

BMX-T550

Mini ITX Barebone System with Intel® H310P Chipset

Quick Reference Guide

2nd Ed –07 June 2022

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FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

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.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:

<http://www.avalue.com.tw/>

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

- 8 x HDD Screw
- 1 x STD IMB desktop system



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

1.3 System Specifications

System	
Processor	Intel® 8/9th Gen. Core™ i7/i5/i3/Pentium®/Celeron®/Processor
Platform Controller Hub	Intel® H310 Chipset
System Memory	Two 260-pin DDR4 2400/2666MHz SO-DIMM socket, supports up to 64GB Max
I/O Chipset	Nuvoton® NCT6106D
BIOS Information	AMI uEFI BIOS, 256Mbit SPI Flash ROM
Watchdog Timer	H/W Reset, 5~255 seconds/5~255 minutes
H/W Status Monitor	CPU temperature monitoring, Voltage monitoring, CPU fan speed control
TPM	Onboard Infineon SLB9665 supports TPM 2.0
SBC	Mini ITX Board
Expansion	
M.2 (Key-X, Size, Signal)	1 x M.2 (2230) E-Key, supports WiFi module
PCIe (Gen X, Lanes)	1 x PCI-e x16
Storage	
M.2 (Key-X, Size, Signal)	1 x M.2 (2242/2260/2280) B-Key, supports WWAN+GNSS with SIM card slot & SSD (SATA)
2.5" Drive Bay (Height)	1 x 2.5" Drive Bay
Edge I/O (Front)	
USB Port	2 x USB2.0
Power Button	1 x Push Button for Power on/off
Reset Button	1 x Push Button for Reset
LED Indicator	1 x Storage LED (yellow)
SIM Slot	1 x SIM slot (Internal)
Edge I/O (Rear)	
USB Port	6 x USB 3.1 Gen1, 4 x USB 2.0
HDMI	1 x HDMI: 3840 x 2160 @ 30 Hz
VGA	1 x VGA: 2048 x 1536 @ 60 Hz
DP	DP++: 4096x2160 @ 30Hz
RJ-45	4 x RJ-45
Edge I/O (Right)	
Antenna	1 x hole
Edge I/O (Left)	
Antenna	1 x hole

System Fan	1 x system smart Fan E1756210300R																				
Ethernet																					
LAN Chipset	1 x Intel® I219LM Gigabit Ethernet PHY 3 x Intel® I211AT PCI-e Gigabit Ethernet																				
Specification	1 x 10/100/1000Base-Tx GbE compatible																				
LED Indicator	1G LAN Port (i219-LM)																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">ACT/LINK</th> <th colspan="2" style="text-align: center;">SPEED</th> </tr> <tr> <th style="text-align: center;">LED</th> <th style="text-align: center;">Definition</th> <th style="text-align: center;">LED</th> <th style="text-align: center;">Definition</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Light Off</td> <td style="text-align: center;">No Link</td> <td style="text-align: center;">Solid Orange</td> <td style="text-align: center;">1G</td> </tr> <tr> <td style="text-align: center;">Solid Yellow</td> <td style="text-align: center;">Connection</td> <td style="text-align: center;">Solid Green</td> <td style="text-align: center;">100M</td> </tr> <tr> <td style="text-align: center;">Flashing</td> <td style="text-align: center;">Activity</td> <td style="text-align: center;">Light Off</td> <td style="text-align: center;">10M</td> </tr> </tbody> </table>	ACT/LINK		SPEED		LED	Definition	LED	Definition	Light Off	No Link	Solid Orange	1G	Solid Yellow	Connection	Solid Green	100M	Flashing	Activity	Light Off	10M
	ACT/LINK		SPEED																		
	LED	Definition	LED	Definition																	
	Light Off	No Link	Solid Orange	1G																	
Solid Yellow	Connection	Solid Green	100M																		
Flashing	Activity	Light Off	10M																		
Power Requirement																					
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant																				
Power Mode	AT/ATX (ATX is default setting)																				
Power Supply Unit	PSU/ATX/220W/190x81.5x40.5mm (TBD)																				
Mechanical & Environment																					
Operating Temp.	(w/HDD), ambient w/ air flow 0°C ~ 40°C (32°F ~ 104°F)																				
Storage Temp.	-20°C ~ 70°C (-4°F ~ 158°F)																				
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing																				
Dimension (W*L*H)	280mm(W) x 75mm (H) x 265mm (D)																				
Weight	TBD																				
Vibration Test (operation)	<ol style="list-style-type: none"> 1. PSD: 0.000505G²/Hz, 0.5 Grms 2. Operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test: Fh Storage: SSD																				
Vibration Test (non-operation)	<ol style="list-style-type: none"> 1. Test Acceleration: 2G 2. Test frequency: 5~500 Hz 3. Sweep : 1 Oct/ per one minute. (logarithmic) 4. Test Axis: X, Y and Z axis Test time :30 min. each axis 5. System condition: non-Operating mode 7. Reference IEC 60068-2-6 Testing procedures 																				
Package vibration test	<ol style="list-style-type: none"> 1. PSD: 0.026G²/Hz, 2.16 Grms 2. Non-operation mode 3. Test Frequency: 5-500Hz 																				

BMX-T550

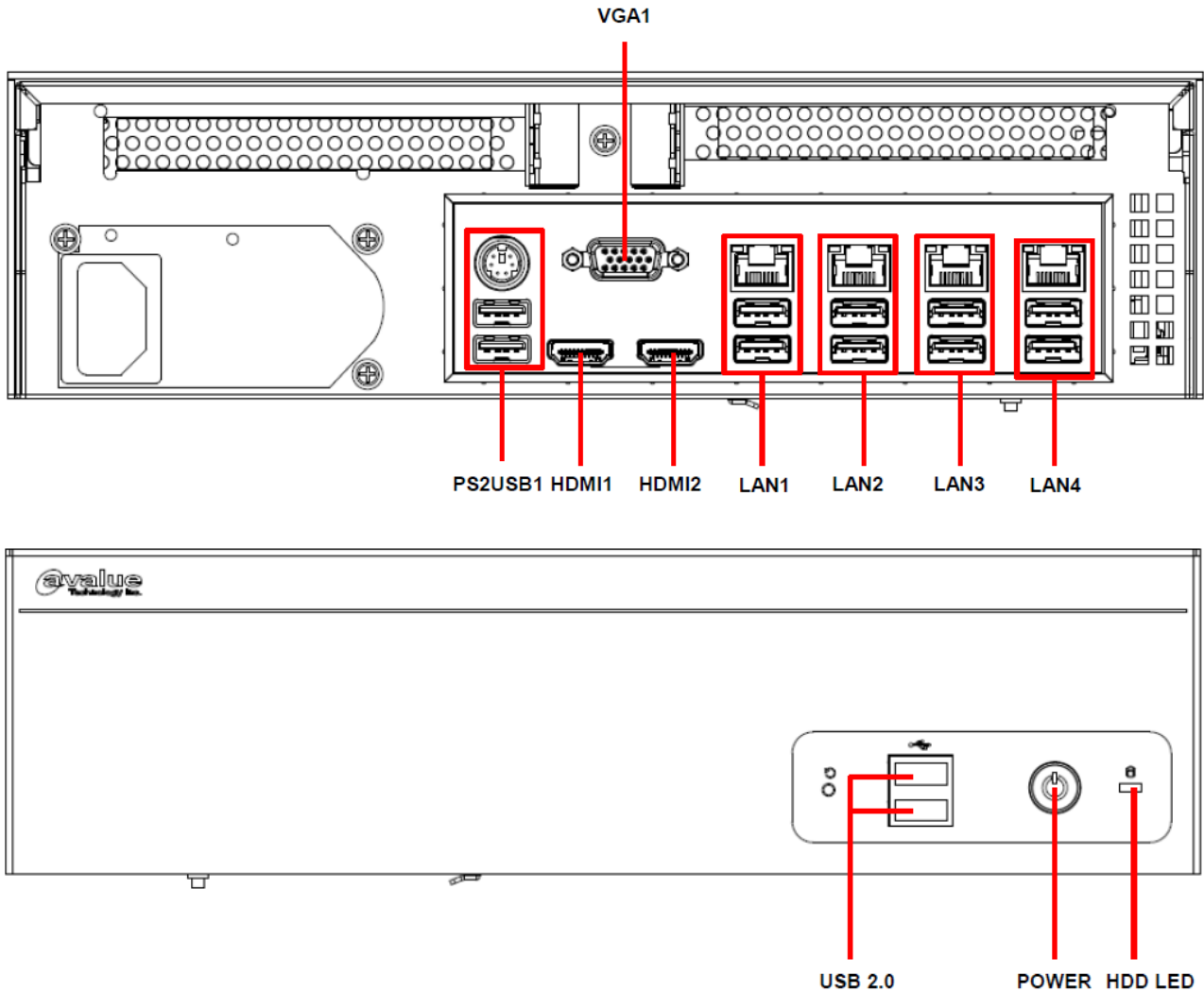
	<ol style="list-style-type: none">4. Test Axis: X, Y and Z axis5. 30 min. per each axis6. IEC 60068-2-64 Test: Fh
Shock Test	<ol style="list-style-type: none">1. Wave form : Half Sine wave2. Acceleration Rate : 10g for operation mode3. Duration Time : 11ms4. No. of Shock : Z axis 1000 times5. Test Axis: Z axis6. Operation mode7. Reference IEC 600`68-2-29 Testing procedures <p>Test Eb : Bump Test</p>
Drop Test	<ol style="list-style-type: none">1. One corner, three edges, six faces2. ISTA 2A, IEC-60068-2-32 Test: Ed
Software Support	
OS Information	Win 10 64bit / Linux
Certification	
Certification Information	CE/FCC: Class A (Nice to have Class B)
Software Support	
Accessory	8 x HDD screw



Note: Specifications are subject to change without notice.

1.4 System Overview

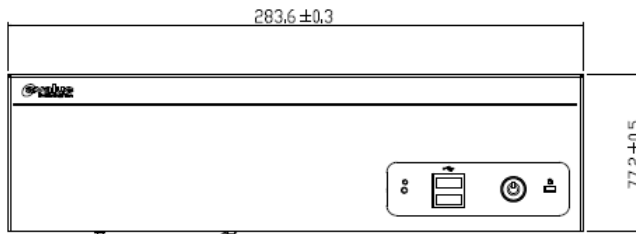
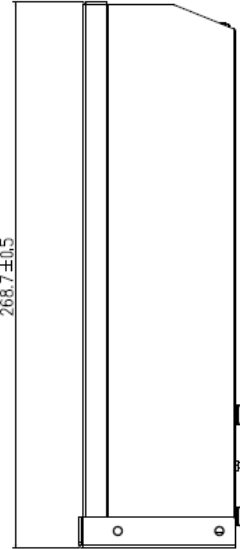
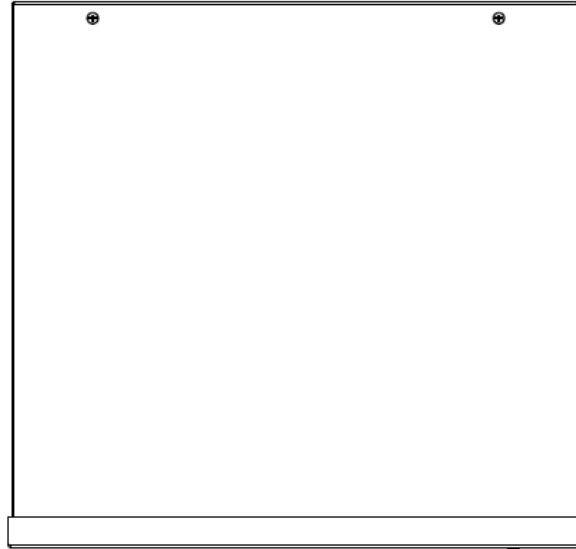
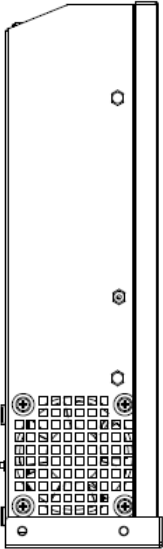
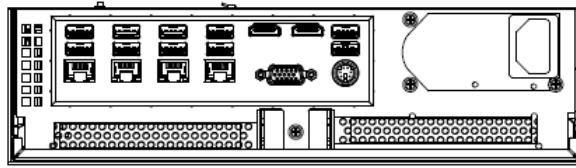
1.4.1 Front/Rear View



Connectors

Label	Function
PS2USB1	PS2+USB connector
LAN1/2/3/4	2 x RJ-45 with Dual deck USB 3.0 connector
HDMI1/2	HDMI connector
VGA1	VGA connector
Ext. ON/OFF	Power on button
USB2.0	USB connector

1.5 System Dimensions



(Unit: mm)

2. Hardware Configuration

Jumper and Connector Setting

For advanced information, please refer to:

- 1- EMX-H310P User's Manual

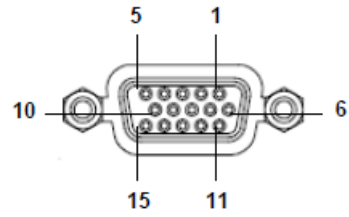
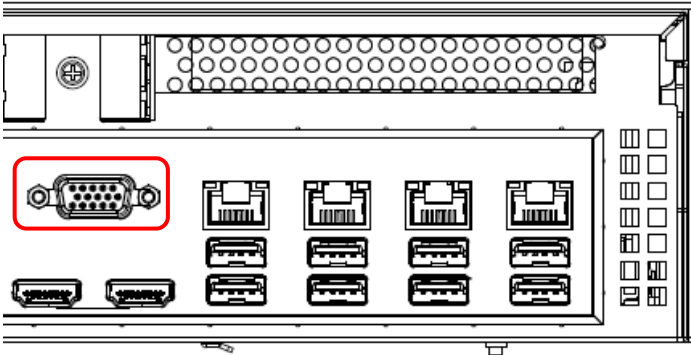


Note: If you need more information, please visit our website:

<http://www.avalue.com.tw>

2.1 BMX-T550 connector mapping

2.1.1 VGA connector (VGA1)



PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYSN
5	GND	10	GND	15	DDCCLK

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing or <F2> immediately after switching the system on, or

By pressing the or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press or <F2> to enter SETUP

If the message disappears before you 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 F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

Use the left and right arrow keys to choose the menu you want to be in.



Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A “>” pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

3.6.1.3 System Time

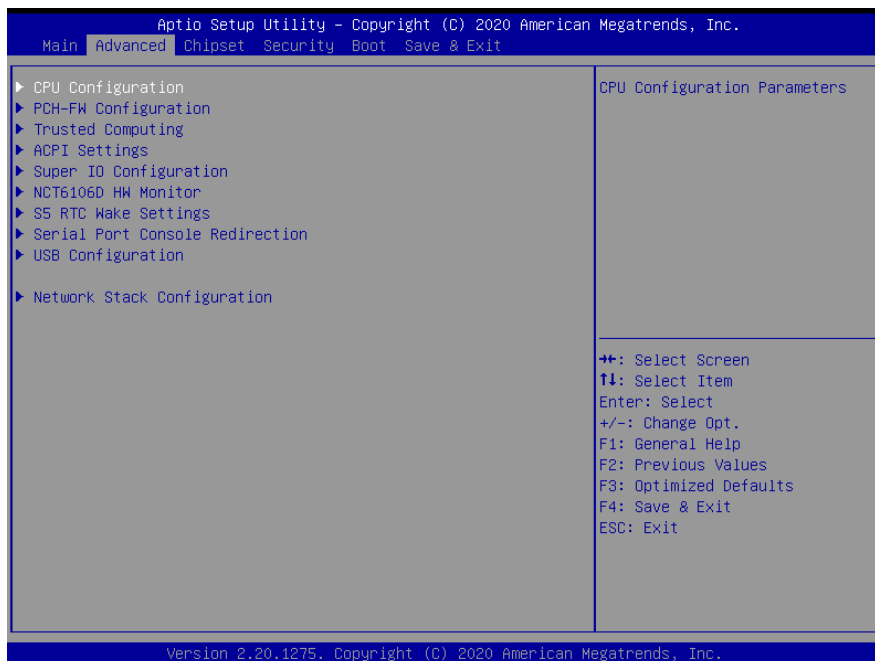
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



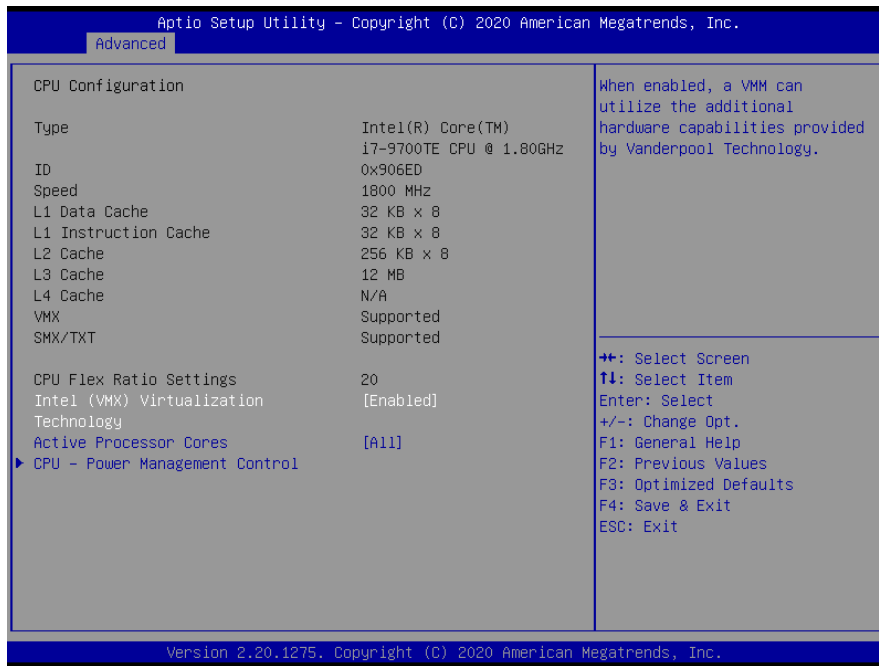
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen. Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

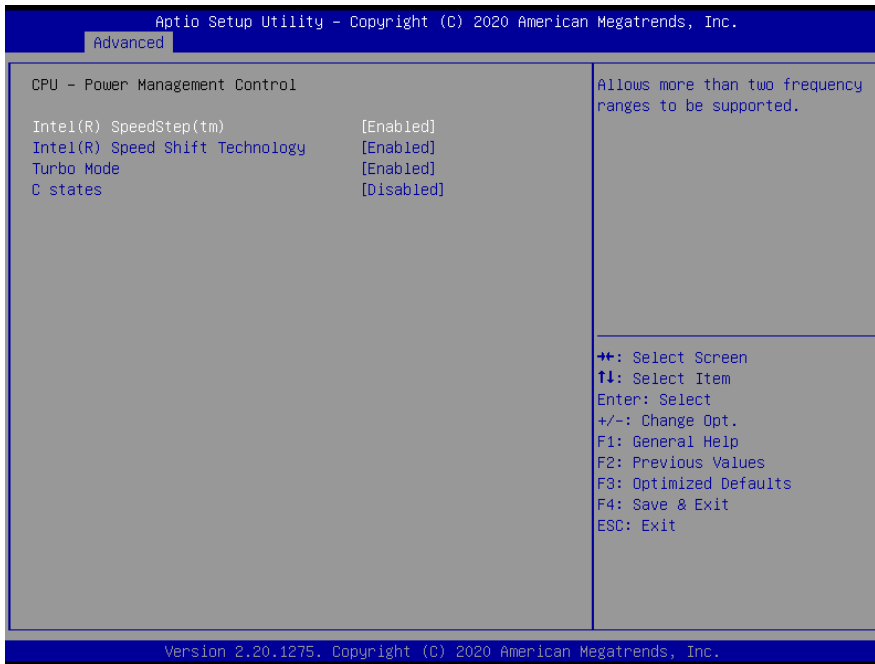


3.6.2.1 CPU Configuration



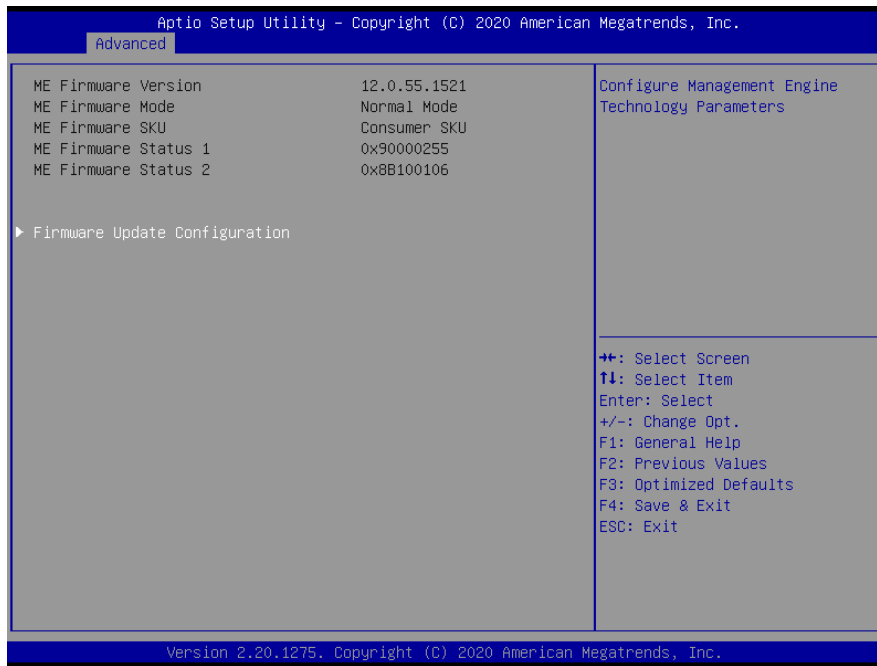
Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled[Default],	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	All[Default], 1 2 3 4 5 6 7 8	Number of cores to enable in each processor package.

3.6.2.1.1 CPU - Power Management Control



Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled[Default],	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled[Default],	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Disabled Enabled[Default],	Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).
C states	Disabled Enabled[Default],	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized

3.6.2.2 PCH-FW Configuration

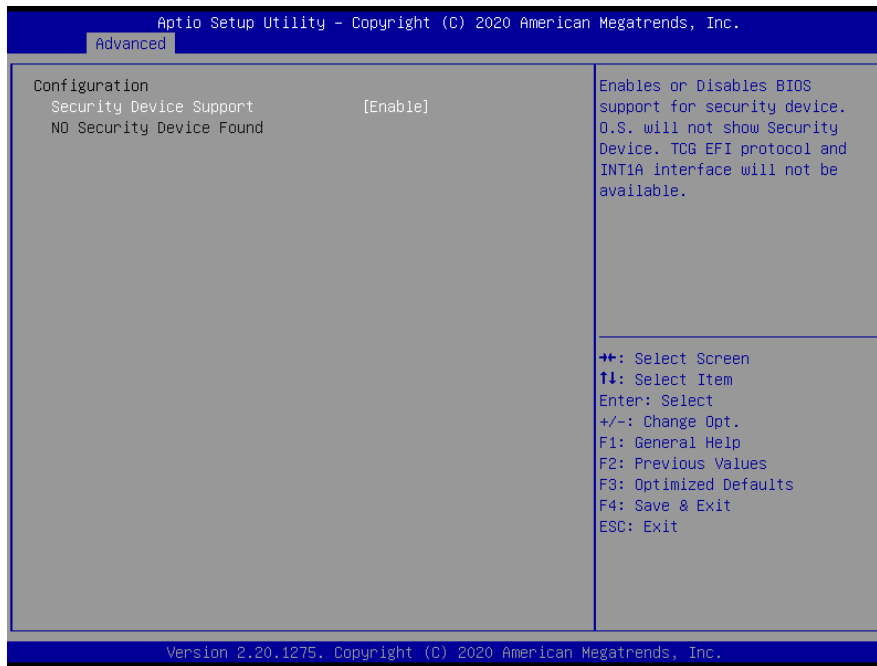


3.6.2.2.1 Firmware Update Configuration



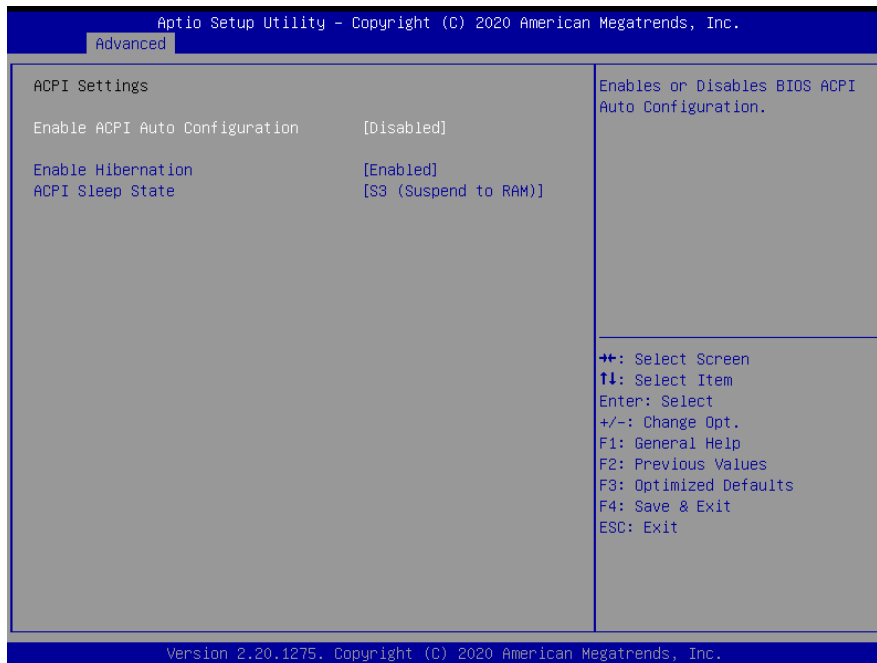
Item	Option	Description
Me FW Image Re-Flash	Disabled[Default], Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.3 Trusted Computing



Item	Options	Description
Security Device Support	Disable, Enable[Default]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

3.6.2.4 ACPI Settings

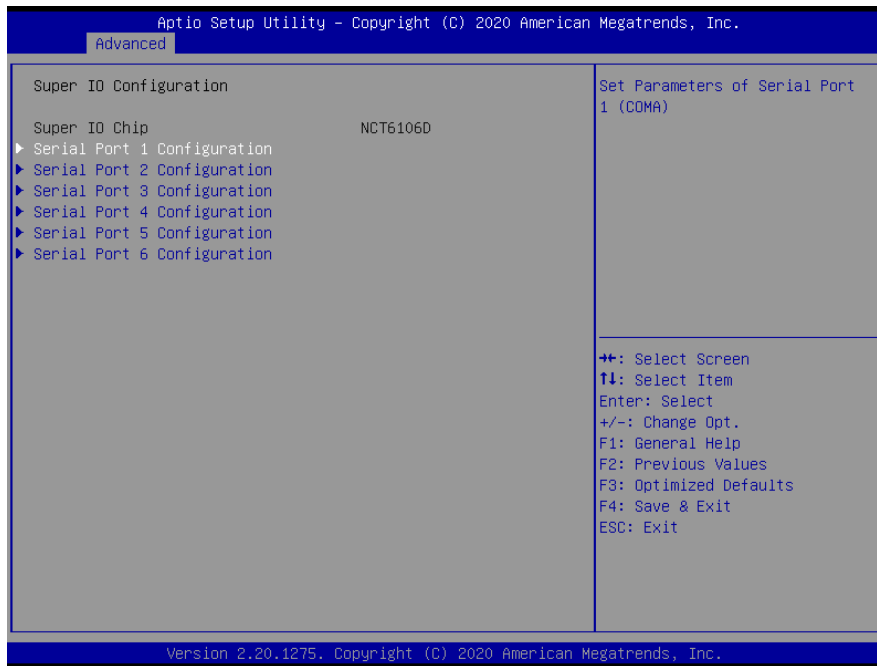


Item	Options	Description
Enable ACPI Auto Configuration	Disabled[Default], Enabled	Enables or Disables BIOS ACPI Auto Configuration.

Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)[Default]	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.

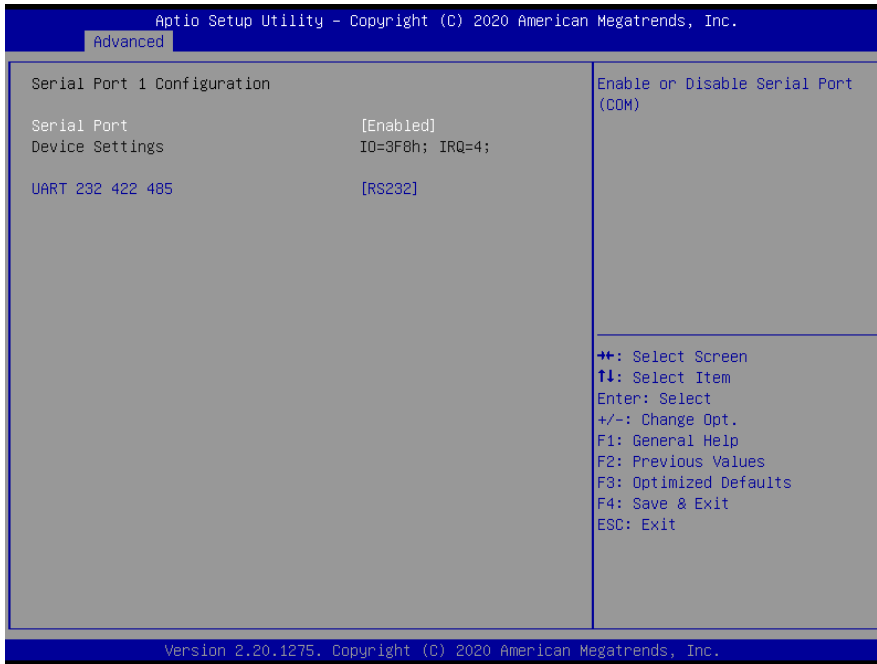
3.6.2.5 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.6 for more information.



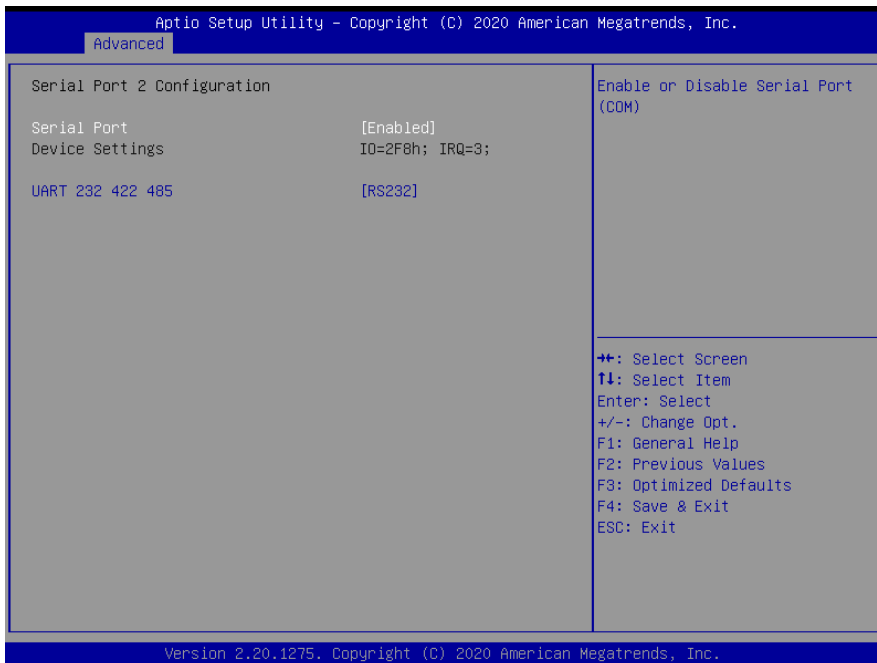
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMF).

