BMX-T540

Mini ITX Barebone System with Intel® C246P Chipset

Quick Reference Guide

2nd Ed –23 June 2021

Part No. E2017BM40A1R

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 UNDESIRED 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 INSTATLLED 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/

Content

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

- 1 x BMX-T540 Barebone system
- Accessories:
  — 8 x HDD Screw
  — 8 x Rubber foot

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

1.3 System Specifications

System	
Mother Board	EMX-C246P
CPU	Intel® LGA1151 Socket Supports 8/9th Generation Core™ Pentium® / Celeron /i7/ i5/ i3 Processors (Max. TDP at 95W) Intel® Xeon®Processor E3-2000 Family (Workstation) Intel® C246 Chipset)
CPU Cooler (Type)	Cooler fan
Memory	2 x 260-pin DDR4 2400/2666MHz SO-DIMM socket, supports up to 64GB Max (non ECC only)
Power Supply	ATX Power (400W)
Adapter	Power Win, 150W 24V/6.5A Power Din Adapter
System Fan	1 x System Fan
Microphone	1 x Line out, 1 x Mic in (optional)
Speaker	2 x 3W Speaker(optional)
Wireless LAN	M.2 WiFi Module Optional with 2 SAM connector
Operating System	Win10, Linux
Storage	
Hard Disk Drive	2 x 2.5" HDD/SSD
Solid State Drive	Supported
Other Storage Device	EMX-C246P board : 1 x M.2 (2242/2260/2280) M-Key, support Intel RST, PCI-e x4 SSD
External I/O	
PS/2 KB & Mouse	Yes
Serial Port	6 x COM (default RS232) * 2 of 6 COM can be replaced RS232/422/485 by BIOS (OEM demand)
USB Port	8 x USB 3.1 Gen 1, 4 x USB2.0 (2x in front IO, 2x in Rear I/O by cable from main board), 1 x PS/2 Keyboard & Mouse Combo Jack
DIO Port	16bits GPIO internal
Video Port	2 x HDMI,VGA
Audio Port	1 x Line-out, 1 x Mic-in (optional)
LAN Port	1 x Intel® I219LM Gigabit Ethernet PHY, 3 x Intel® I210AT PCI-e Gigabit Ethernet
Wireless LAN Antenna	Optional: 2 x Wireless LAN Antenna
Switch	1 x Power-on Switch
Indicator Light	1 x HDD LED 1 x Power LED

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Expansion Slots	AUX-069 : PCIe x1 to 2 PCI slot Riser card
	AUX-070 :PCIe x16 to 1 PCI + 1 PCIe x8 with x16
	AUX-075 : PCI-ex16 to 2PCI-e x8 with x16 slot Riser Card
	1 x PCI-e x 16 to PCI-ex16 Riser Card
Mechanical	
Power Type	AT/ATX Mode (Default: ATX mode)
Power Connector Type	AC in
Dimension	107(H) X 372(W) X 307(D) (mm)
Weight	6.4kg packed
Color	Black
OS Support	Win10, Linux
Reliability	
EMI Test	CE/FCC : Class B (Nice to have)
Safety	Avalue Standard
Dust and Rain Test	Avalue Standard
Vibration Test	Random Vibration Operation:
	1. PSD: 0.03622G²/Hz , 1.5 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
	7. Storage : SSD
	Sine Vibration test (Non-operation)
	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
	5 Test time :10 min. each axis
	6 System condition : Non-Operating mode
	7. Reference IEC 60068-2-6 Testing procedures
	Package vibration test
	1. PSD: 0.026G²/Hz , 2.16 Grms
	2. Non-operation mode
	3. Test Frequency : 5-500Hz
	4. Test Axis : X,Y and Z axis
	5. 30 min. per each axis

	6. IEC 60068-2-64 Test:Fh
Mechanical Shock Test	1. Wave form：Half Sine wave 2. Acceleration Rate：10g for operation mode 3. Duration Time：11ms 4. No. of Shock：Z axis 300 times 5. Test Axis: Z axis 6. Operation mode 7. Reference IEC 60068-2-29 Testing procedures Test Eb : Bump Test
Drop Test	Package drop test 1 One corner , three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test:Ed
Operating Temperature	0~40°C (32˚F ~ 104˚F) w/ SSD, ambient w/ 0.5m/s air flow
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Storage Temperature	-40°C ~ 75°C (-40 ~ 167°F)

Note: Specifications are subject to change without notice.

