time to improve system performance and hence the screenshots hereinafter may not fully comply with what you actually have onscreen.

5.1. Main

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

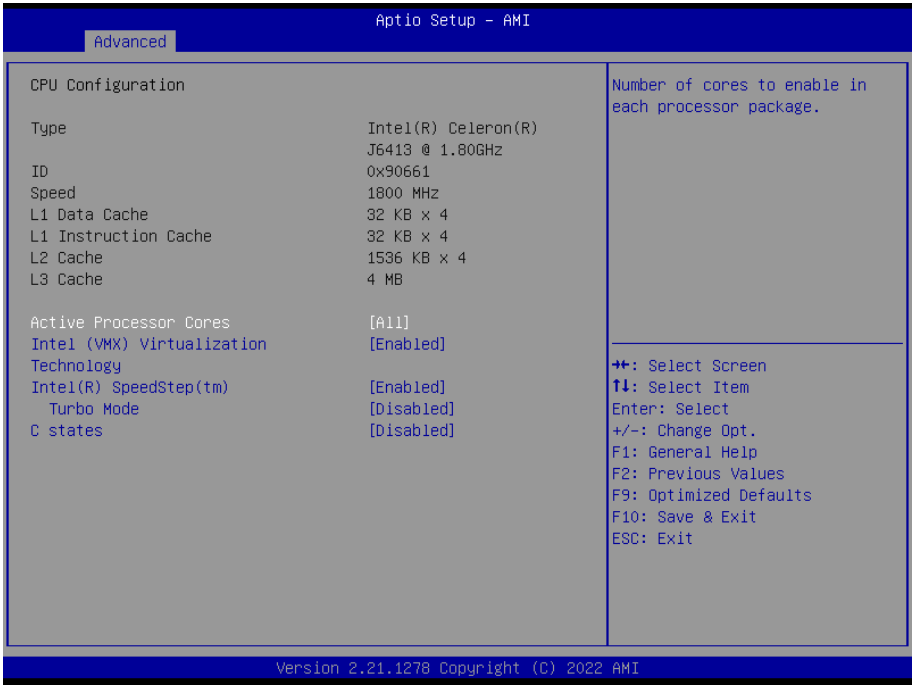
Setting	Description
BIOS Name	Delivers the model name of the computer.
BIOS Version	Delivers the computer's BIOS version.
Build Date and Time	Delivers the date and time when the BIOS Setup utility was made/ updated.
Access Level	Delivers the level that the BIOS is being accessed at the moment.
ME FW Version	Delivers the ME version.
System Date	Sets system date.
System Time	Sets system time.

5.2. Advanced



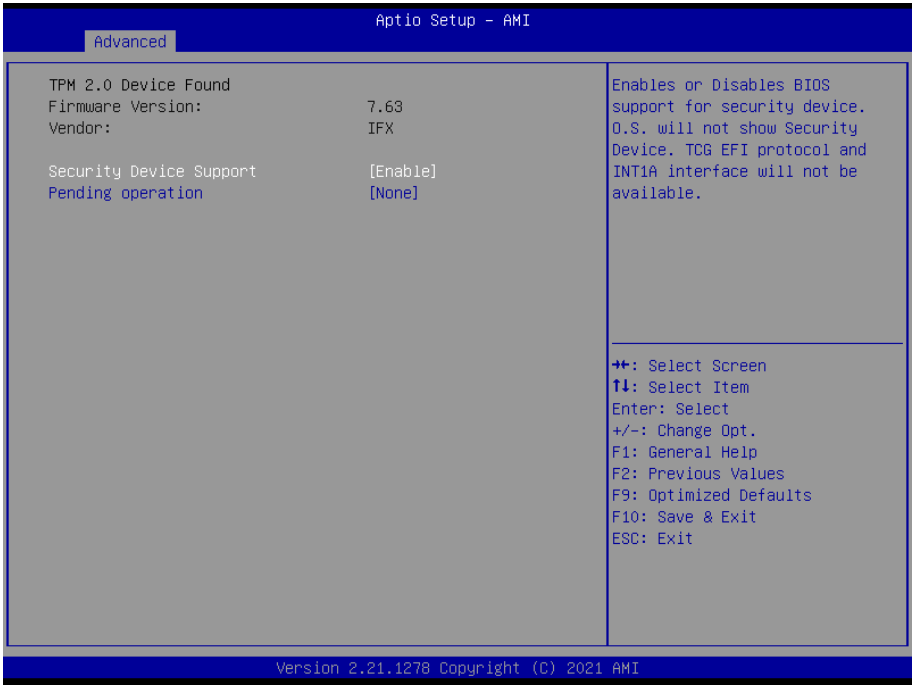
Setting	Description
CPU Configuration	See 5.2.1. CPU Configuration on page 42
Trusted Computing	See 5.2.2. Trusted Computing on page 43
ACPI Settings	See 5.2.3. ACPI Settings on page 44
Super IO Configuration	See 5.2.4. Super IO Configuration on page 45
Hardware Monitor	See 5.2.5. Hardware Monitor on page 47
S5 RTC Wake Settings	See 5.2.6. S5 RTC Wake Settings on page 48
PCI Subsystem Settings	See 5.2.7. PCI Subsystem Setting on page 49
USB Configuration	See 5.2.8. USB Configuration on page 50
Network Stack Configuration	See 5.2.9. Network Stack Configuration on page 52
NVMe Configuration	See 5.2.10. NVME Configuration on page 53