3.6.2.5.1 Serial Port 1 Configuration



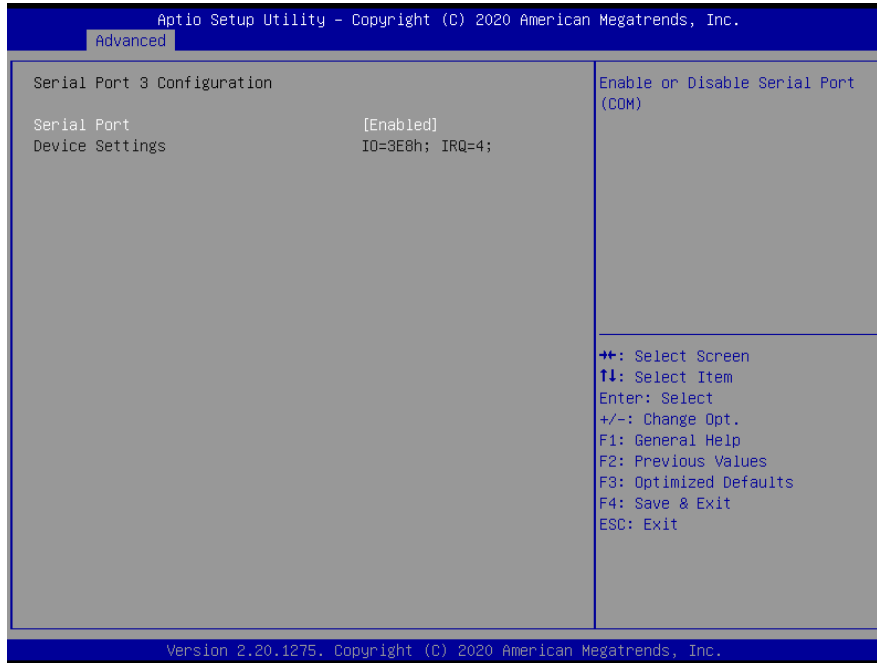
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
UART 232 422 485	RS232[Default], RS422 RS485	Set COM Port as RS232, RS422 or RS485 mode.

3.6.2.5.2 Serial Port 2 Configuration



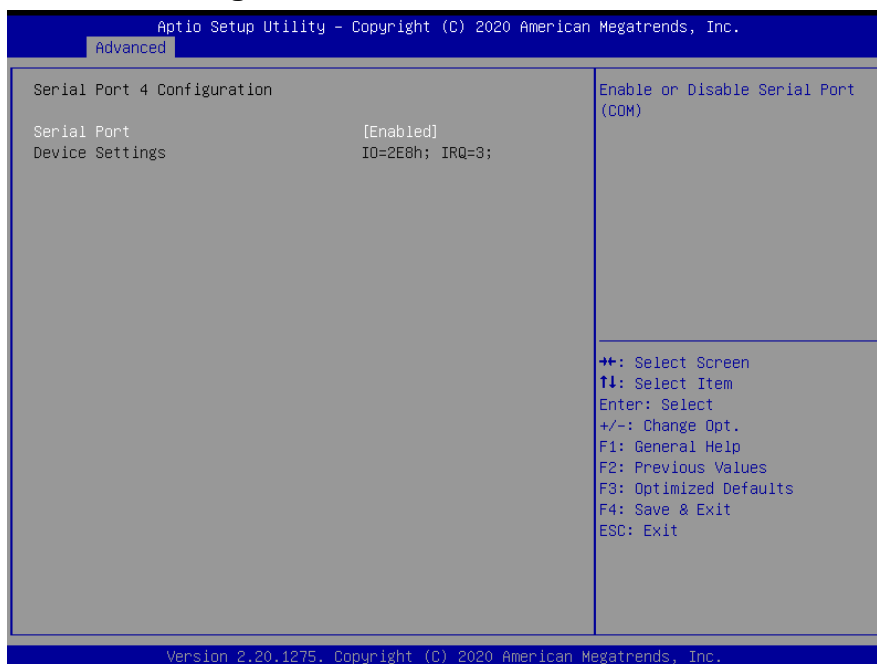
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
UART 232 422 485	RS232[Default], RS422 RS485	Set COM Port as RS232, RS422 or RS485 mode.

3.6.2.5.3 Serial Port 3 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

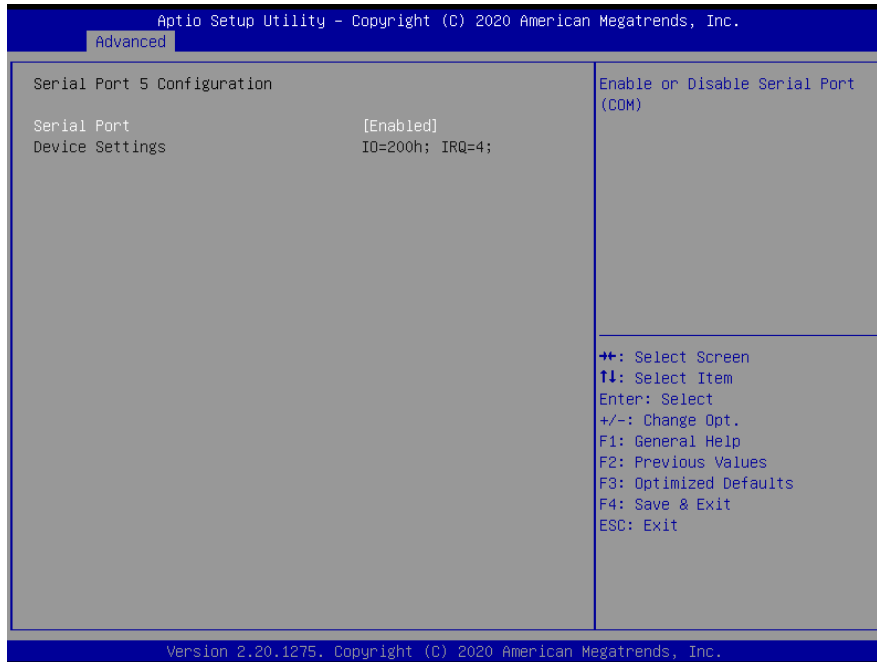
3.6.2.5.4 Serial Port 4 Configuration



BMX-T550

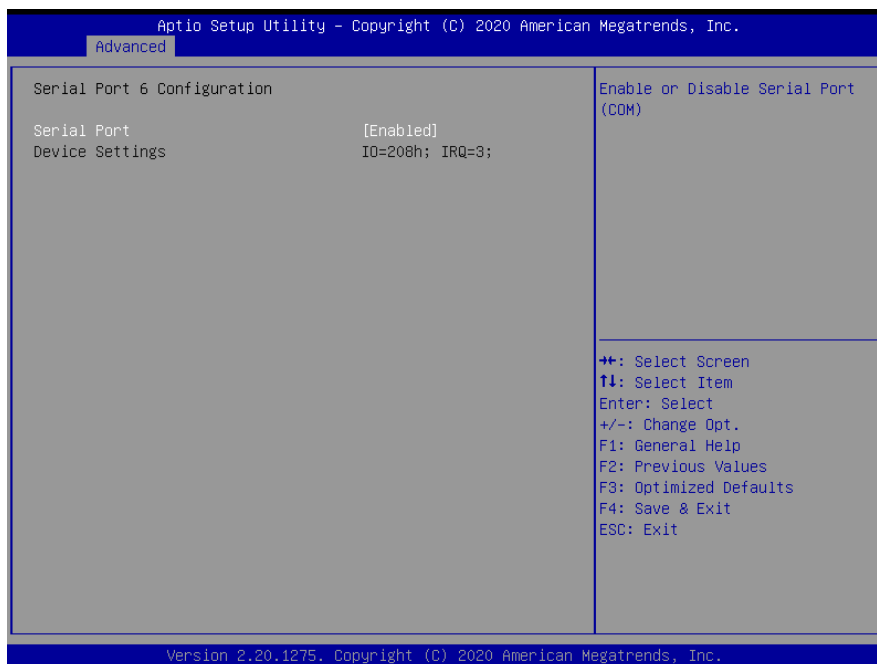
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.5.5 Serial Port 5 Configuration



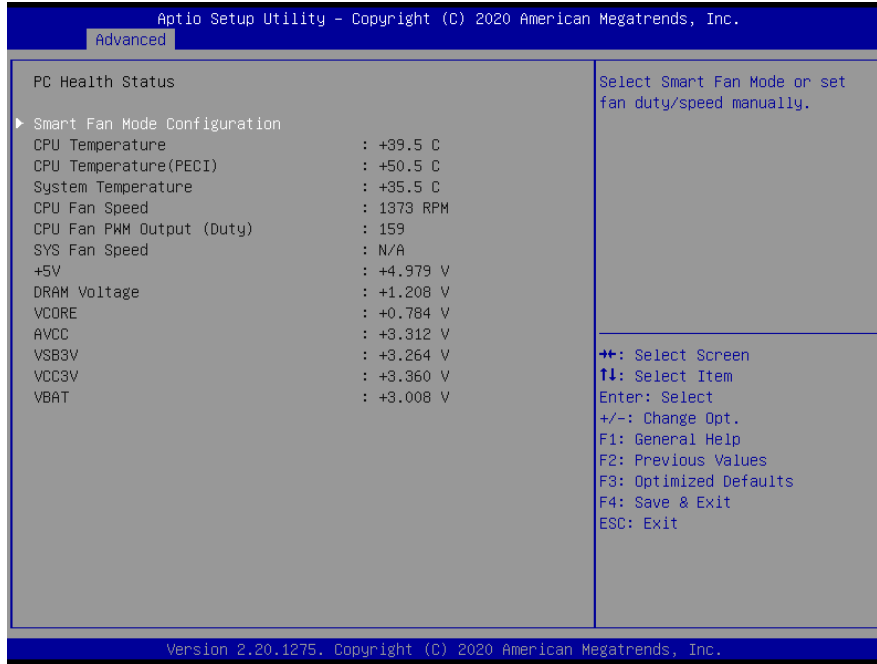
Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.5.6 Serial Port 6 Configuration

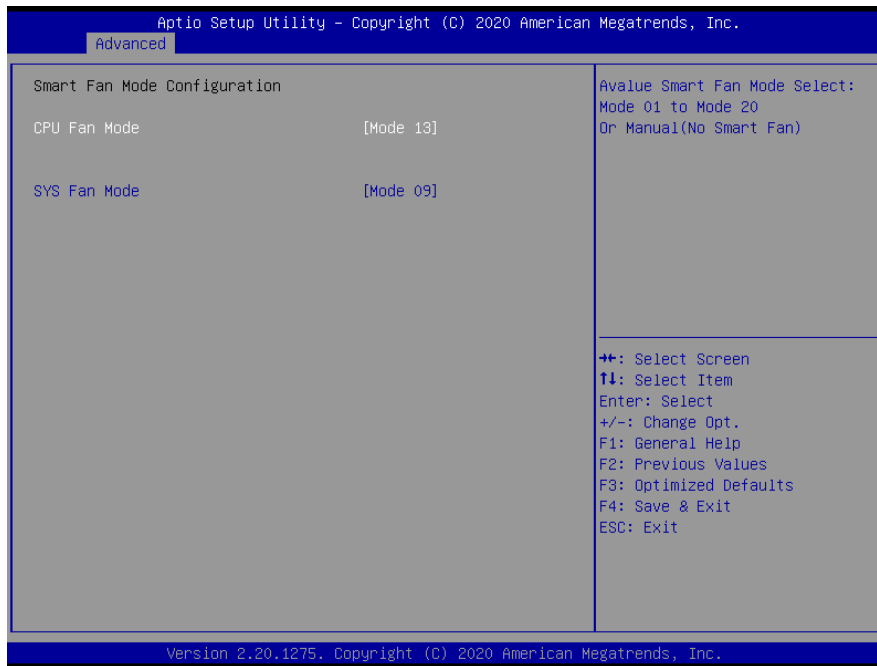


Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).

3.6.2.6 NCT6106D H/W Monitor



3.6.2.6.1 Smart Fan Configuration



Item	Option	Description
CPU Fan Mode	Manual Mode	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual (No Smart Fan)
	Mode 01	
	Mode 02	
	Mode 03	
	Mode 04	

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	<p>Mode 05 Mode 06 Mode 07 Mode 08 Mode 09 Mode 10 Mode 11 Mode 12 Mode 13[Default], Mode 14 Mode 15 Mode 16 Mode 17 Mode 18 Mode 19 Mode 20</p>	
<p>SYS Fan Mode</p>	<p>Manual Mode Mode 01 Mode 02 Mode 03 Mode 04 Mode 05 Mode 06 Mode 07 Mode 08 Mode 09[Default], Mode 10 Mode 11 Mode 12 Mode 13 Mode 14 Mode 15 Mode 16 Mode 17 Mode 18 Mode 19 Mode 20</p>	<p>Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual (No Smart Fan)</p>

3.6.2.7 S5 RTC Wake Settings



Item	Options	Description
Wake system from S5	Disabled[Default], Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime, System will wake on the current time + Increase minute(s).

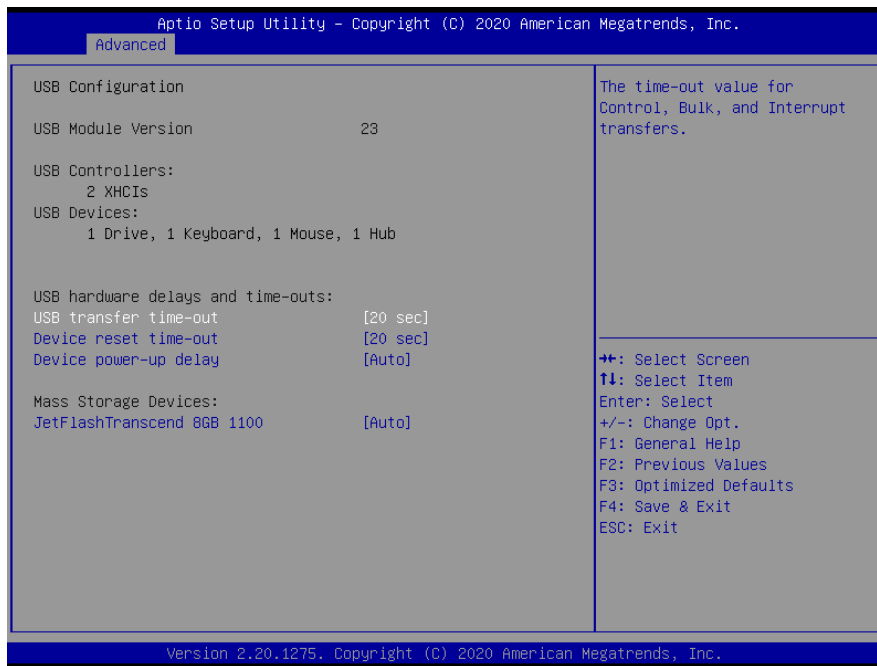
3.6.2.8 Serial Port Console Redirection



Item	Options	Description
Console Redirection	Disabled[Default], Enabled	Console Redirection Enable or Disable.