BMX-T540

1.4 System Overview

1.4.1   Front/Rear View
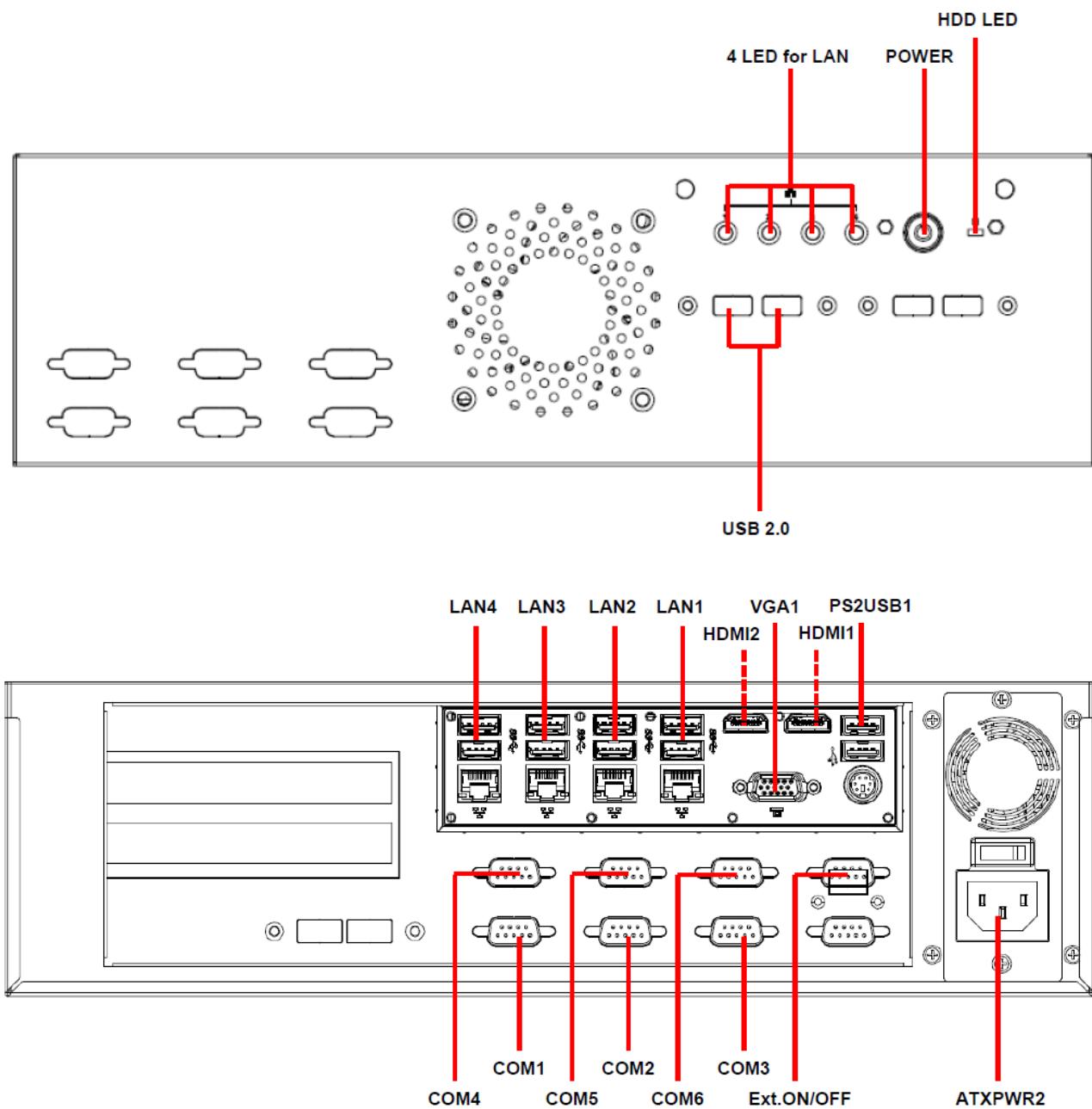
Connectors

Label	Function
ATXPWR2	ATX Power connector
PS2USB1	PS2+USB connector
LAN1/2/3/4	2 x RJ-45 with Dual deck USB 3.0 connector
COM1~6	Serial port 1~6 connector
HDMI1/2	HDMI connector
VGA1	VGA connector
Ext. ON/OFF	Power on button

1.5 System Dimensions

307±0.5

372±0.5

107±0.5
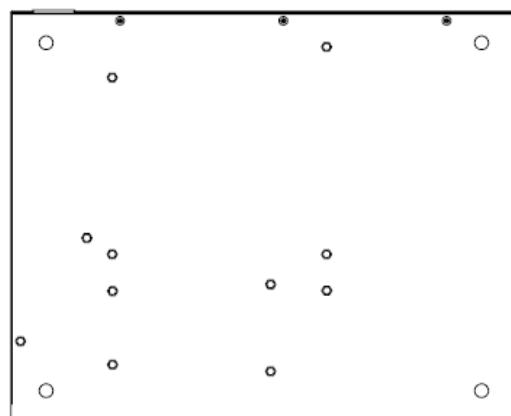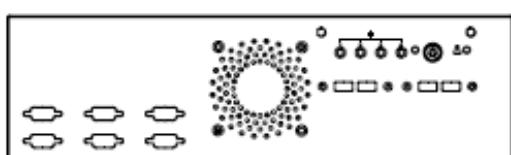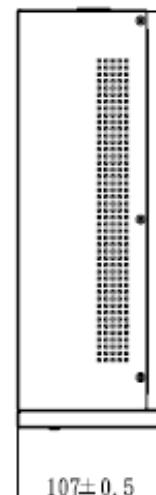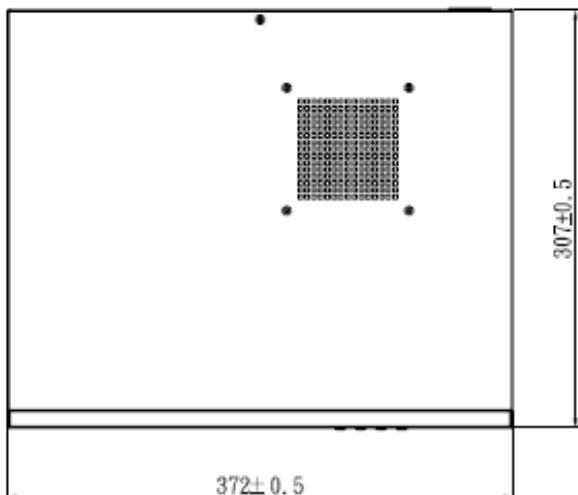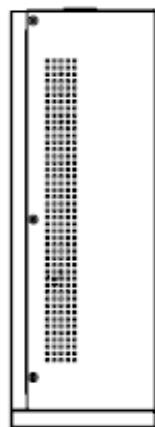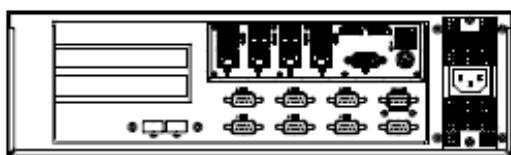
(Unit: mm)

2. Hardware Configuration

Jumper and Connector Setting

For advanced information, please refer to:

1- EMX-C246P User's Manual

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

http://www.avalue.com.tw

2.1 BMX-T540 connector mapping

2.1.1 Serial port 1~6 connector (COM1~6)
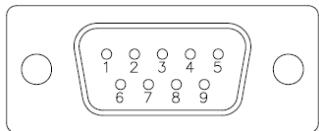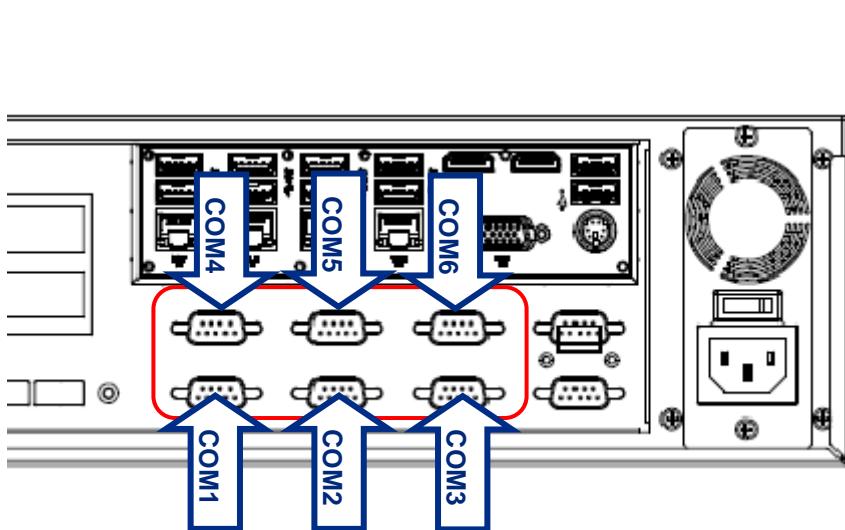
Signal	PIN	PIN	Signal
DCD	1	6	DSR
RXD	2	7	RTS
TXD	3	8	CTS
DTR	4	9	RI
GND	5		