5.2.1. CPU Configuration



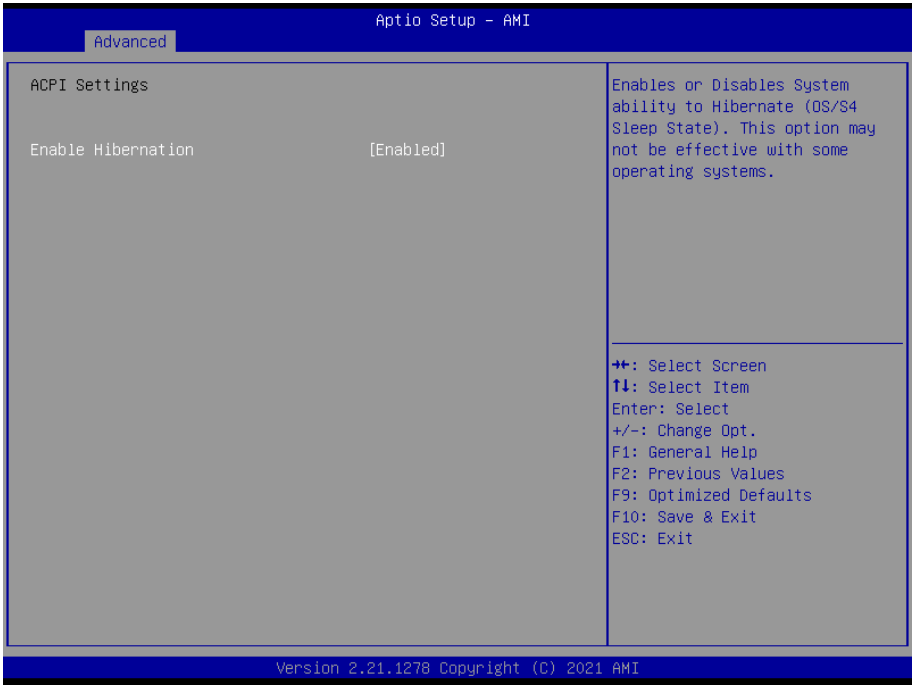
Setting	Description
Active Processor Cores	Numbers of cores to enable in each processor package
Intel Virtualization Technology	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology ► Options: **Enabled** (default) or **Disabled**
Intel SpeedStep	Allows more than two frequency ranges to be supported **Enable** (default) / **Disable** Intel SpeedStep
Turbo Mode	Only available when Intel Speed Step is **Enabled**. **Enable** (default) / **Disable** Turbo Mode
CPU C States	**Enable** / **Disable** (default) CPU C States

5.2.2. Trusted Computing



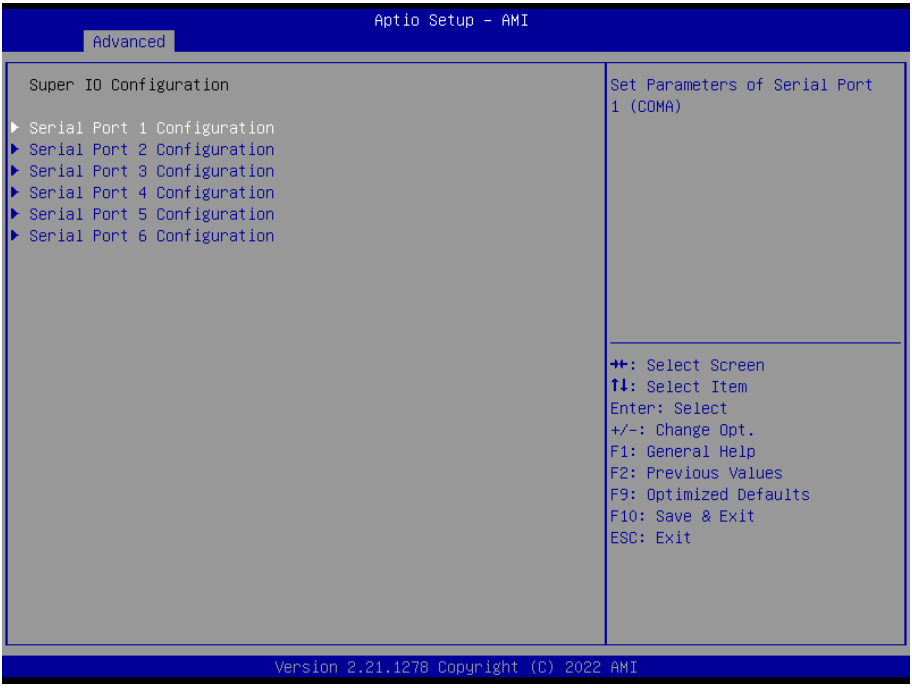
Setting	Description
Security Device Support	**Enable** (default) or **Disable** BIOS support for security device.
Pending operation	Schedule an Operation for the security Device. Your computer will reboot during restart in order to change State of Security Device. ► Options: **None** (default) and **TPM Clear**

5.2.3. ACPI Settings



Setting	Description
Enable Hibernation	**Enables** (default) or **Disables** System ability to Hibernate (OS/ S4 Sleep State). This option may be not effective with some OS.