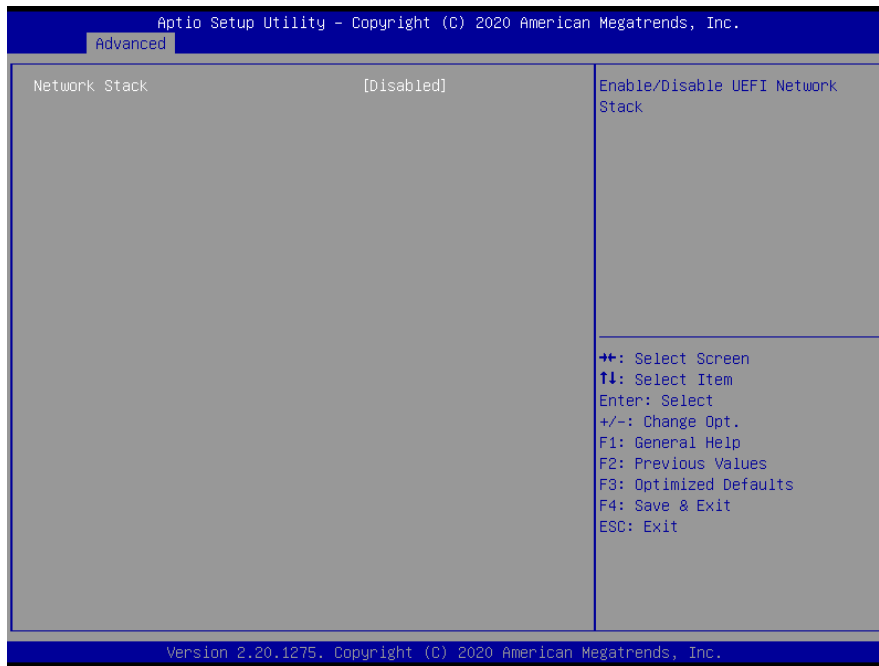
3.6.2.9 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.



Item	Options	Description
USB transfer time-out	1 sec 5 sec 10 sec 20 sec [Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec [Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto [Default] Manual	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 100ms, for a Hub port the delay is taken form Hub descriptor.
JetF lashTranscend 8GB 1100	Auto [Default] Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM' drives with no media will be emulated according to a drive type.

3.6.2.10 Network Stack Configuration

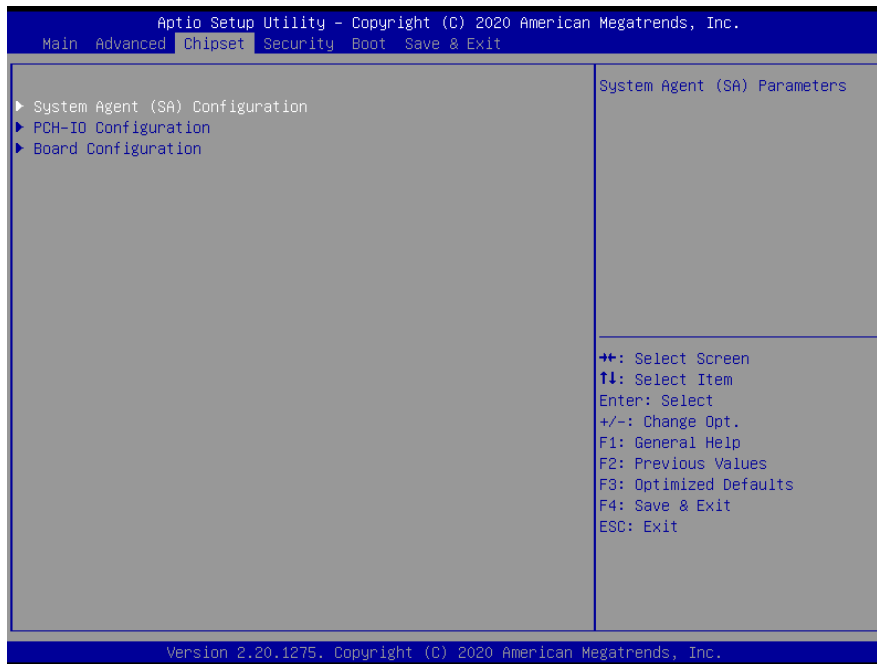


Item	Options	Description
Network Stack	Disabled[Default], Enabled	Enable/Disable UEFI Network Stack.



Note: Motherboard designed with quad Gigabit LAN consumes longer startup time when Network Stack setting at “Enable”, this is a normal phenomenon.

3.6.3 Chipset

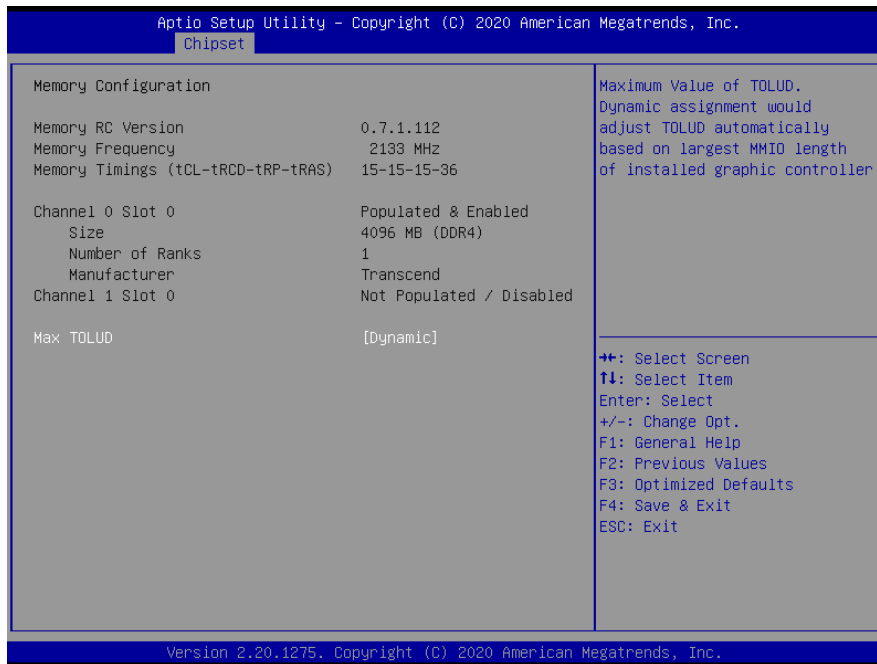


3.6.3.1 System Agent (SA) Configuration



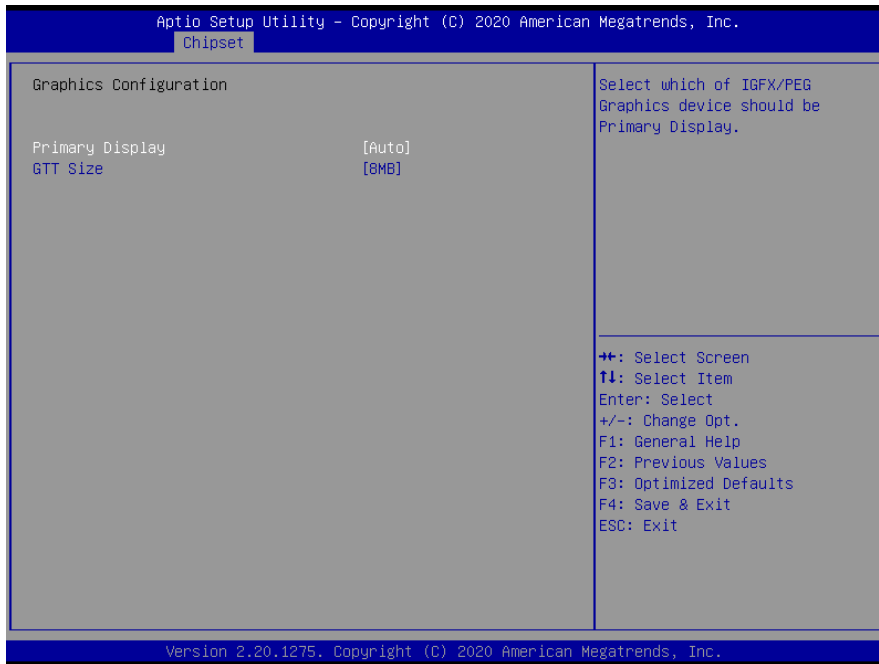
Item	Option	Description
VT-d	Disabled Enabled[Default]	VT-d capability.

3.6.3.1.1 Memory Configuration



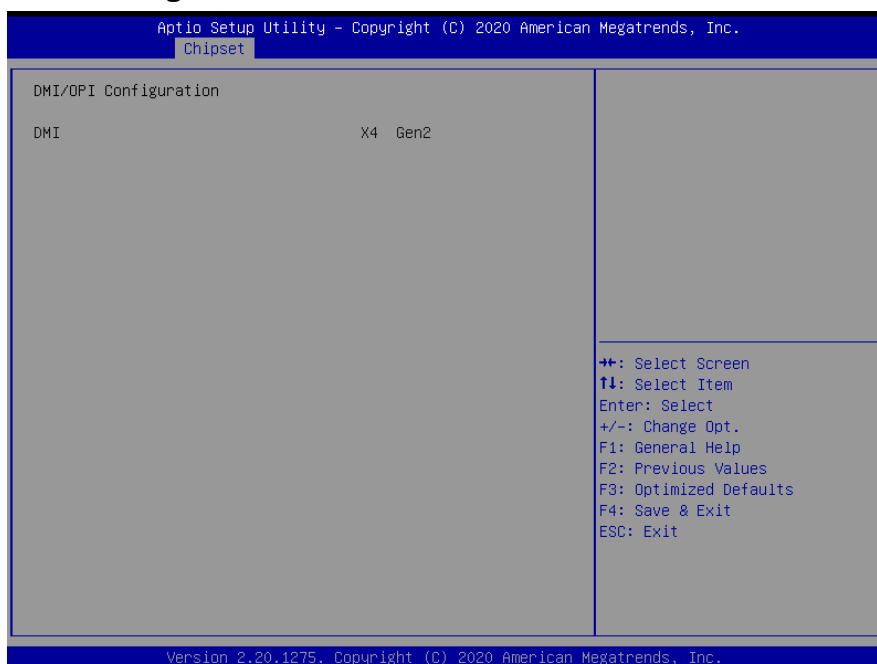
Item	Option	Description
Max TOLUD	Dynamic[Default]	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
	1GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	

3.6.3.1.2 Graphics Configuration

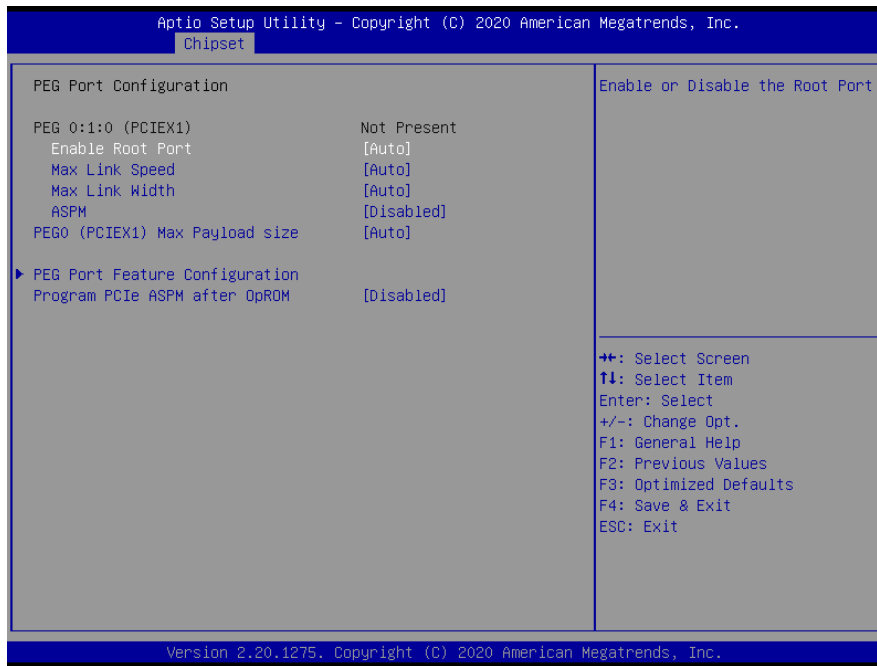


Item	Option	Description
Primary Display	Auto[Default] IGFX PEG	Select which of IGFX/PEG Graphics device should be Primary Display.
GTT Size	2MB 4MB 8MB[Default]	Select the GTT Size

3.6.3.1.3 DMI/OPI Configuration

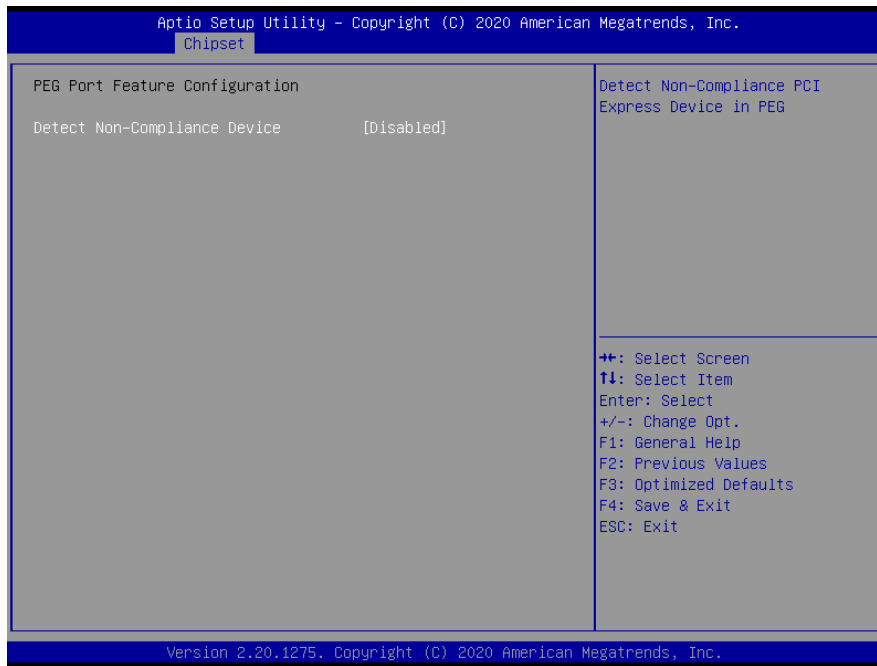


3.6.3.1.4 PEG Port Configuration



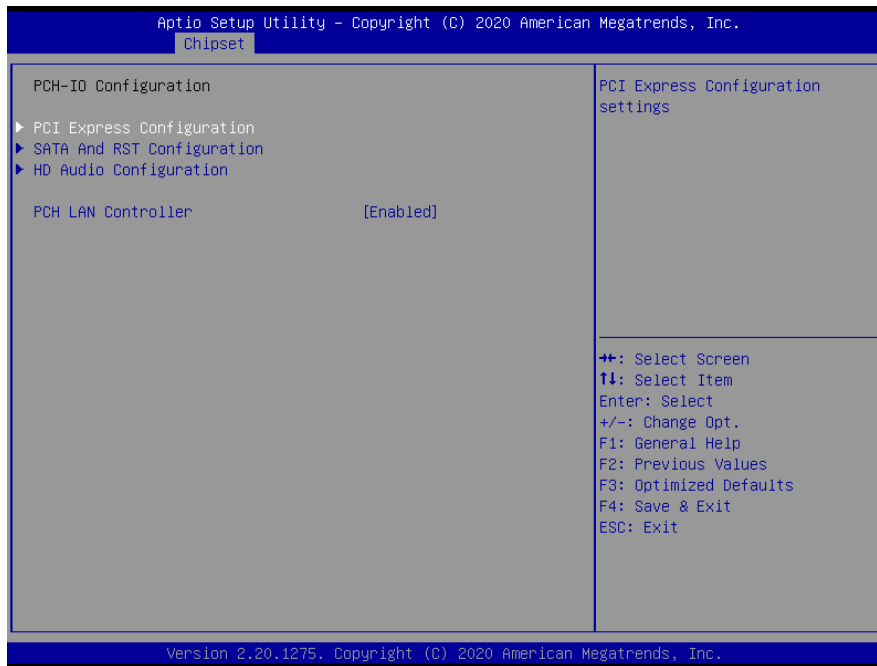
Item	Option	Description
Enable Root Port	Disabled Enabled Auto[Default]	Enable or Disable the Root Port.
Max Link Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PEG 0:1:0 Max Speed
Max Link Width	Auto[Default] Force X1 Force X2 Force X4 Force X8	Force PEG link to retrain to X1/2/4/8
ASPM	Disabled[Default] Auto ASPM L0s ASPM L1 ASPM L0sL1	Control ASPM support for the PEG 0. This has no effect if PEG is not the currently active device.
PEG0 (PCIEX1) Max Payload size	Auto[Default] 128 256 TLP	Select PEG0 Max Payload size; Choose Auto(Default Device Capability) or force to 128/256 Bytes
Program PCIe ASPM after OpROM	Disabled[Default] Enabled	Enabled: PCIe ASPM will be programmed after OpROM. Disabled: PCIe ASPM will be programmed before OpROM.