2.1.2 VGA connector (VGA1)
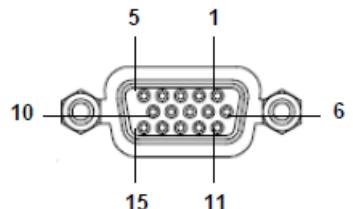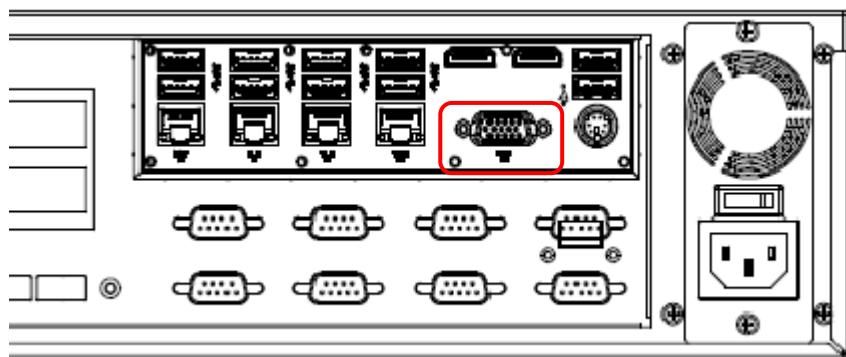
PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNS
5	GND	10	GND	15	DDCCLK

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2.2 Installing Mounting Brackets
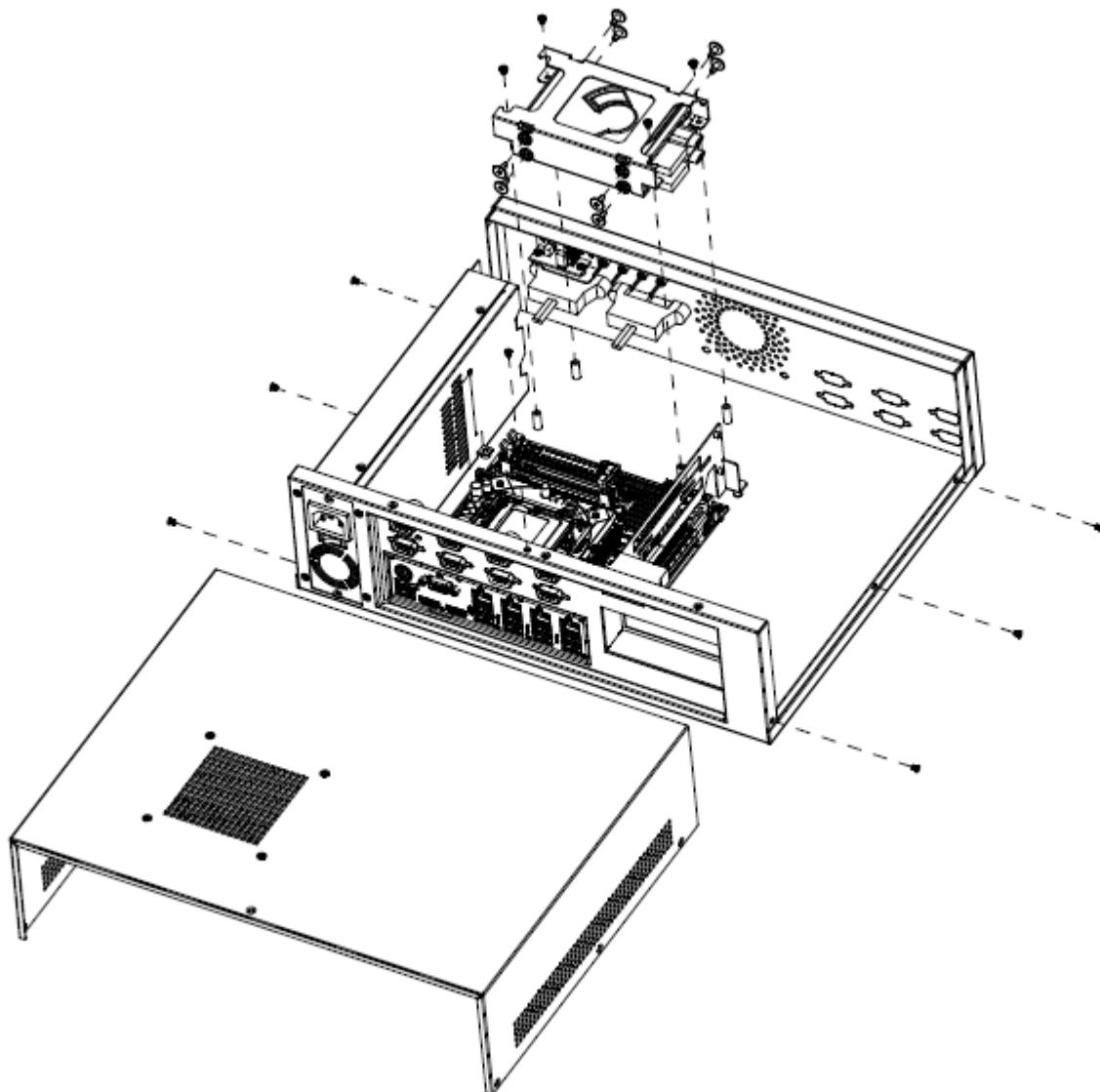
Step1. Remove 6 screws from rear and each side before removing back cover.

Step2. Secure HDD by means of 10 screws.

Step3. Re-assemble your system back through previous steps to complete the installation.