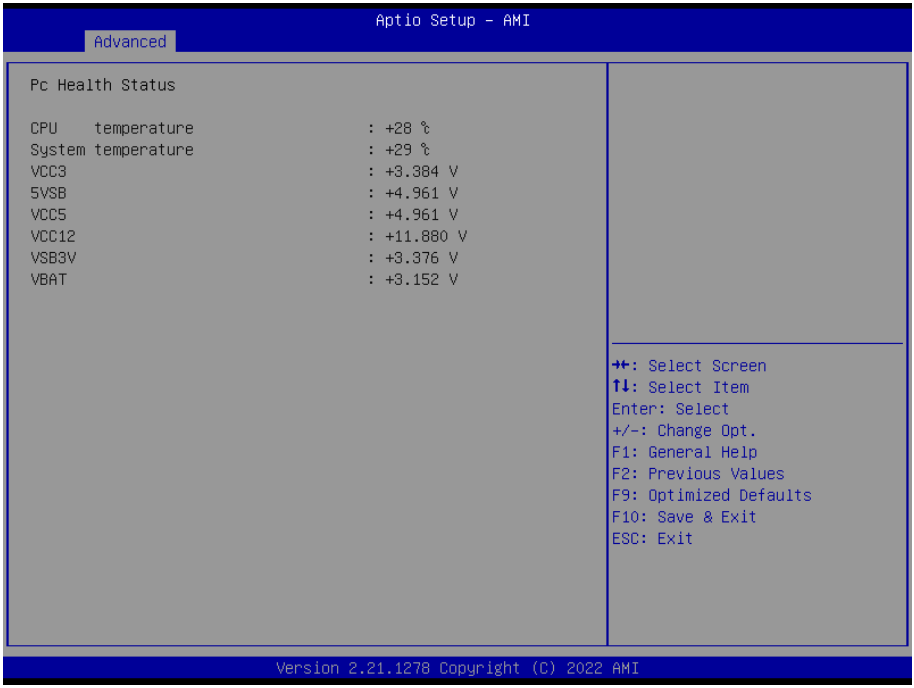
5.2.4. Super IO Configuration



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

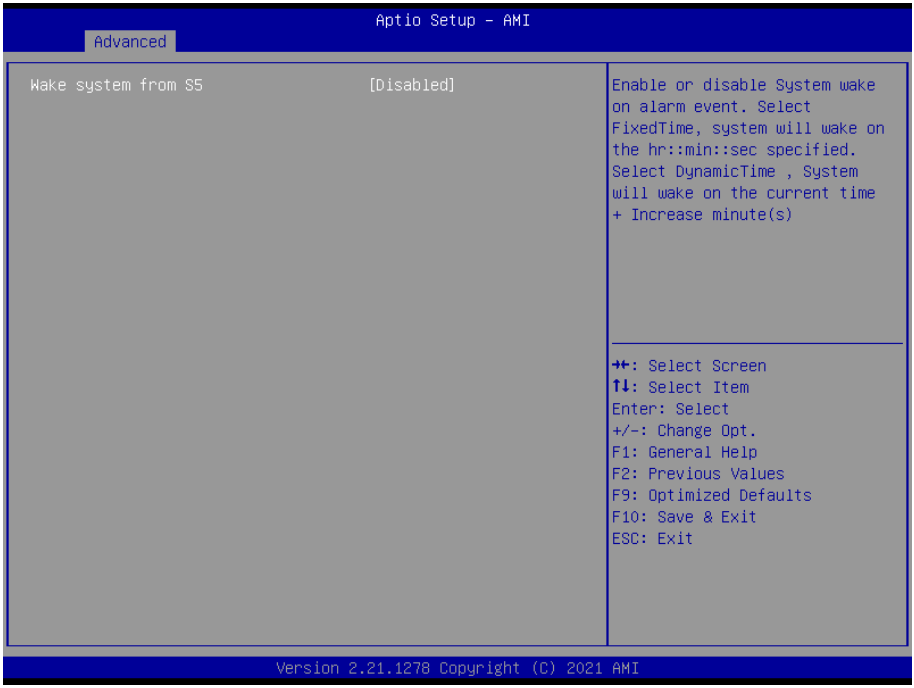
Change Settings	Select an optimal setting for Super IO device. ► Options for Serial Port 1: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=3E8h; IRQ=4** (default) Mode Select: **RS-232**; **RS-422**; **RS485**; **RS-485 Termination Resistor** Options for Serial Port 2: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=2F8h; IRQ=3** (default) Mode Select: **RS-232**; **RS-422**; **RS485**; **RS-485 Termination Resistor** Options for Serial Port 3: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=3E8h; IRQ=5** (default) Options for Serial Port 4: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=2E8h; IRQ=6** (default) Options for Serial Port 5: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=2F0h; IRQ=7** (default) Options for Serial Port 6: Serial Port: **[Enabled]**(default)**; [Disabled]**; **IO=2E0h; IRQ=10** (default)