3.6.3.1.4.1 PEG Port Feature Configuration



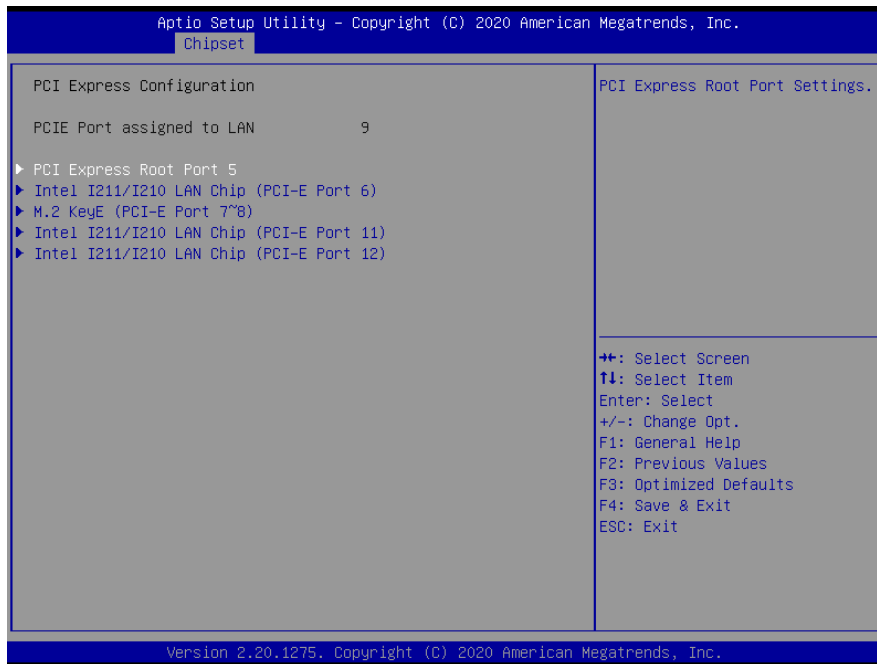
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default] Enabled	Detect Non-Compliance PCI Express Device in PEG

3.6.3.2 PCH-IO Configuration

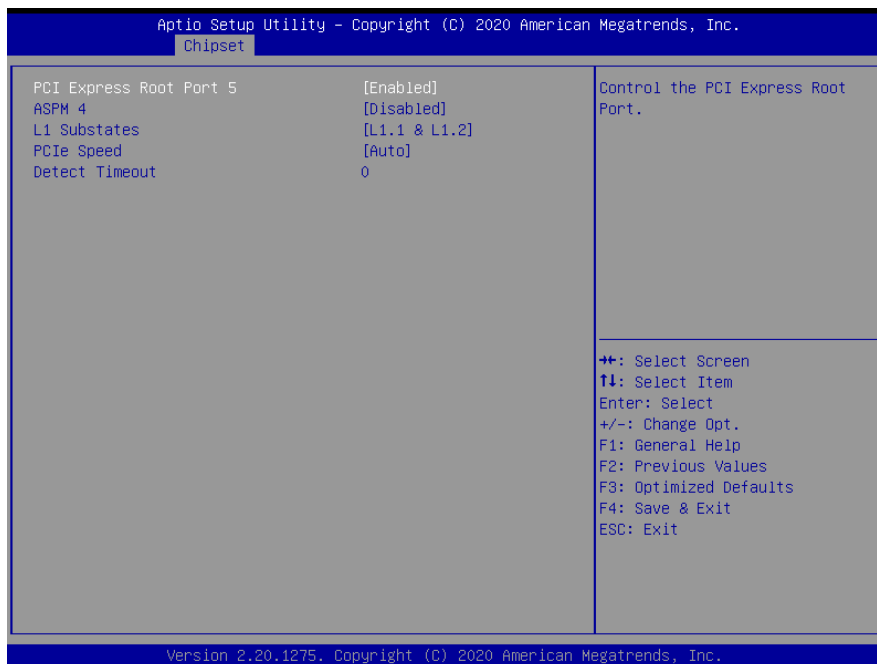


Item	Option	Description
PCH LAN Controller	Enabled[Default] Disabled	Enable/Disable onboard NIC.

3.6.3.2.1 PCI Express Configuration



3.6.3.2.1.1 PCI Express Root Port 5

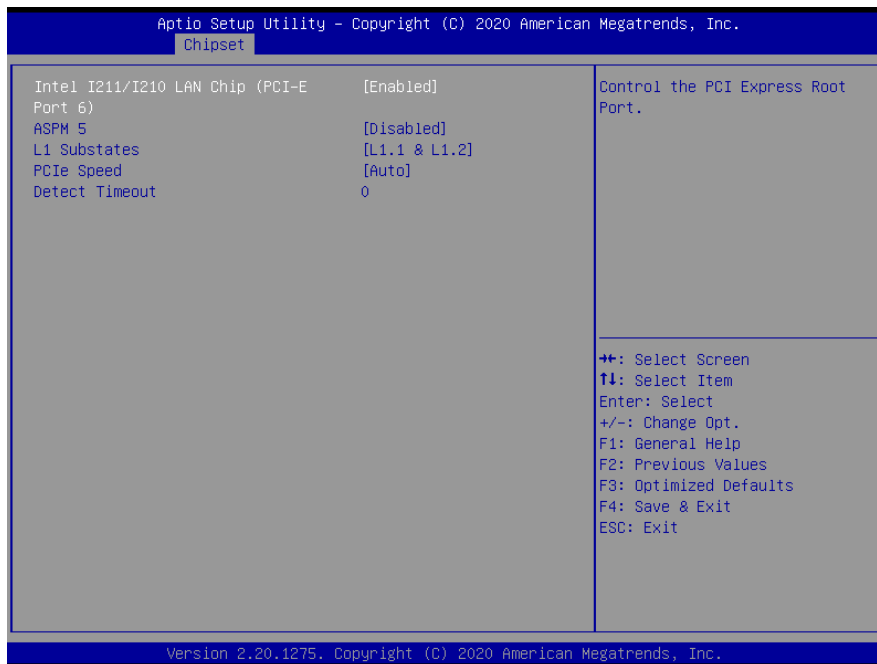


Item	Option	Description
PCI Express Root Port 5	Disabled Enabled[Default],	Control the PCI Express Root Port.
ASPM 4	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM.

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L1 Substates	Disabled L1.1 L1.1 & L1.2[Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

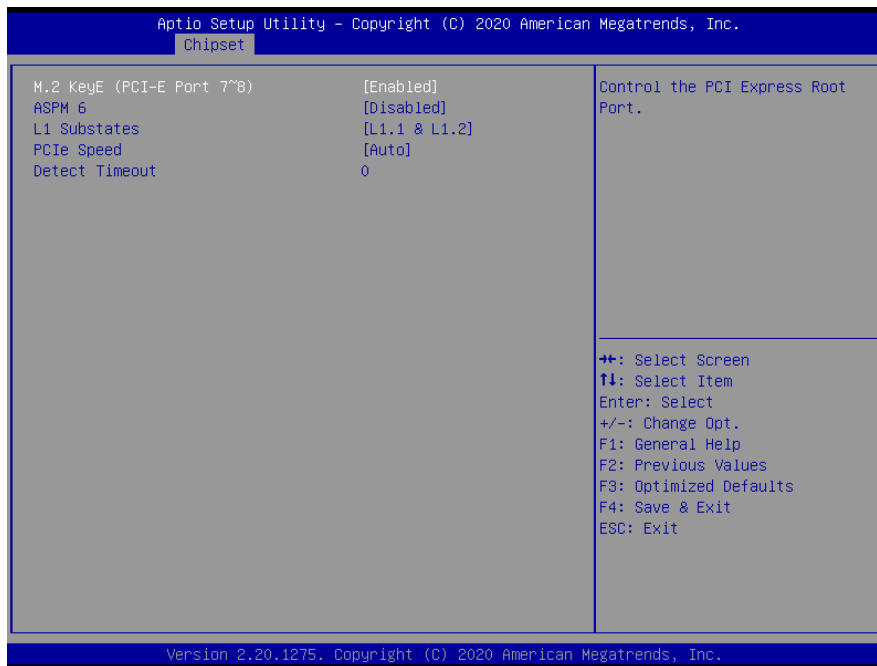
3.6.3.2.1.2 Intel I211/I210 LAN Chip (PCI-E Port 6)



Item	Option	Description
Intel I211/I210 LAN Chip (PCI-E Port 6)	Disabled Enabled[Default],	Control the PCI Express Root Port.
ASPM 5	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2[Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no

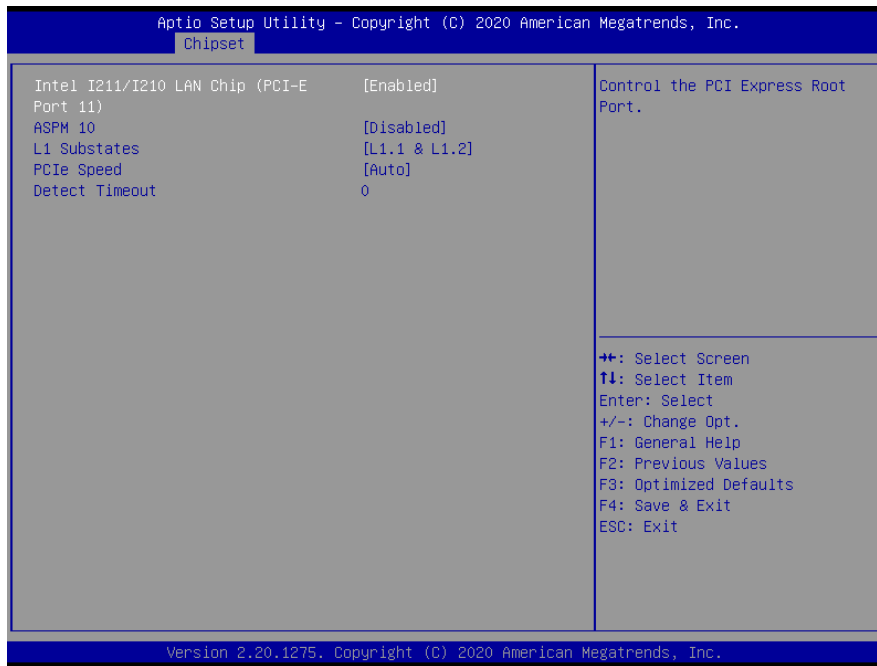
		device and potentially disabling the port.
--	--	--

3.6.3.2.1.3 M.2 KeyE (PCI-E Port 7~8)



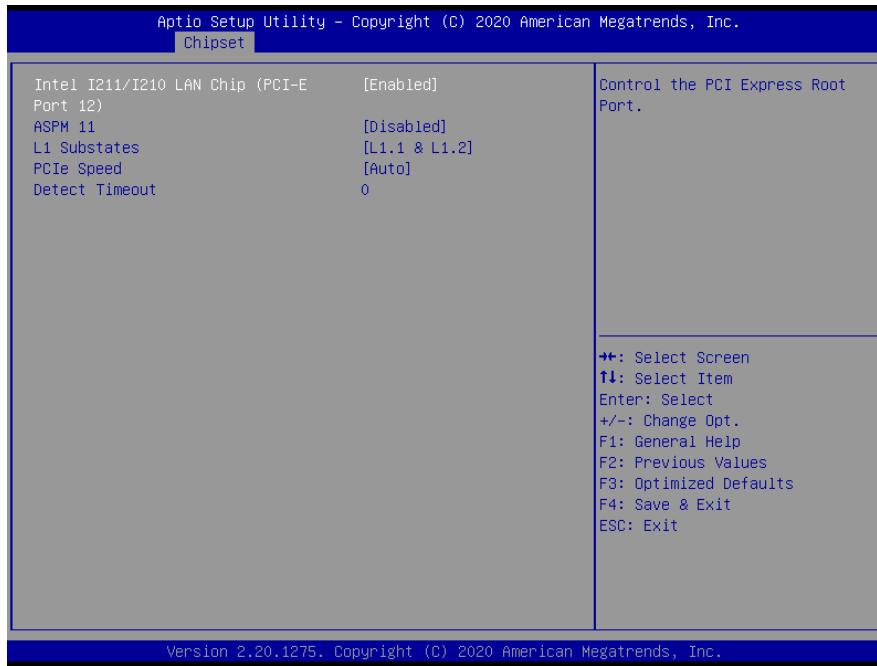
Item	Option	Description
M.2 KeyE (PCI-E Port 7~8)	Disabled Enabled[Default],	Control the PCI Express Root Port.
ASPM 6	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2[Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

3.6.3.2.1.4 Intel I211/I210 LAN Chip (PCI-E Port 11)



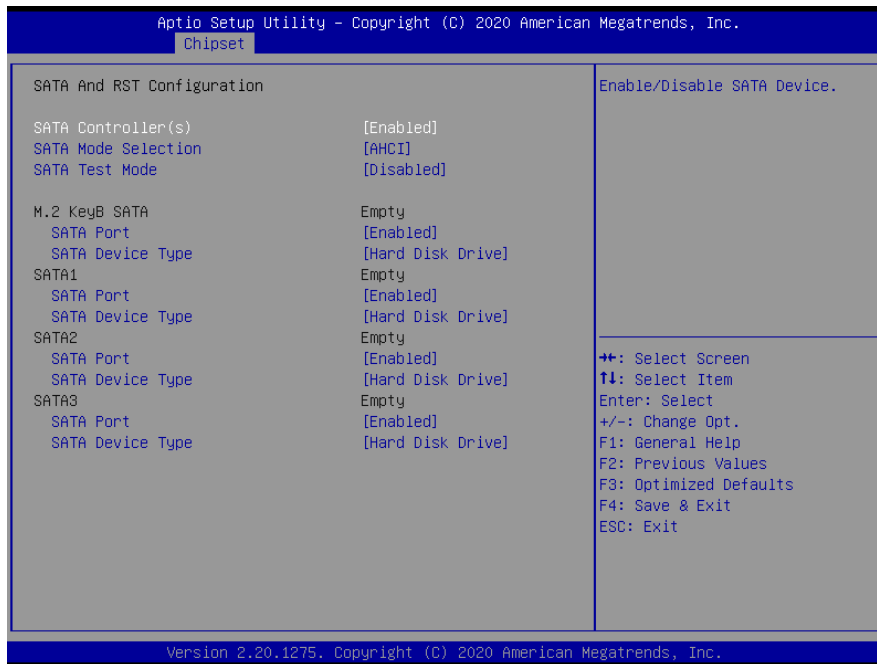
Item	Option	Description
Intel I211/I210 LAN Chip (PCI-E Port 11)	Disabled Enabled[Default],	Control the PCI Express Root Port.
ASPM 10	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2[Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

3.6.3.2.1.5 Intel I211/I210 LAN Chip (PCI-E Port 12)



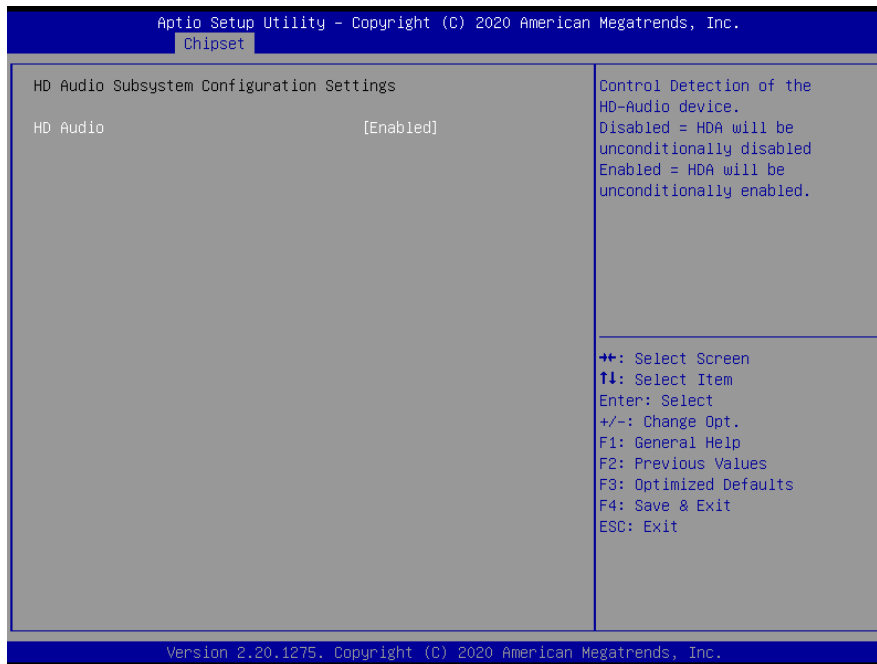
Item	Option	Description
Intel I211/I210 LAN Chip (PCI-E Port 11)	Disabled Enabled[Default],	Control the PCI Express Root Port.
ASPM 11	Disabled[Default] L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s - Force all links to L0s State AUTO - BIOS auto configure DISABLE - Disables ASPM.
L1 Substates	Disabled L1.1 L1.1 & L1.2[Default]	PCI Express L1 Substates settings.
PCIe Speed	Auto[Default] Gen1 Gen2 Gen3	Configure PCIe Speed
Detect Timeout	0	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.