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

Press <Del> 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 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.

```
           Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

    BIOS Information                                     Choose the system default
    BIOS Vendor              American Megatrends         language
    Core Version             5.13
    Compliancy               UEFI 2.7; PI 1.6
    Project Version          1AUOK 0.46 x64
    Build Date and Time      11/13/2020 13:17:52
    Access Level             Administrator
    BIOS Name                BM540004

    System Language          [English]
  ▶ Intel RC Version

    System Date              [Wed 01/27/2021]
    System Time              [20:26:58]             →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

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```

```
           Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
    Main

    Intel RC Version                                  ▲

    FSP Information
    FSP version              N/A
    RC version               N/A
    Build Date               N/A

    Board Information
    Board ID                 BMX-T540(BM540004)
    Fab ID                   Default string
    LAN PHY Revision         N/A

    Processor Information
    Name                     CoffeeLake DT
    Type                     Intel(R) Core(TM)       →←: Select Screen
                             i3-8100T CPU @ 3.10GHz  ↑↓: Select Item
    Speed                    3100 MHz                Enter: Select
    ID                       0x906EB                 +/-: Change Opt.
    Stepping                 B0                      F1: General Help
    Package                  LGA1151                 F2: Previous Values
    Number of Processors     4Core(s) / 4Thread(s)   F3: Optimized Defaults
    Microcode Revision       B4                      F4: Save & Exit
    GT Info                  GT2 (0x3E91)            ESC: Exit
    eDRAM Size               N/A                  ▼

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```

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.

```
           Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
   Main  Advanced  Chipset  Security  Boot  Save & Exit

▶ CPU Configuration                                    CPU Configuration Parameters
▶ PCH-FW Configuration
▶ Trusted Computing
▶ ACPI Settings
▶ Super IO Configuration
▶ NCT6106D HW Monitor
▶ S5 RTC Wake Settings
▶ Serial Port Console Redirection
▶ USB Configuration
▶ Network Stack Configuration
▶ NVMe Configuration

                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit

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```

3.6.2.1 CPU Configuration

```
                    Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
        Advanced

        CPU Configuration                                        When enabled, a VMM can
                                                                 utilize the additional
        Type                            Intel(R) Pentium(R)      hardware capabilities provided
                                        Gold G5400T CPU @        by Vanderpool Technology.
                                        3.10GHz
         ID                             0x906EB
        Speed                           3100 MHz
        L1 Data Cache                   32 KB x 2
        L1 Instruction Cache            32 KB x 2
        L2 Cache                        256 KB x 2
        L3 Cache                        4 MB
        L4 Cache                        N/A
        VMX                             Supported
        SMX/TXT                         Not Supported                →←: Select Screen
                                                                     ↑↓: Select Item
        CPU Flex Ratio Settings         20                           Enter: Select
        Intel (VMX) Virtualization      [Enabled]                    +/-: Change Opt.
        Technology                                                   F1: General Help
        Active Processor Cores          [All]                        F2: Previous Values
      ▶ CPU - Power Management Control                               F3: Optimized Defaults
                                                                     F4: Save & Exit
                                                                     ESC: Exit