5.2.5. Hardware Monitor



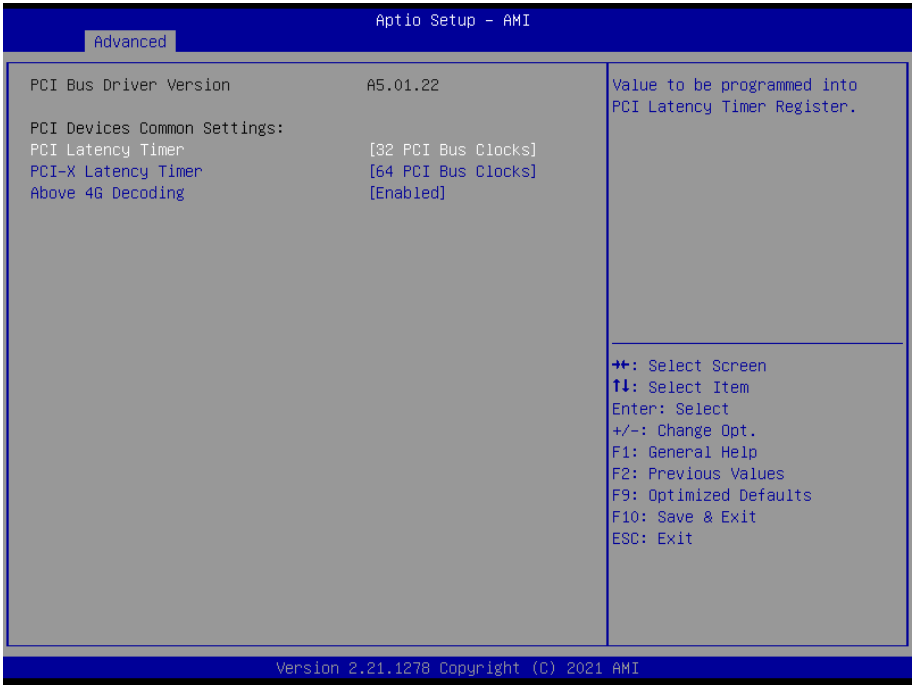
Select this submenu to view the main board's hardware status. Select it to run a report of various info as depicted below:

5.2.6. S5 RTC Wake Settings



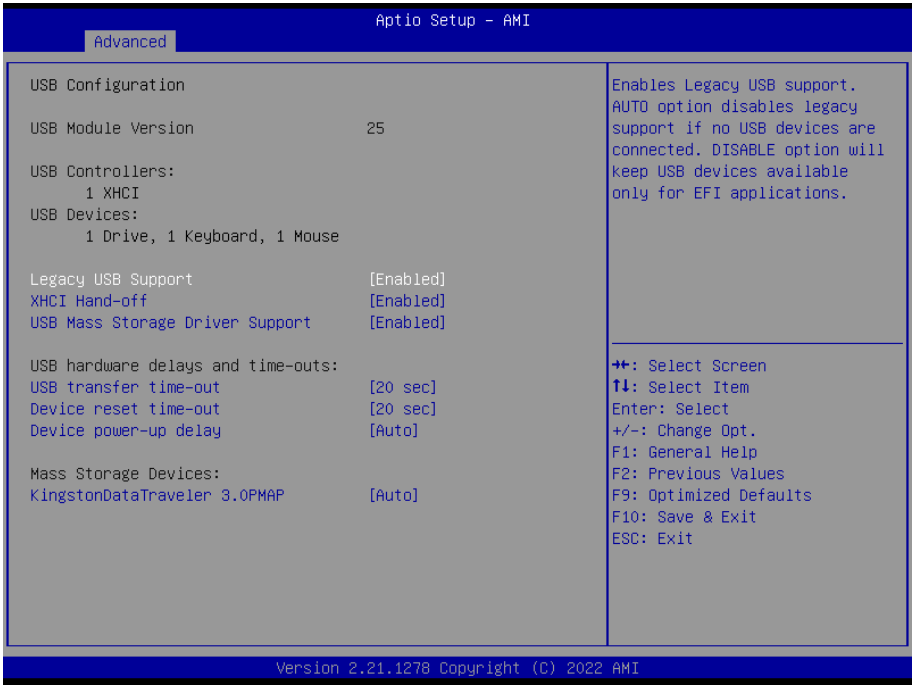
Setting	Description
Wake System from S5	**Enable** or **Disable** (default) system wake on alarm event. ► Options available are: **Disabled** (default): **Fixed Time:** System will wake on the hr::min::sec specifiedc. **DynamicTime:** If selected, you need to set **Wake up minute increase** from 1 -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

5.2.7. PCI Subsystem Setting



Setting	Description
PCI Latency Timer	Value to be programmed into PCI Latency Timer Register. ► **Options: 32** (default), **64**, **96**, **128**, **160**, **192**, **224** and **248 PCI Bus Clocks**.
PCI-X Latency Timer	Value to be programmed into PCI-X Latency Timer Register. ► **Options: 32**, **64** (default), **96**, **128**, **160**, **192**, **224** and **248 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).