3.6.3.2.2 SATA And RST Configuration



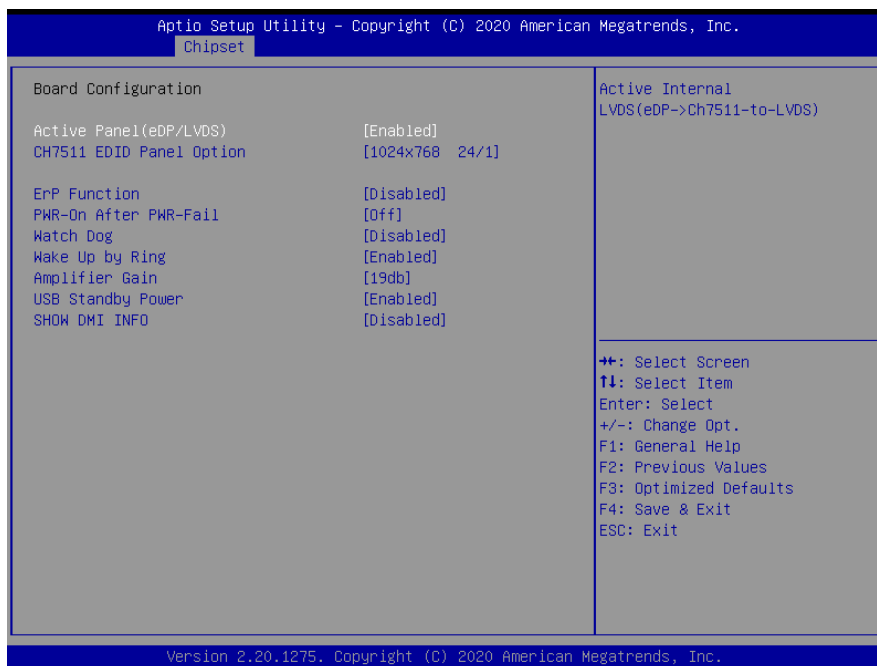
Item	Options	Description
SATA Configuration(S)	Enabled[Default], Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI[Default], RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled[Default],	Test Mode Enable/Disable (Loop Back).
SATA Port	Disabled Enabled[Default],	Enable or Disable SATA Port
SATA Device Type	Hard Disk Drive[Default], Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

3.6.3.2.3 HD Audio Configuration



Item	Option	Description
HD Audio	Disabled Enabled[Default],	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

3.6.3.3 Board Configuration

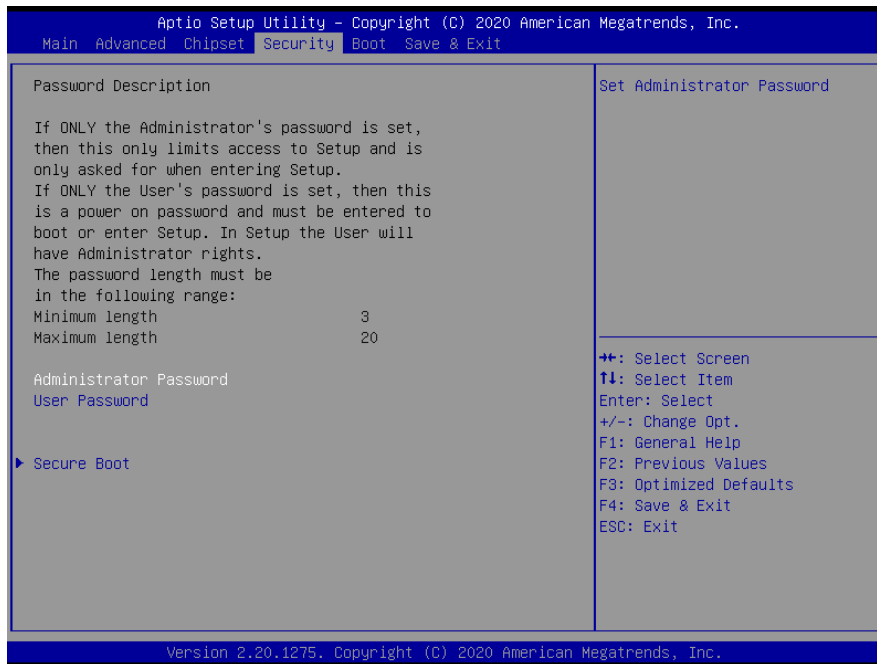


Item	Option	Description
Active Panel (eDP/LVDS)	Disabled Enabled[Default],	Active Internal LVDS(eDP->Ch7511-to-LVDS)

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CH7511 EDID Panel Option	1024x768 24/1 [Default] , 800x600 18/1 1024x768 18/1 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option
ErP Function	Disabled [Default] , Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off [Default] , On Last state	AC loss resume.
Watch Dog	Disabled [Default] , 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
Wake Up by Ring	Disabled Enabled [Default] ,	Wake Up by Ring from S3/S4/S5
Amplifier Gain	11db 14db 19db [Default] , 25db	Amplifier Gain
USB Standby Power	Disabled Enabled [Default] ,	Enabled/Disabled USB Standby Power during S3/S4/S5
SHOW DMI INFO	Disabled [Default] , Enabled	SHOW DMI INFO

3.6.4 Security



Item	Description
Administrator Password	Set Administrator Password
User Password	Set User Password

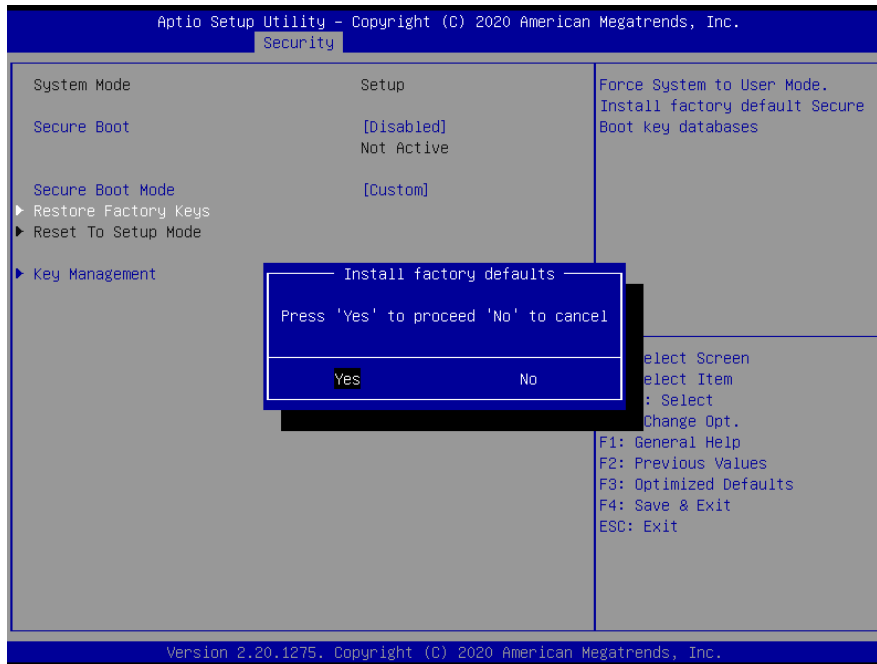
3.6.4.1 Secure Boot



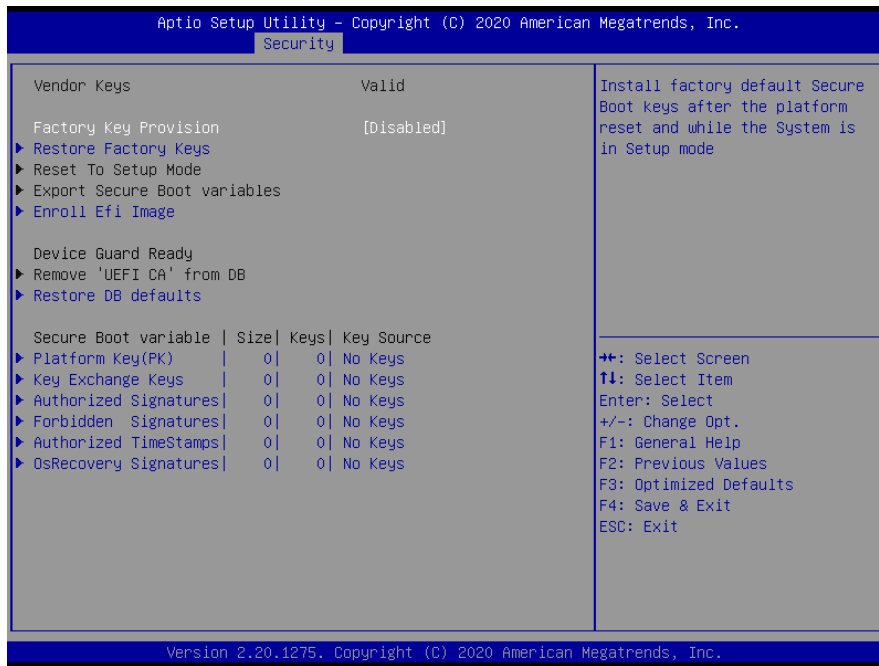
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Item	Option	Description
Secure Boot	Disabled[Default], Enabled	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard Custom[Default],	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

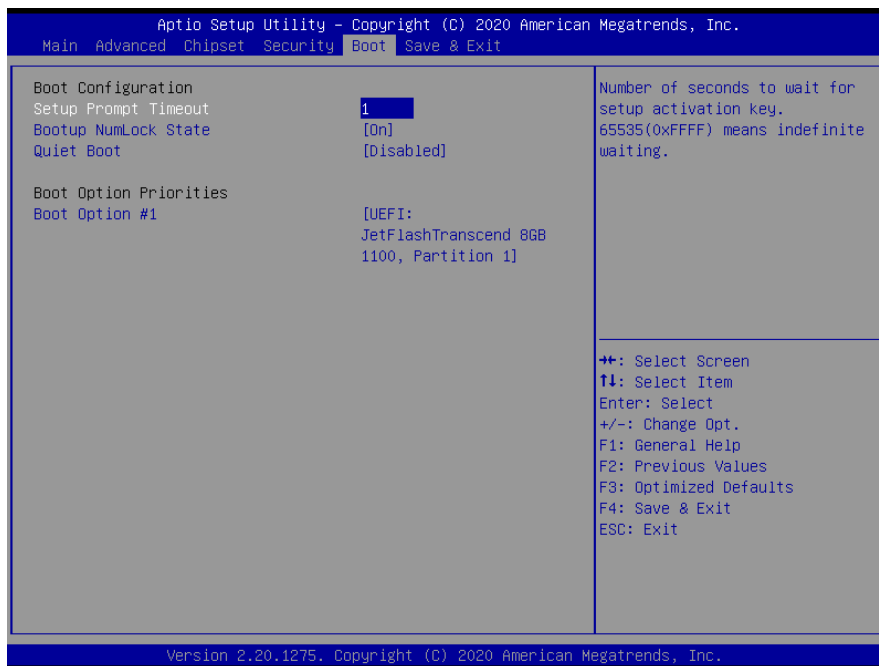
3.6.4.1.1 Restore Factory Keys



3.6.4.1.2 Key Management



3.6.5 Boot

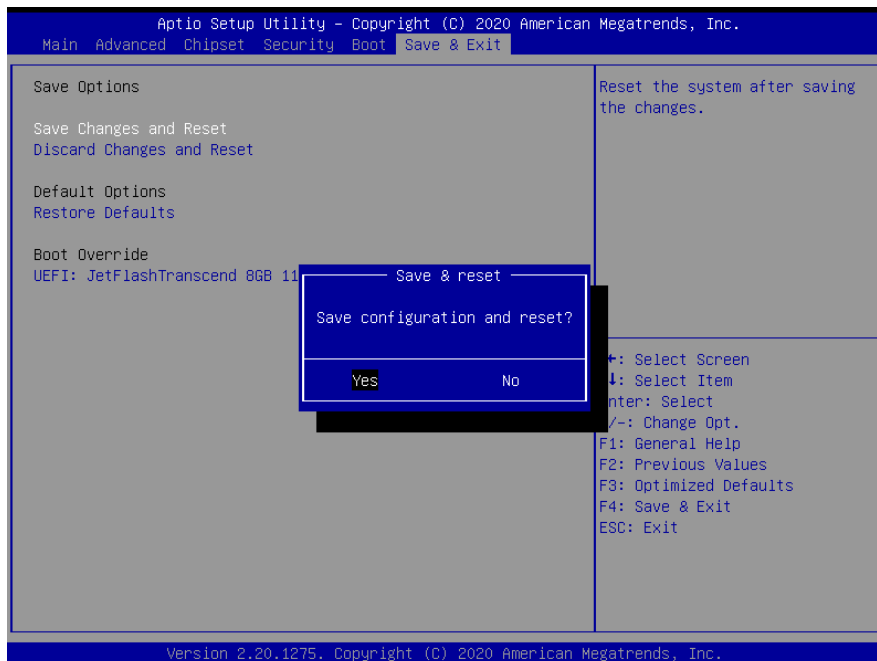


Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On[Default] Off	Select the keyboard NumLock state.