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```

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

```
                Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
        Advanced

     CPU - Power Management Control                          Allows more than two frequency
                                                             ranges to be supported.
        Intel(R) SpeedStep(tm)             [Enabled]
        Intel(R) Speed Shift Technology   [Enabled]
        C states                          [Enabled]
          Enhanced C-states               [Enabled]
          C-State Auto Demotion           [C1 and C3]
          C-State Un-demotion             [C1 and C3]
          Package C-State Demotion        [Disabled]
          Package C-State Un-demotion     [Disabled]
        Package C State Limit             [Auto]


                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

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.
C states	Disabled Enabled**[Default]**,	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Enhanced C-states	Disabled Enabled**[Default]**,	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-states.
C-State Auto Demotion	Disabled C1 C3 C1 and C3**[Default]**,	Configure C-State Auto Demotion
C-State Un-demotion	Disabled C1 C3 C1 and C3**[Default]**,	Configure C-State Un-demotion
Package C-State Demotion	Disabled**[Default]**, Enabled	Package C-State Demotion
Package C-State Un-demotion	Disabled**[Default]**, Enabled	Package C-State Un-demotion
Package C State Limit	C0/C1 C2 C3	Maximum Package C State Limit Setting. Cpu Default: Leaves to Factory default value.Auto: Initializes to deepest available Package C State

	C6	Limit.
	C7	
	C7S	
	C8	
	C9	
	C10	
	Cpu Default	
	Auto**[Default]**,	

3.6.2.2 PCH-FW Configuration
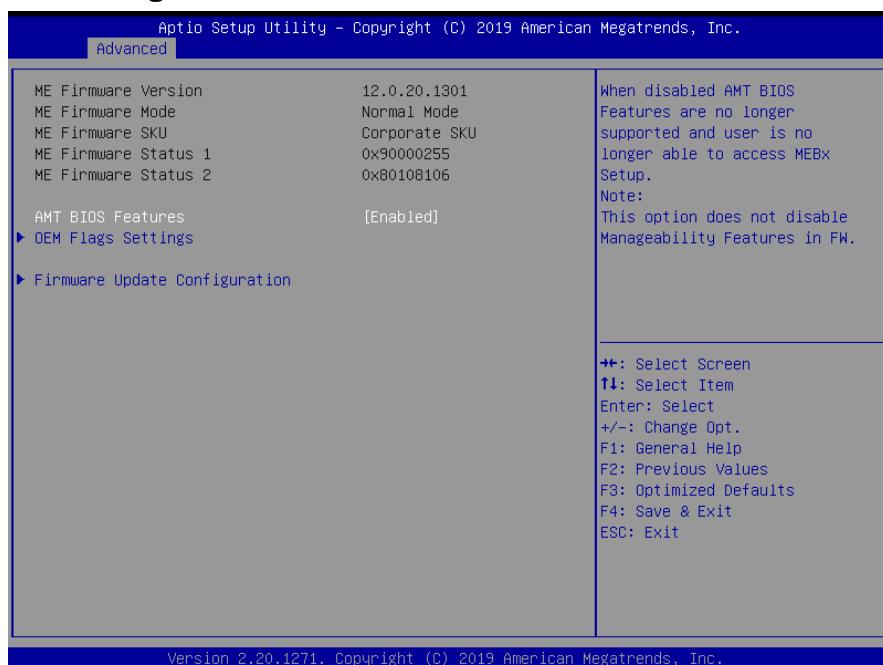
Item	Options	Description
AMT BIOS Features	Disabled Enabled**[Default]**,	When disabled AMT BIOS Feature are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW.

3.6.2.2.1 OEM Flags Settings

Item	Description
Unconfigure ME	OEMFlag Bit 15: Unconfigure ME with resetting MEBx password to default.

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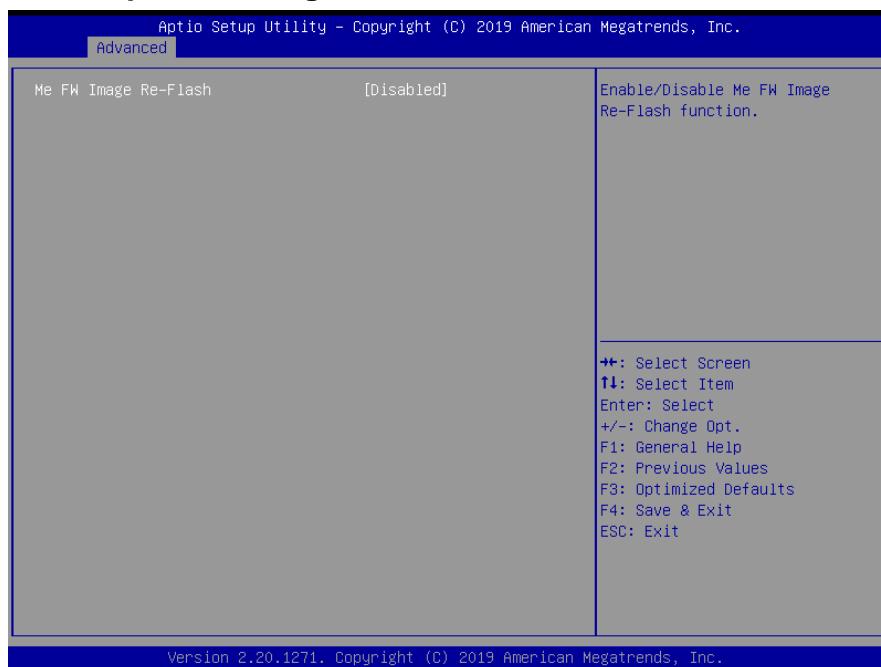
Item	Option	Description
Me FW Image Re-Flash	Disabled**[Default]**, Enabled	Enable/Disable Me FW Image Re-Flash function.

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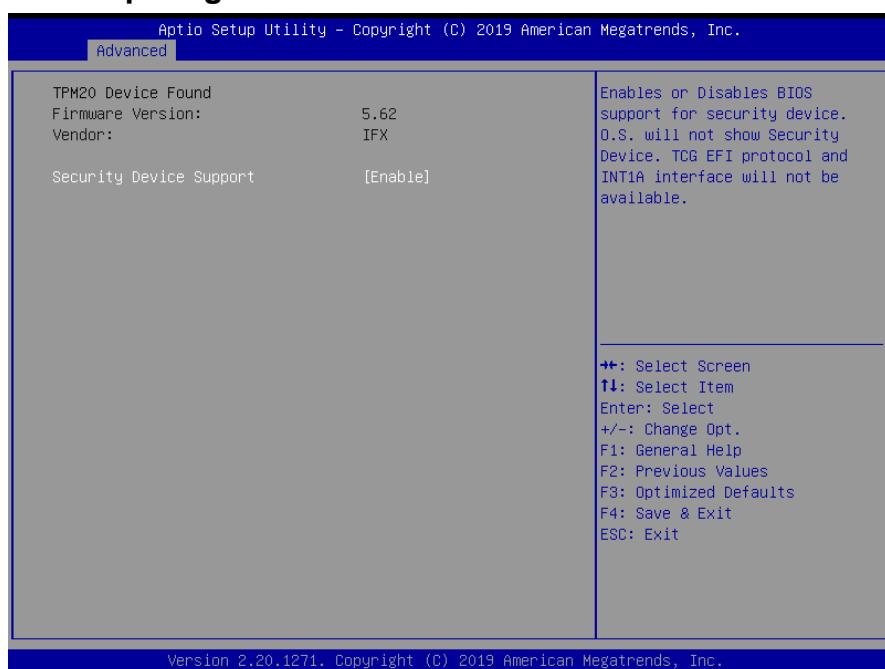
Item	Options	Description
Security Device Support	Disable Enable**[Default]**,	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

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 be not 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.
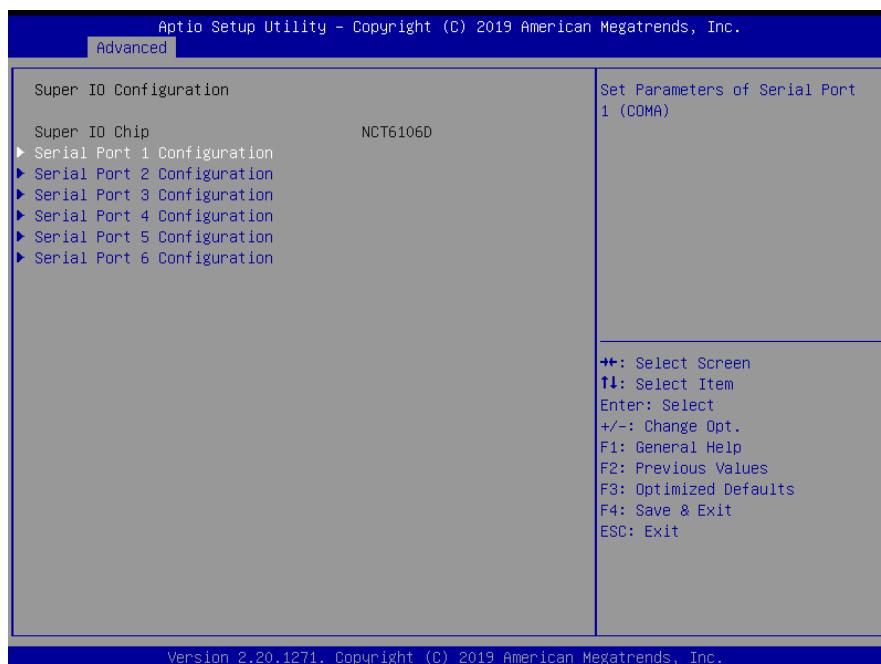
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 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
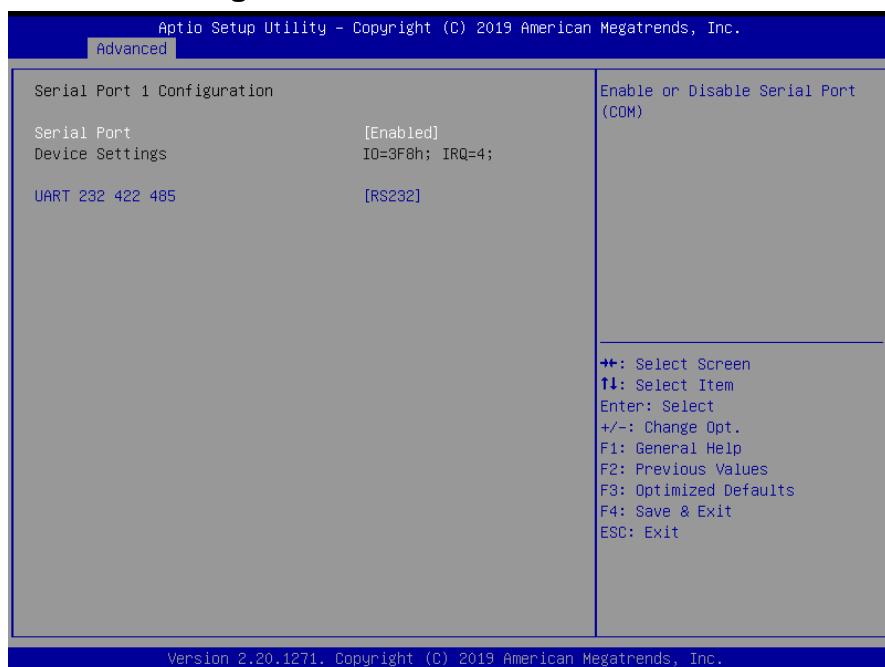
```
                Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
          Advanced