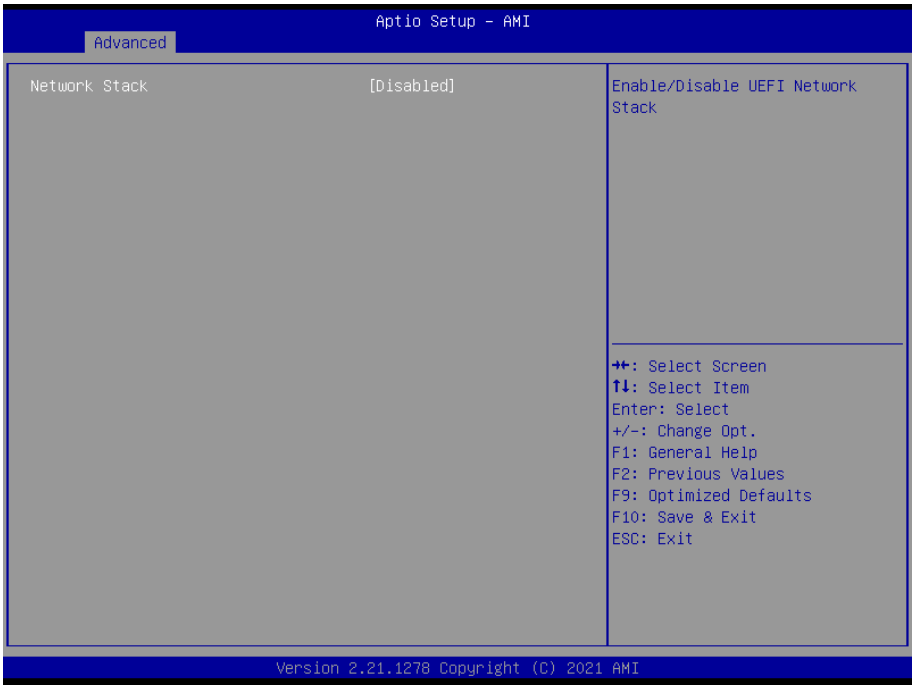
5.2.8. USB Configuration



Setting	Description
Legacy USB Support	Enables/disables legacy USB support. ► Options available are **Enabled** (default), **Disabled** and **Auto**. ► Select **Auto** to disable legacy support if no USB device are connected. ► Select **Disabled** to keep USB devices available only for EFI applications.
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: **Disabled** / **Enabled** (default).
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: **1 sec, 5 sec, 10 sec, 20 sec** (default).

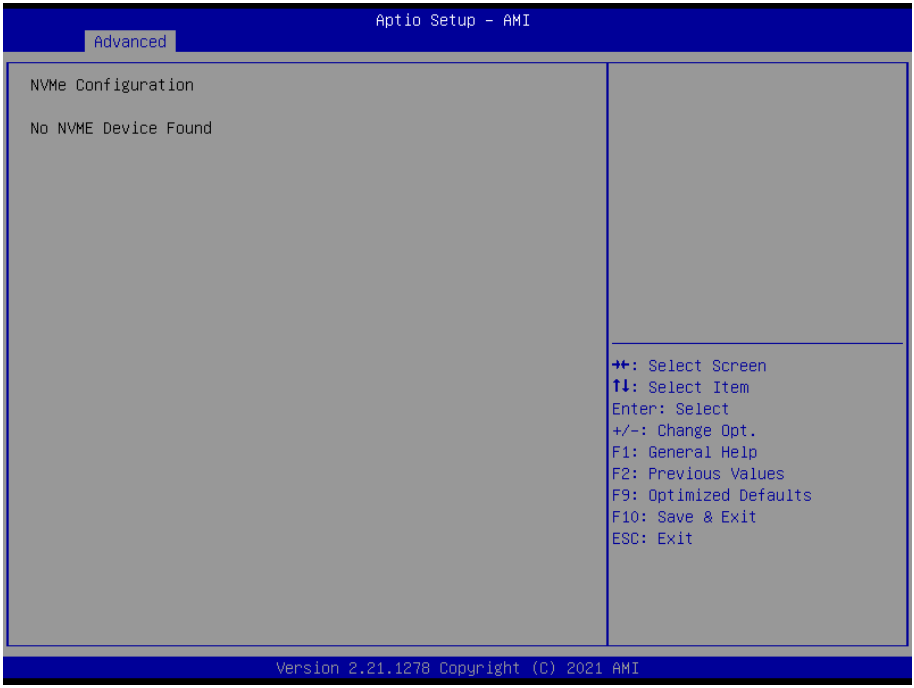
Device reset time-out	Use this item to set USB mass storage device start unit command time-out. ► Options available are: **10 sec, 20 sec** (default)., **30 sec, 40 sec**
Device power-up delay	Use this item to set maximum time the device will take before it properly reports itself to the host controller. '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.

5.2.9. Network Stack Configuration



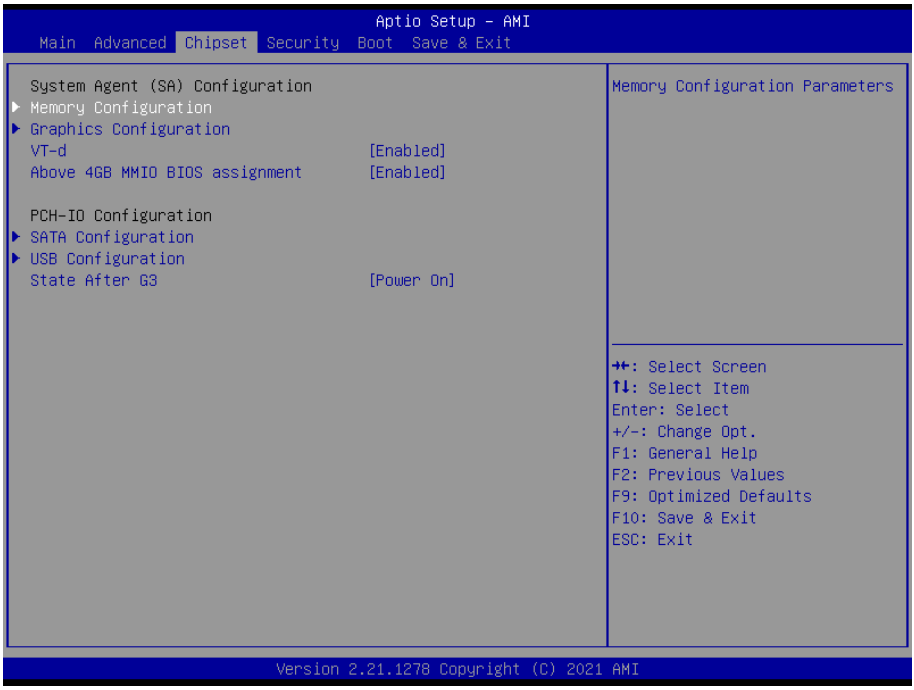
Setting	Description
Network Stack	**Enable** or **Disable** (default) UEFI network stack.