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Quiet Boot	Disabled[Default] Enabled	Enable or disable Quiet Boot option.
Boot Option #1	Sets the system boot order	

3.6.6 Save & Exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 *Discard Changes and Reset*

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.3 *Restore Defaults*

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.4 *Launch EFI Shell from filesystem device*

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

4. Drivers Installation



Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

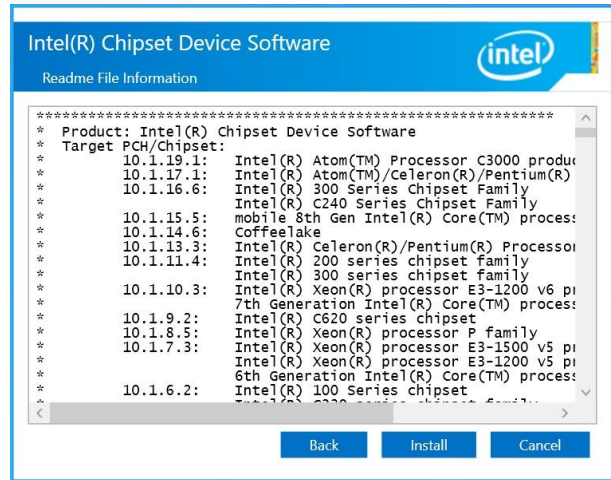
4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

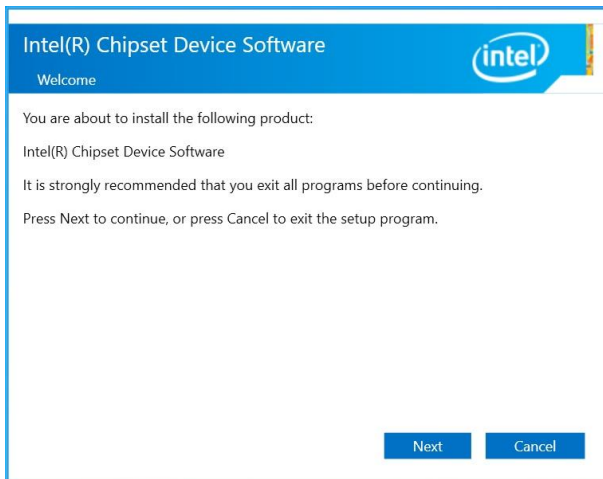
<http://www.avalue.com.tw>.



Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



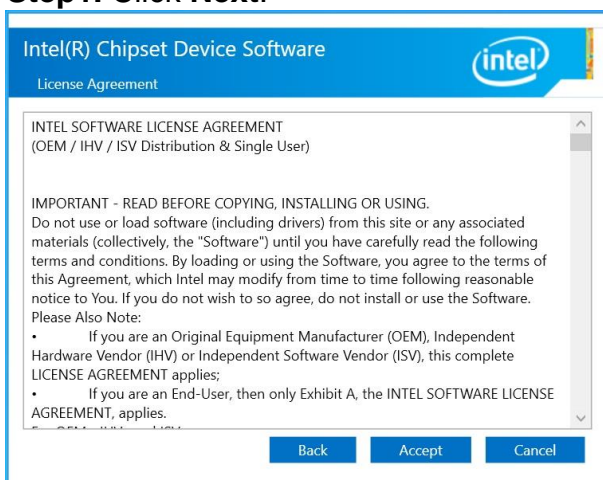
Step 3. Click Install.



Step 1. Click Next.



Step 4. Complete setup.



Step 2. Click Accept.

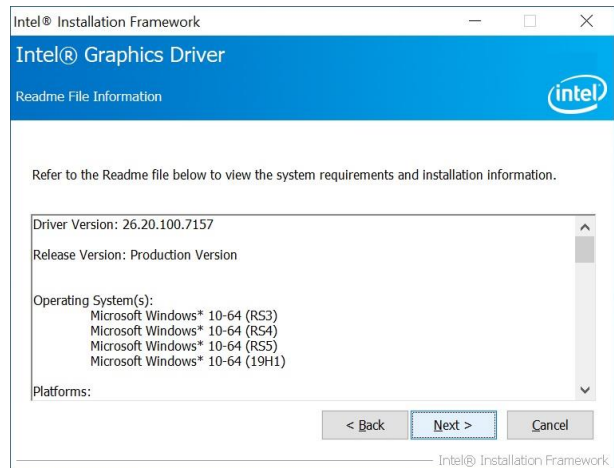
4.2 Install VGA Driver

All drivers can be found on the Avalue Official Website:

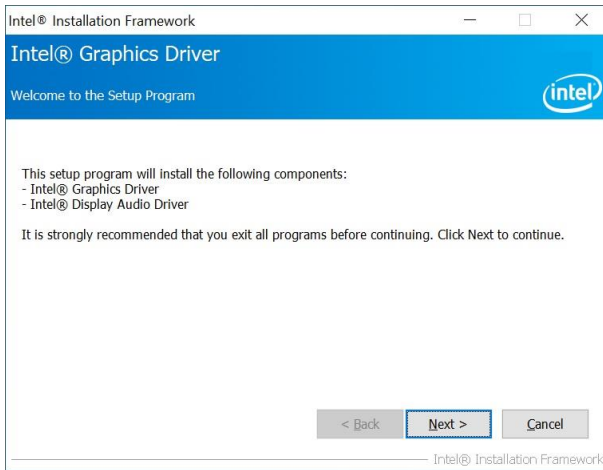
<http://www.avalue.com.tw>.



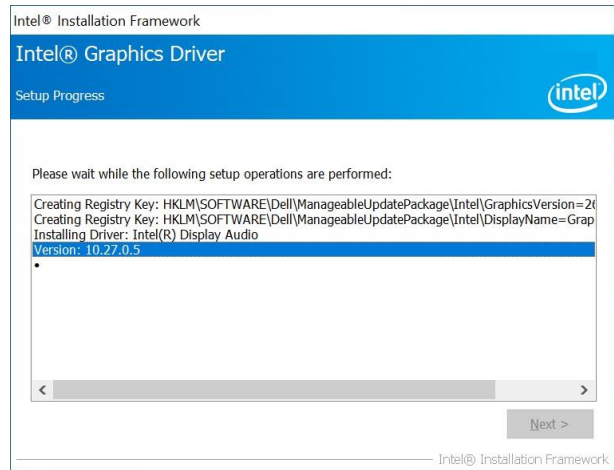
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



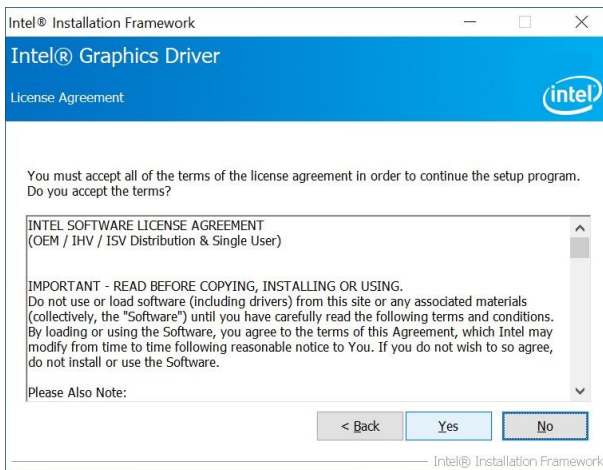
Step 3. Click Next.



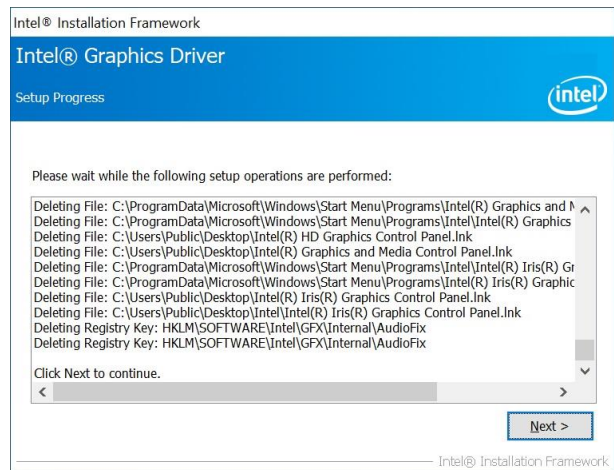
Step 1. Click Next to continue installation.



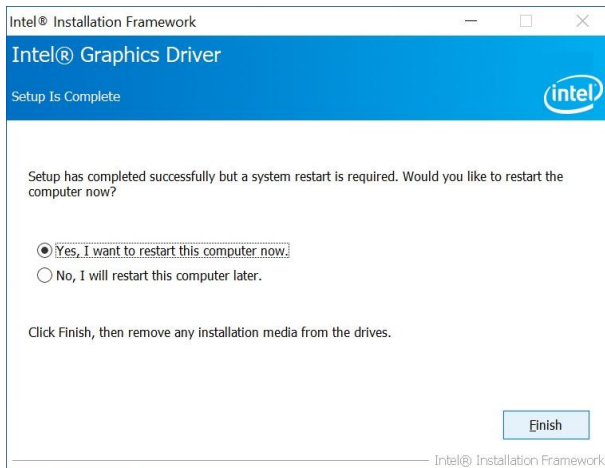
Step 4. Click Next.



Step 2. Click Yes.



Step 5. Click Next.



Step 6. Click **Finish** to complete setup.

SUPPORTED PRODUCTS:

The Intel® Graphics Driver contains support for the following Intel Chipsets/Processors with the following graphic support: Intel®, Iris® Pro and Intel® HD graphics:

- 6th Gen Intel® Core™ processor family (codename Skylake) (Workstation-Xeon)

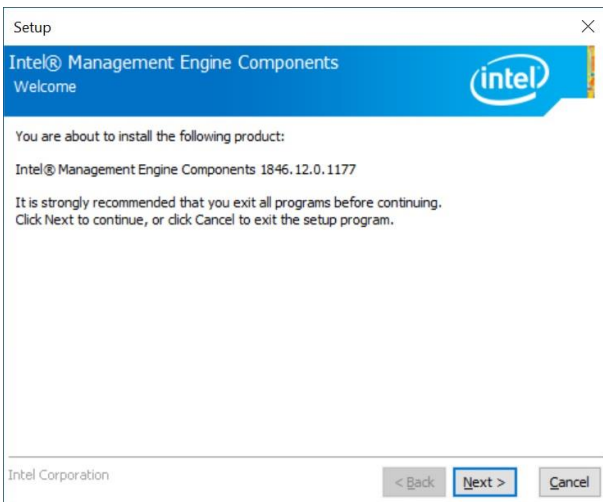
4.3 Install ME Driver

All drivers can be found on the Avalue Official Website:

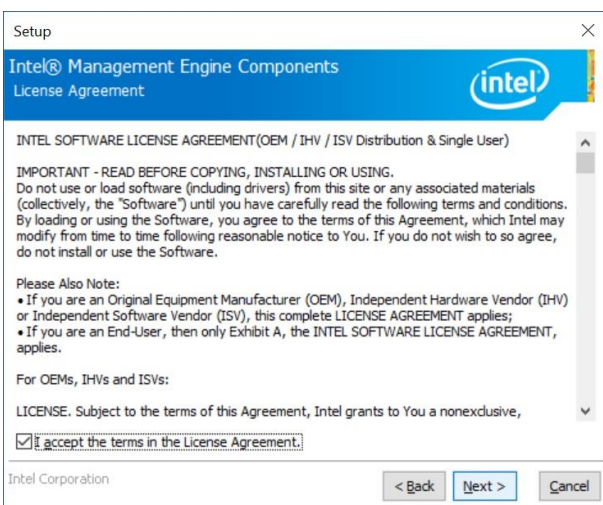
<http://www.avalue.com.tw>.



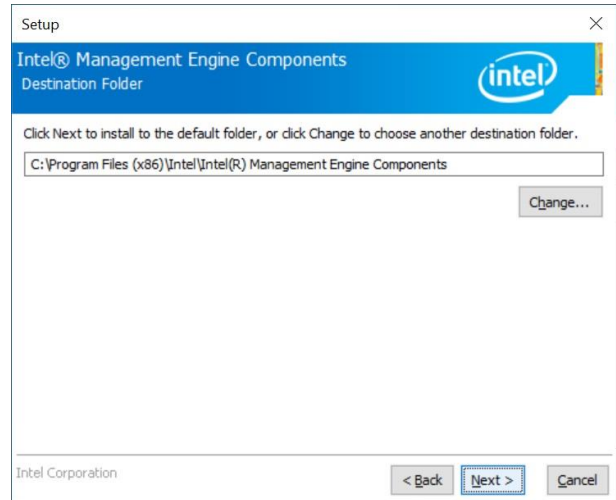
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



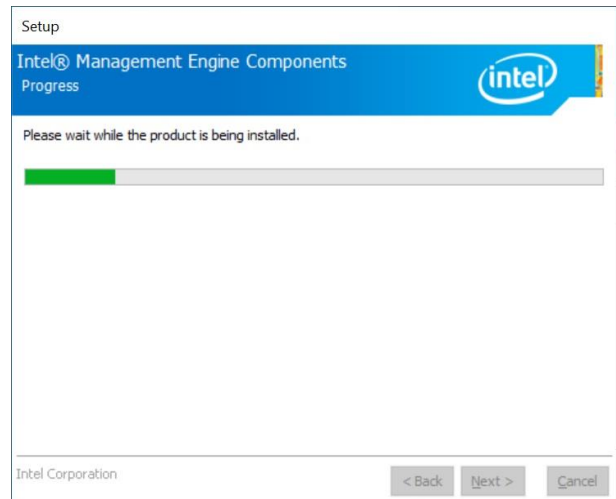
Step 1. Click Next to continue setup.



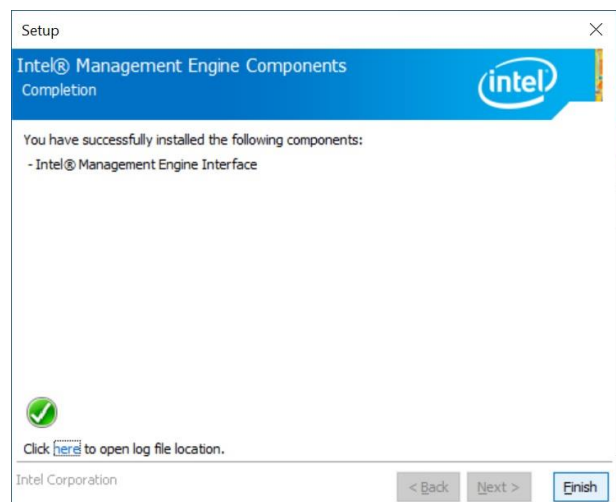
Step 2. Click Next.



Step 3. Click Next



Step 4. Click Next



Step 5. Click Finish to complete the setup

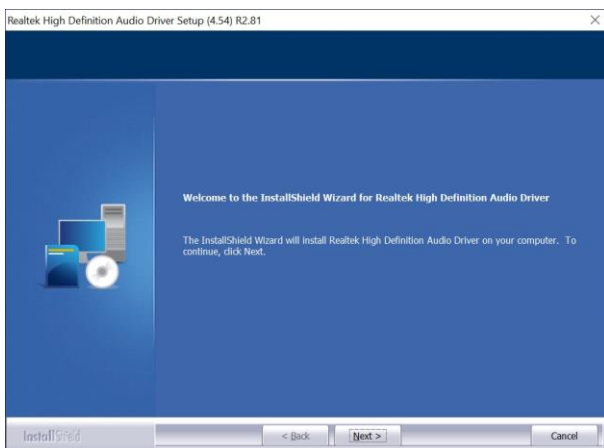
4.4 Install Audio Driver

All drivers can be found on the Avalue Official Website:

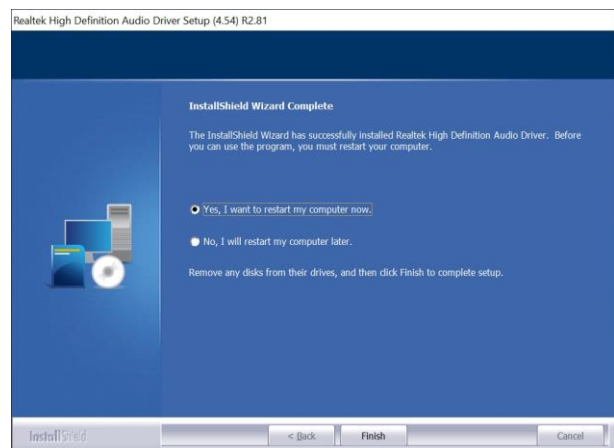
<http://www.avalue.com.tw>.