     Serial Port 1 Configuration                              Enable or Disable Serial Port
                                                              (COM)
     Serial Port                      [Enabled]
     Device Settings                  IO=3F8h; IRQ=4;

     UART 232 422 485                      [RS232]




                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




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```

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
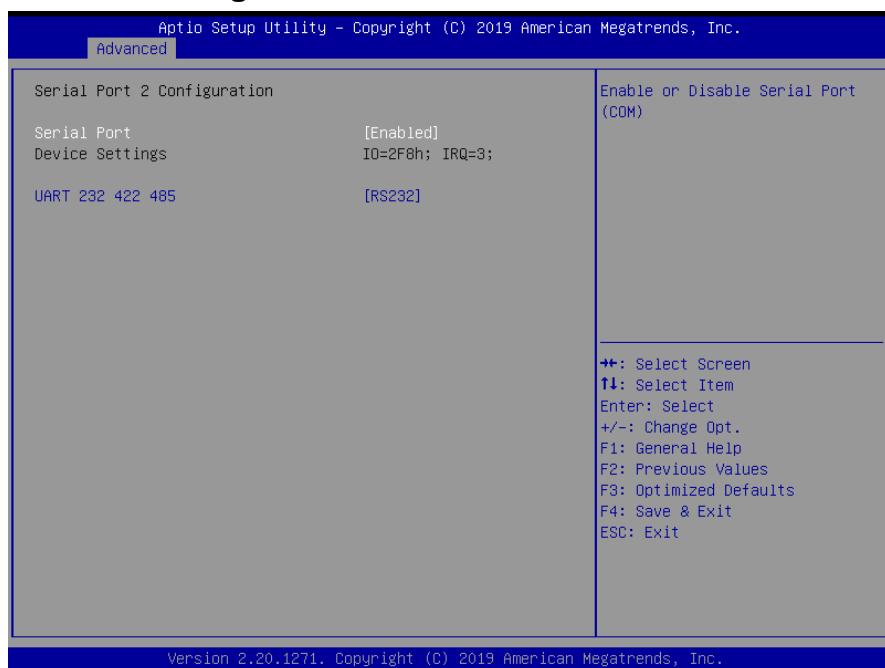
```
                Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
          Advanced

     Serial Port 2 Configuration                              Enable or Disable Serial Port
                                                              (COM)
     Serial Port                      [Enabled]
     Device Settings                  IO=2F8h; IRQ=3;