5.2.10. NVME Configuration



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

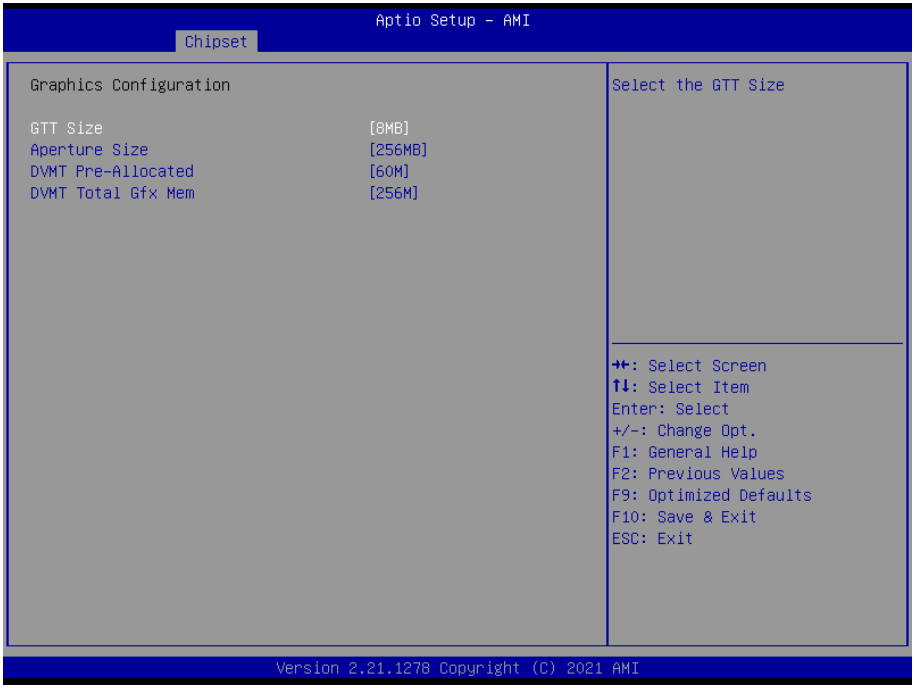
5.3. Chipset



The features settings are:

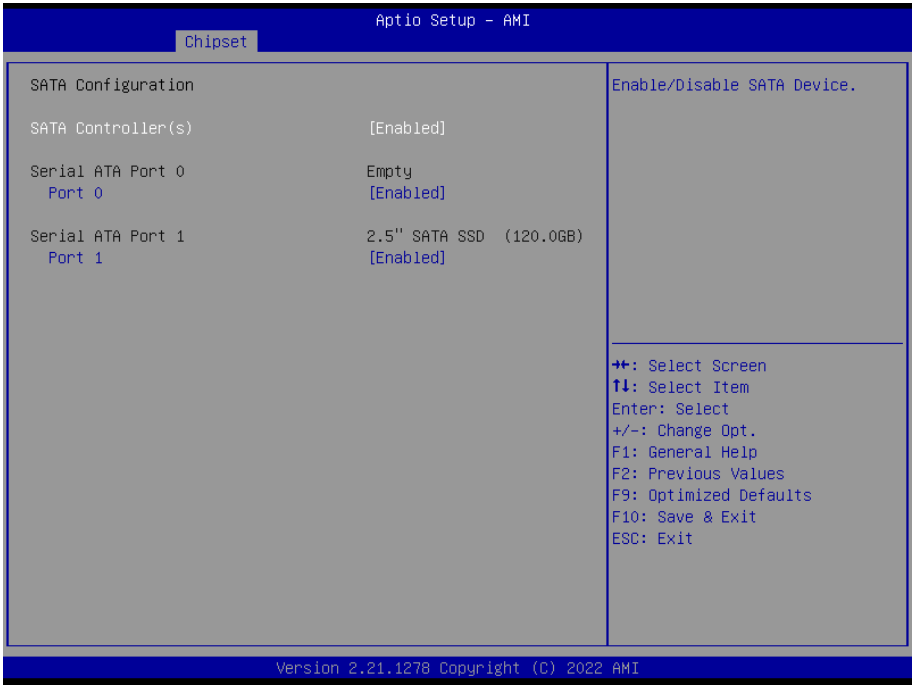
Setting	Description
System Agent (SA) Configuration	
Memory Configuration	Access this submenu to view the memory configuration.
Graphics Configuration	See 5.3.1. Graphics Configuration on page 55
VT-d	**Enable** (default) or **Disable** VT-d function
Above 4GB MMIO BIOS assignment	**Enable** or **Disable** (default) Above 4GB MMIO BIOS assignment. This is enabled automatically when aperture size is set to 2048MB.
PCH-IO Configuration	
SATA Configuration	See 5.3.2. SATA Configuration on page 56
USB Configuration	See 5.3.3. USB Configuration on page 57
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) and **Power Off**