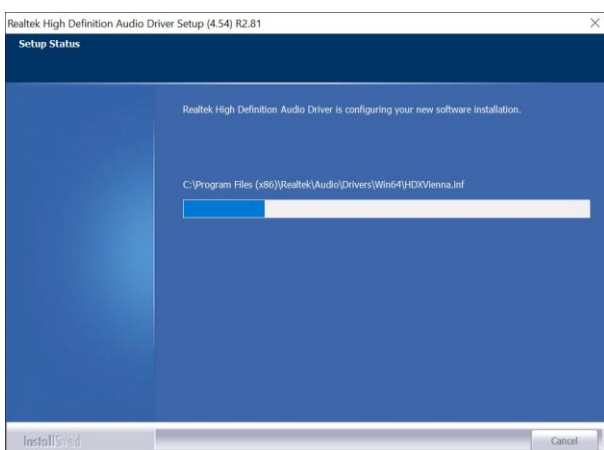
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 1. Click **Next** to Install.



Step 3. Select **Finish** to complete Installation.



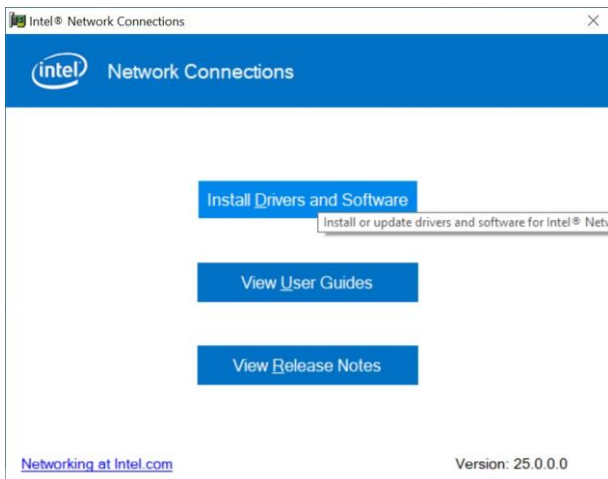
Step 2. Click **Next**.

4.5 Install LAN Driver

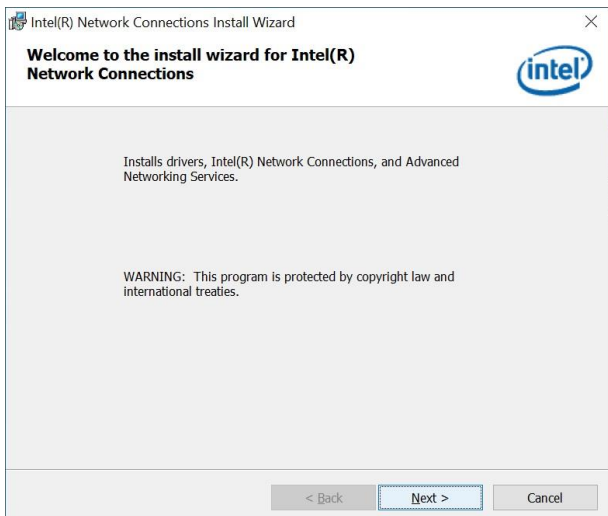
All drivers can be found on the Avalue Official Website:
<http://www.avalu.com.tw>.



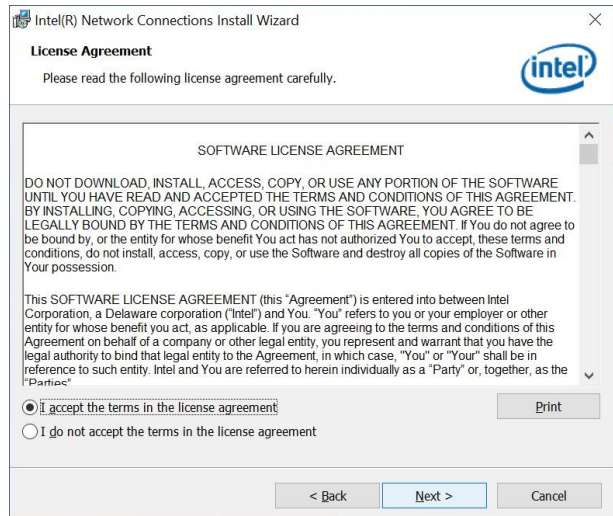
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



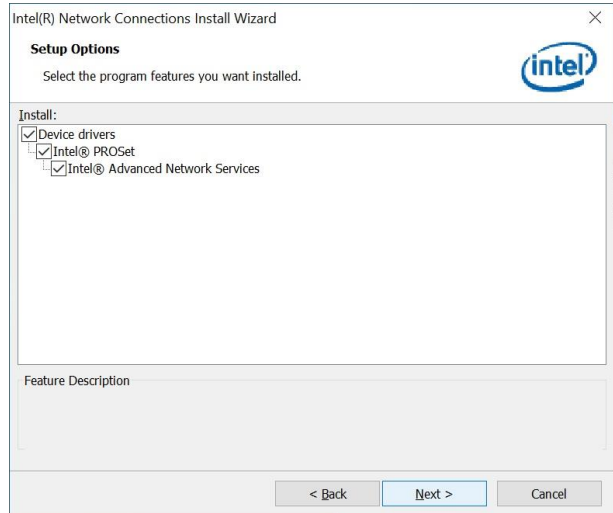
Step 1. Click Install Drivers and Software



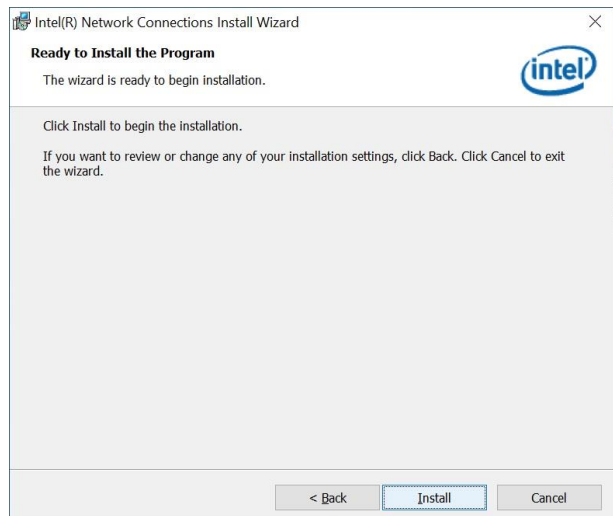
Step 2. Click Next to continue installation.



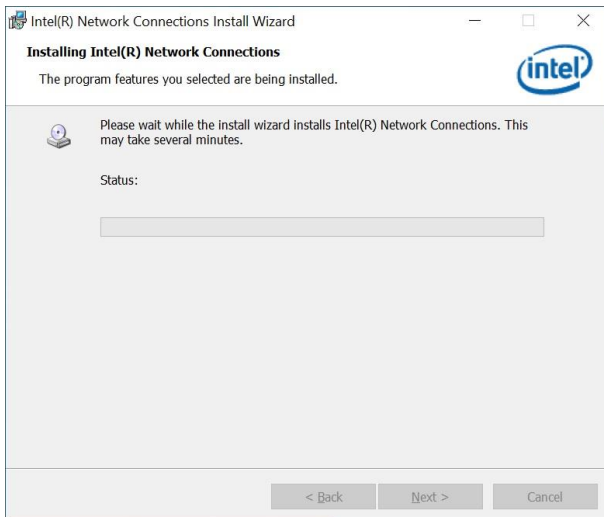
Step 3. Click Next.



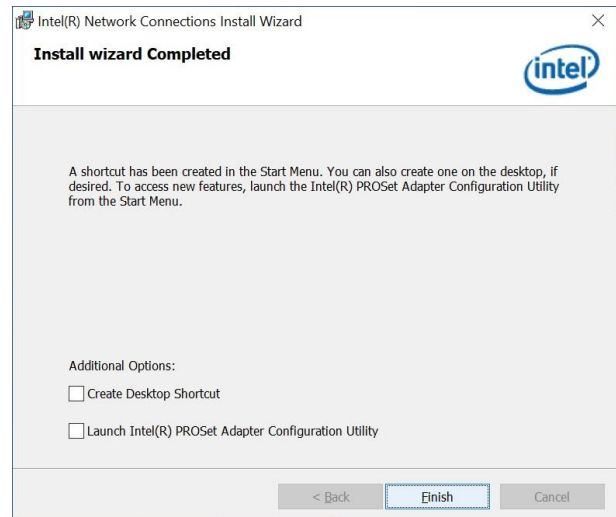
Step 4. Click Next.



Step 5. Click Install.



Step 6. Click Next.



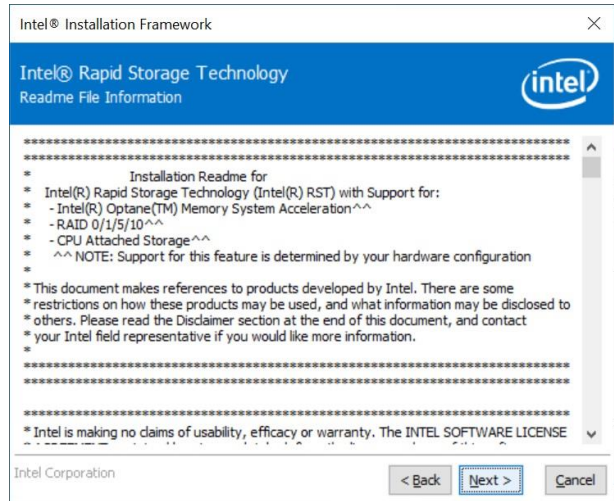
Step 7. Click Finish to complete setup.

4.6 Install RST Driver

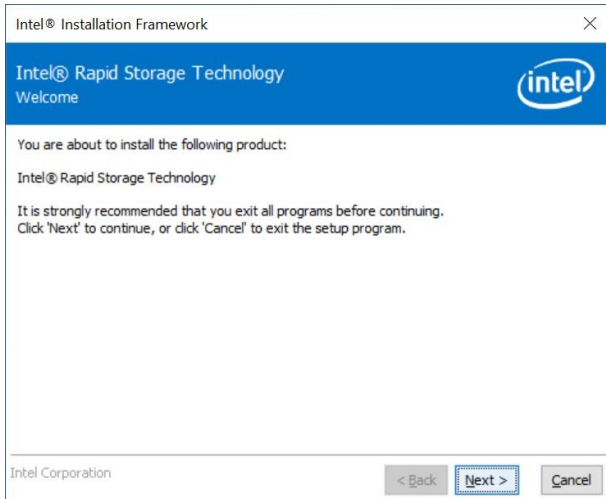
All drivers can be found on the Avalue Official Website:
<http://www.avalue.com.tw>.



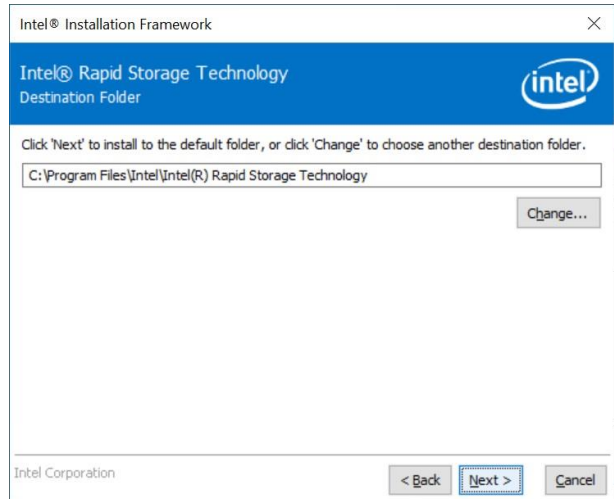
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



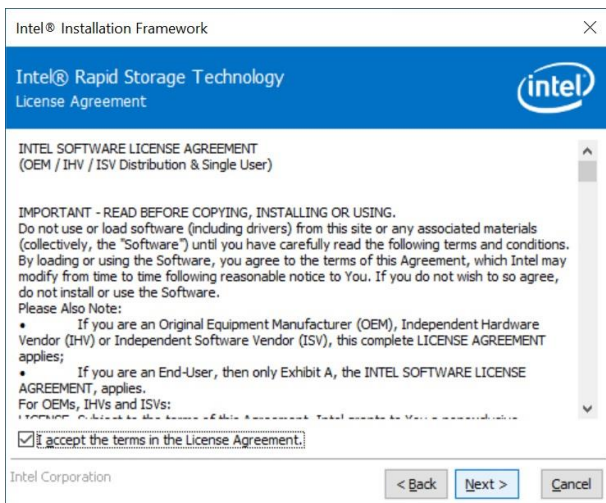
Step 3. Click Next.



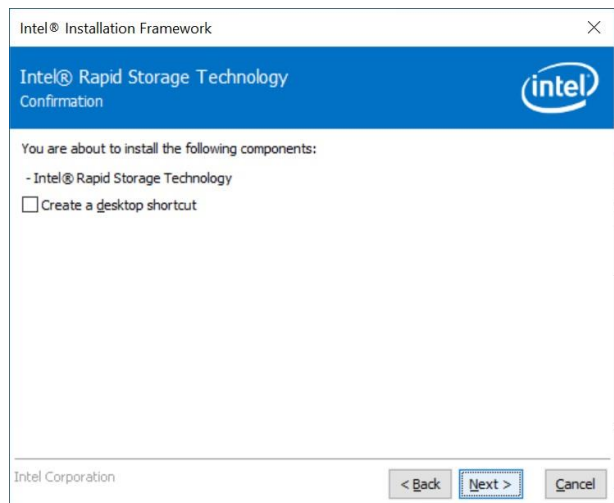
Step 1. Click Next to continue installation.



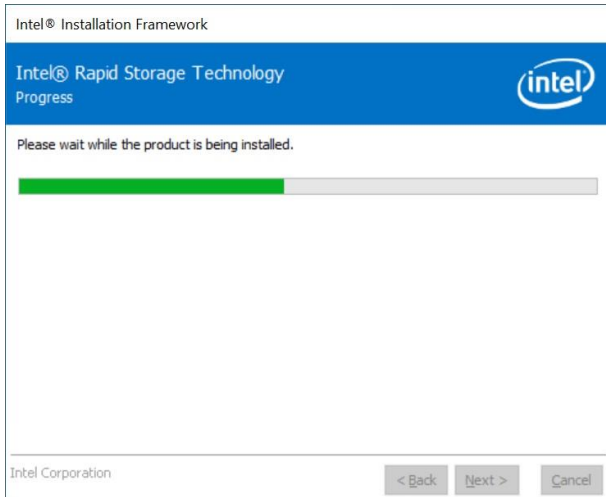
Step 4. Click Next.



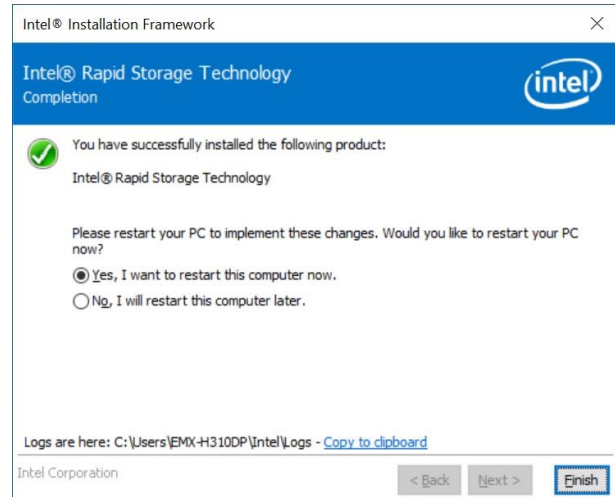
Step 2. Click Next.



Step 5. Click Finish to complete setup.



Step 6. Click Next.



Step 7. Click Finish to complete setup.