     UART 232 422 485                      [RS232]




                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




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```

BMX-T540

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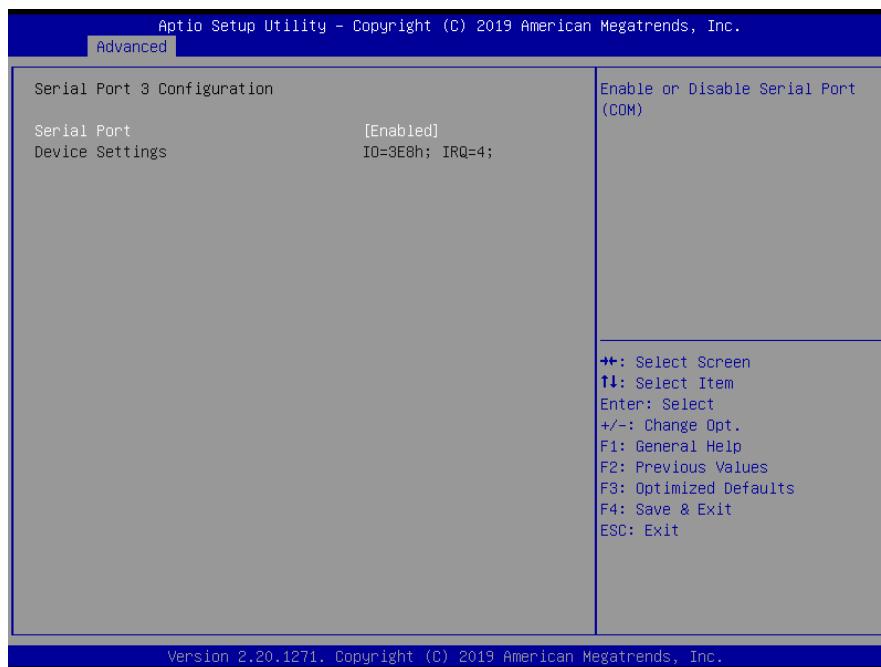
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.5.4 Serial Port 4 Configuration
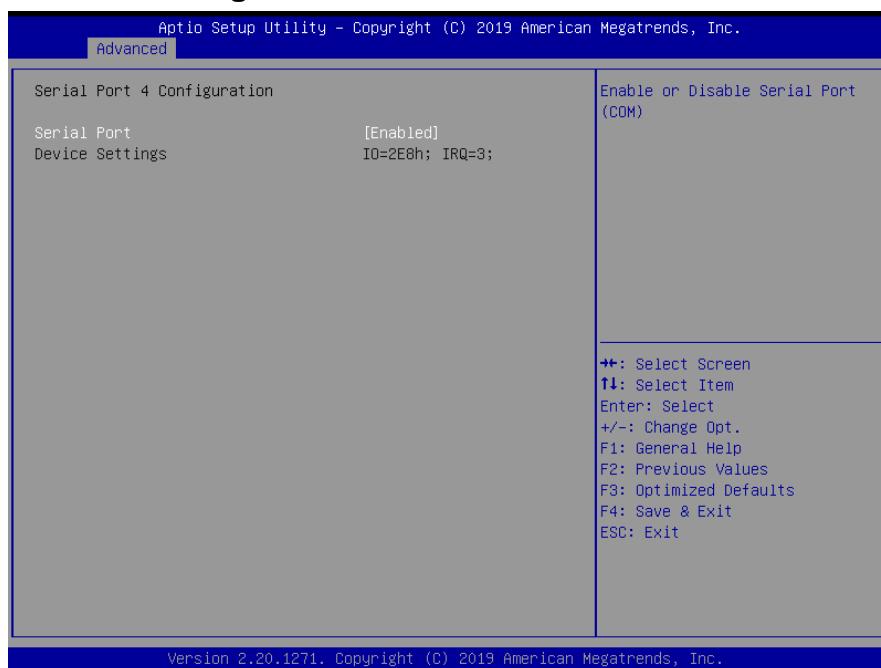
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.5.5 Serial Port 5 Configuration
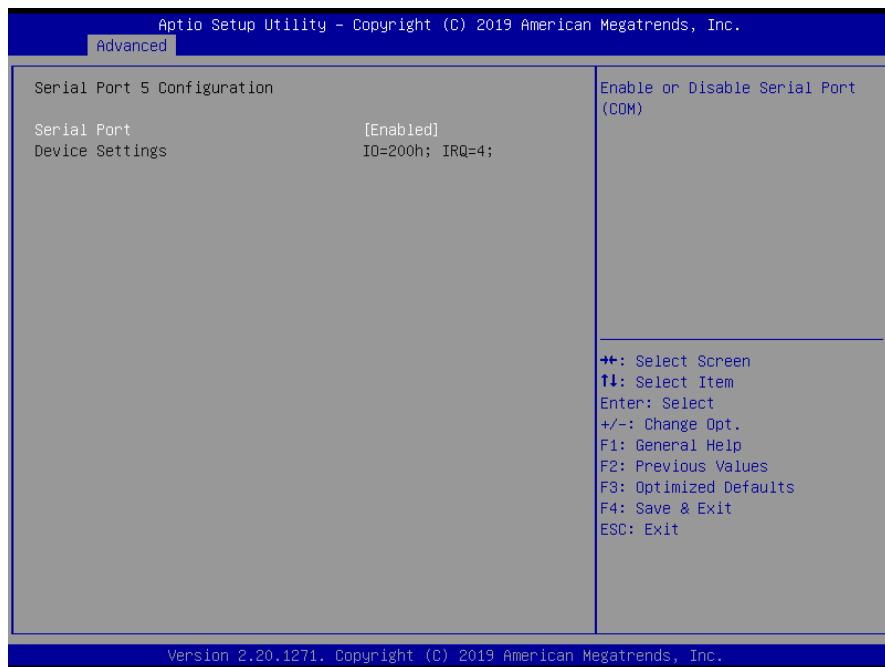
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.5.6 Serial Port 6 Configuration
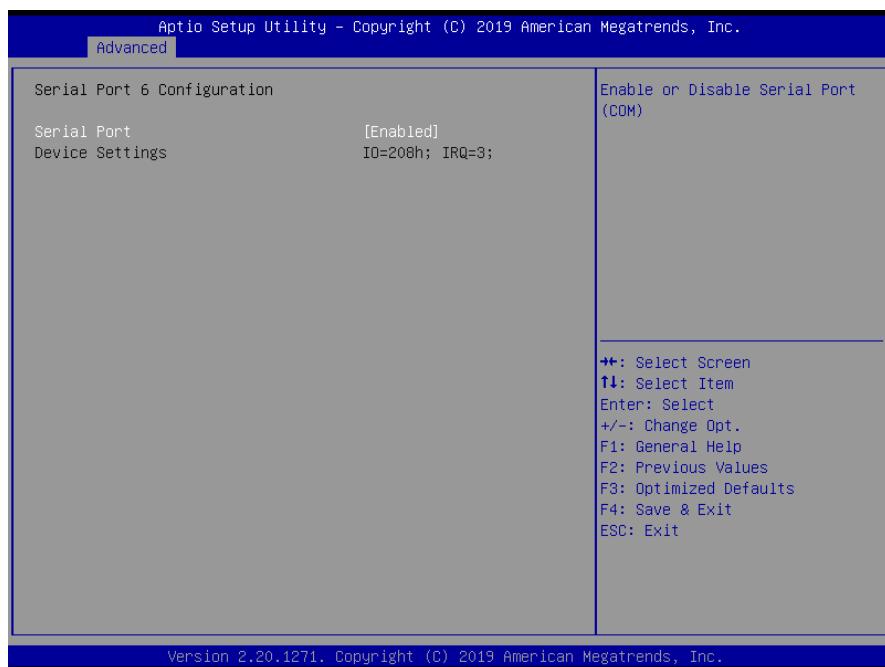
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.6 NCT6106D H/W Monitor
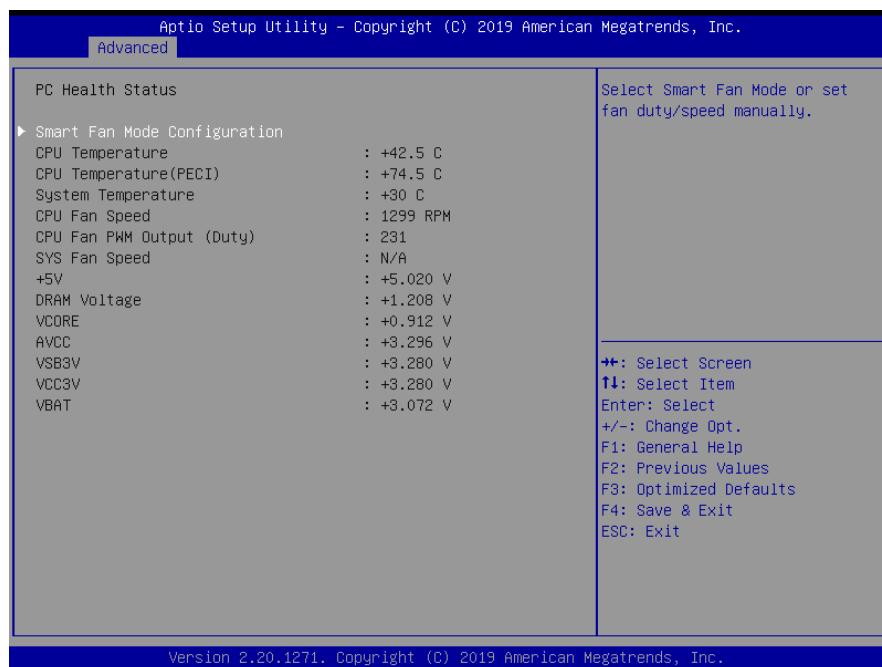
3.6.2.6.1 Smart Fan Configuration
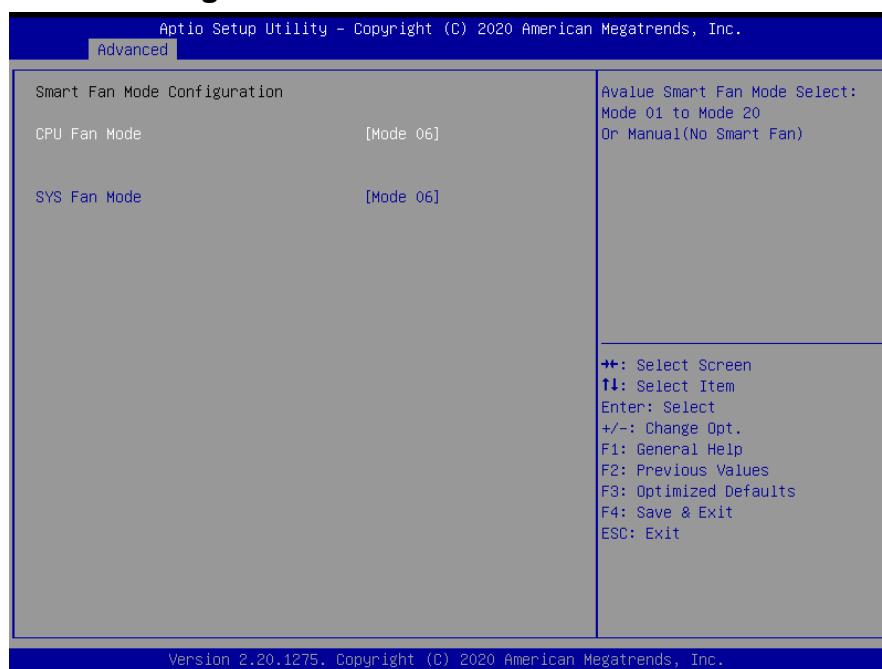