5.3.1. Graphics Configuration



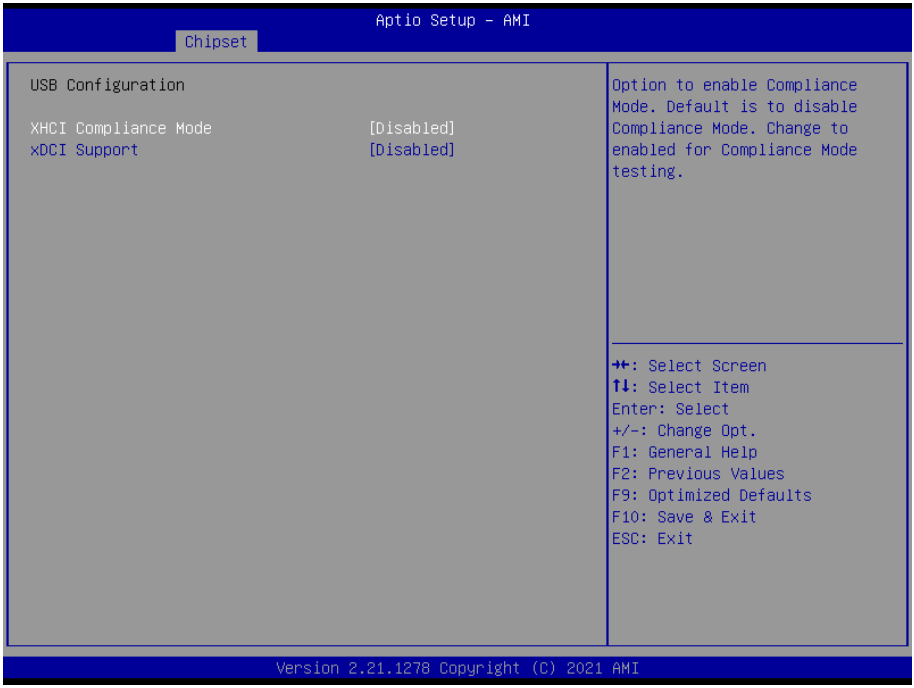
Setting	Description
GTT Size	Select the GTT Size. ► Options: **4MB, 2MB** and **8MB** (default)**.**
Apeture Size	Select the Apeture Size. Note that above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM support. ► Options: **128MB**, **256MB** (default)**, 512MB**, **1024MB** and **2048MB**
DVMT Pre-Allocated	Select the DVMT 5.0 Pre-allocated (Fixed) Graphic Memory size used by the Internal Graphic Device. ► 60M is the default.
DVMT Total Gfx Mem	Select the DVMT 5.0 Total Graphic Memory size used by the Internal Graphic Device. ► Options: **128M, 256M** (default) and **Max.**

5.3.2. SATA Configuration



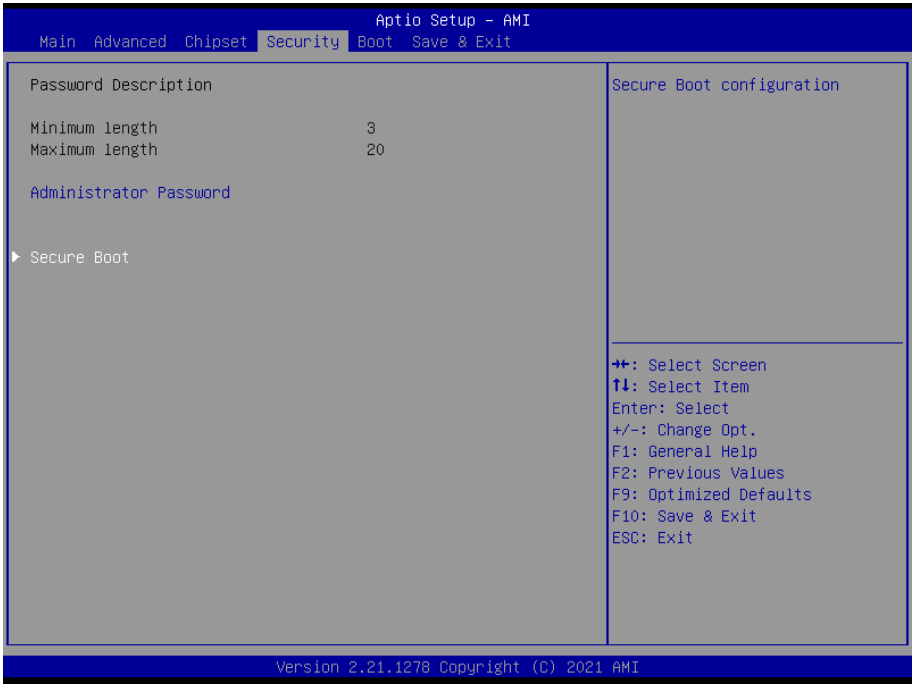
Setting	Description
SATA Controller(s)	**Enables** (default) / **Disables** SATA device(s).
Serial ATA Port 0~1	SATA device information. **Enables** (default) / **Disables** the SATA port. *Available SATA ports depend on your model.

5.3.3. USB Configuration



Setting	Description
XHCI Compliance Mode	**Enable** / **Disable**(default) Compliance mode. Options to disable Compliance Mode. Default is **FALSE** (default) to not disable Compliance Mode. Set **TRUE** to disable Compliance Mode.
xDCI Support	**Enable** / **Disable** (default) xDCI (USB OTG Device).

5.4. Security

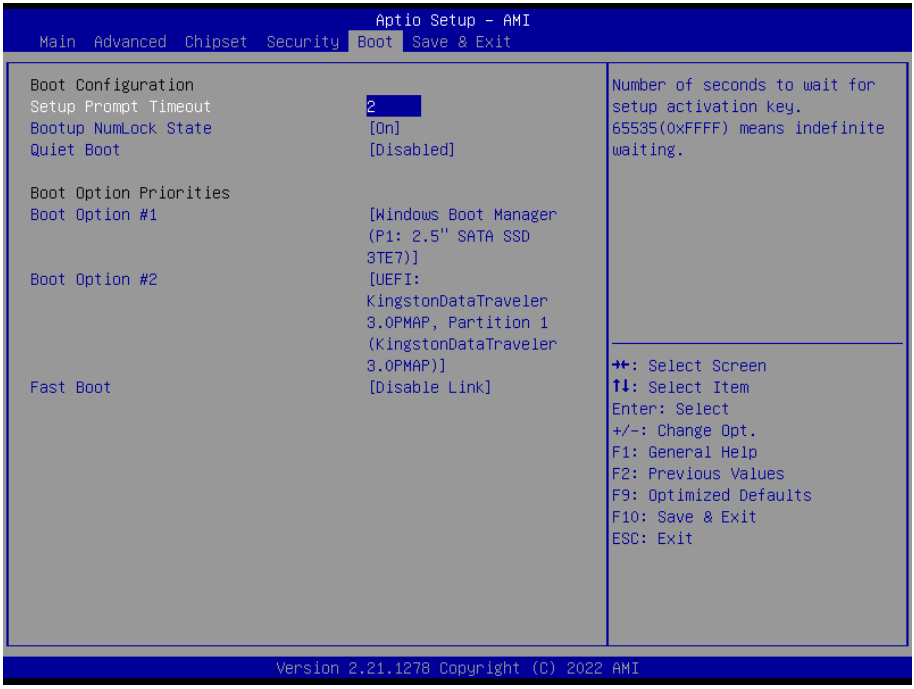


Setting	Description
Administrator Password	To set up an administrator password: 1. Select **Administrator Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.
Security Boot	See 5.4.1 Security Boot on page <?>.

5.4.1. Security Boot

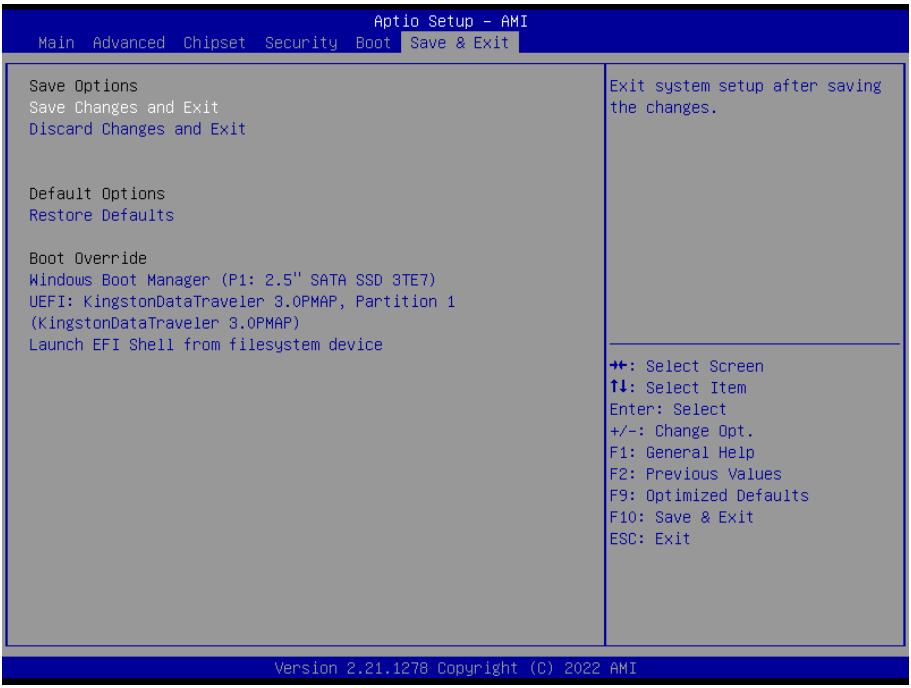
Setting	Description
Secure Boot	**Enable**/**Disable** (default) secure boot.
Secure Boot Mode	Allow users to set the secure boot selector. **Standard**/**Custome** (default) mode.
Restore Factory Keys	Force system to restore default secure boot key database.
Reset to Setup Mode	Delete all secure boot key databases.
Key Management	Allow users to modify secure variables and set key management page.

5.5. Boot



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.

5.6. Save & Exit



The features settings are:

Setting	Description
Save Changes and Reset	Saves the changes and quits the BIOS Setup utility.
Discard Changes and Exit	Quits the BIOS Setup utility without saving the change(s).
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. ► **P0:** Select the device to boot up the system regardless of the currently configured boot priority. ► **Launch EFI Shell from filesystem device:** Attempts to launch EFI Shell Application (Shell.efi) from one of the available filesystem devices.