Item	Option	Description
CPU Fan Mode	Manual Mode Mode 01 Mode 02 Mode 03 Mode 04	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual (No Smart Fan)

	Mode 05	
	Mode 06**[Default]**,	
	Mode 07	
	Mode 08	
	Mode 09	
	Mode 10	
	Mode 11	
	Mode 12	
	Mode 13	
	Mode 14	
	Mode 15	
	Mode 16	
	Mode 17	
	Mode 18	
	Mode 19	
	Mode 20	
SYS 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	
	Mode 05	
	Mode 06**[Default]**,	
	Mode 07	
	Mode 08	
	Mode 09	
	Mode 10	
	Mode 11	
	Mode 12	
	Mode 13	
	Mode 14	
	Mode 15	
	Mode 16	
	Mode 17	
	Mode 18	
	Mode 19	
	Mode 20	

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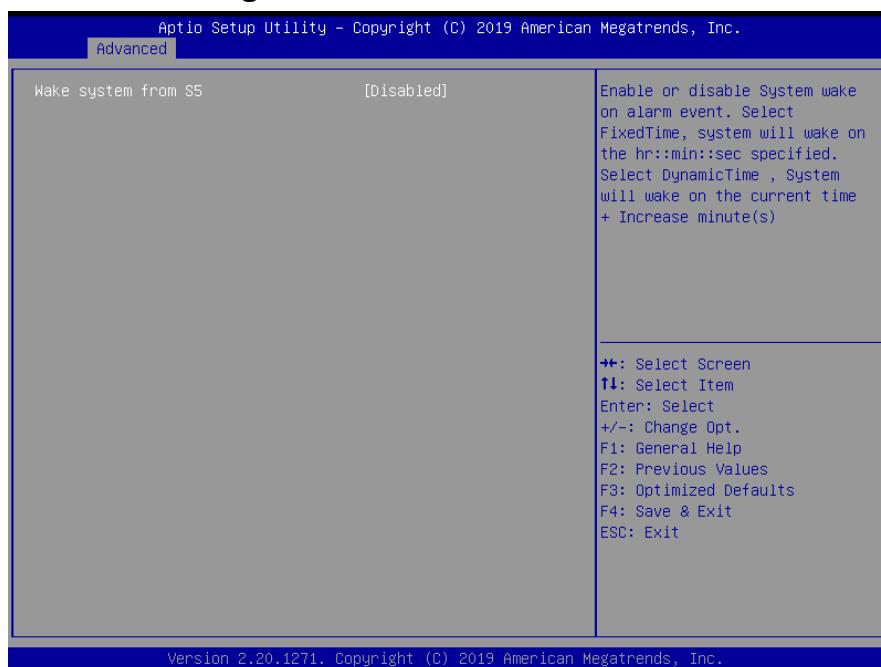
Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

3.6.2.8 Serial Port Console Redirection
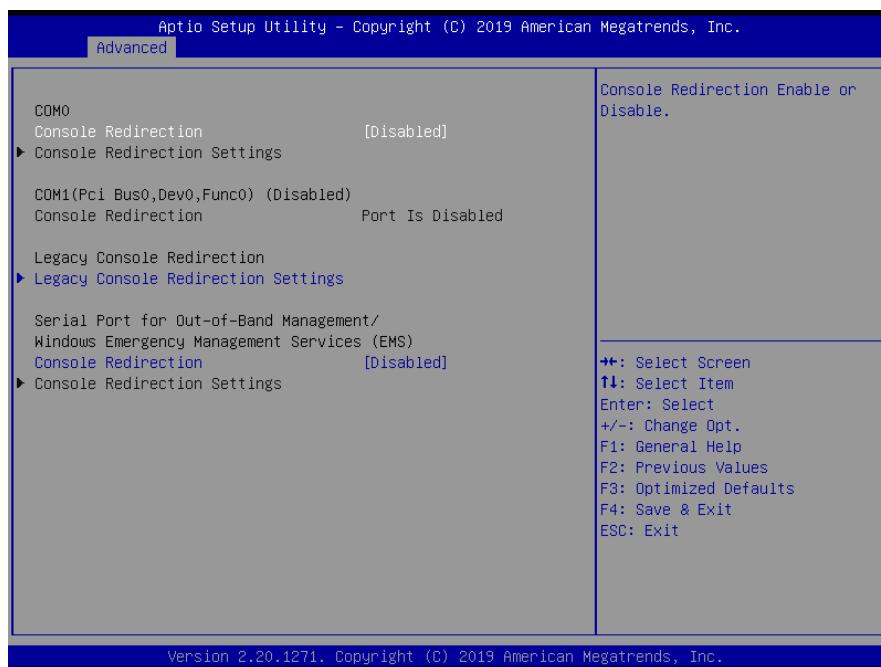
Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

3.6.2.8.1 Legacy Console Redirection Settings
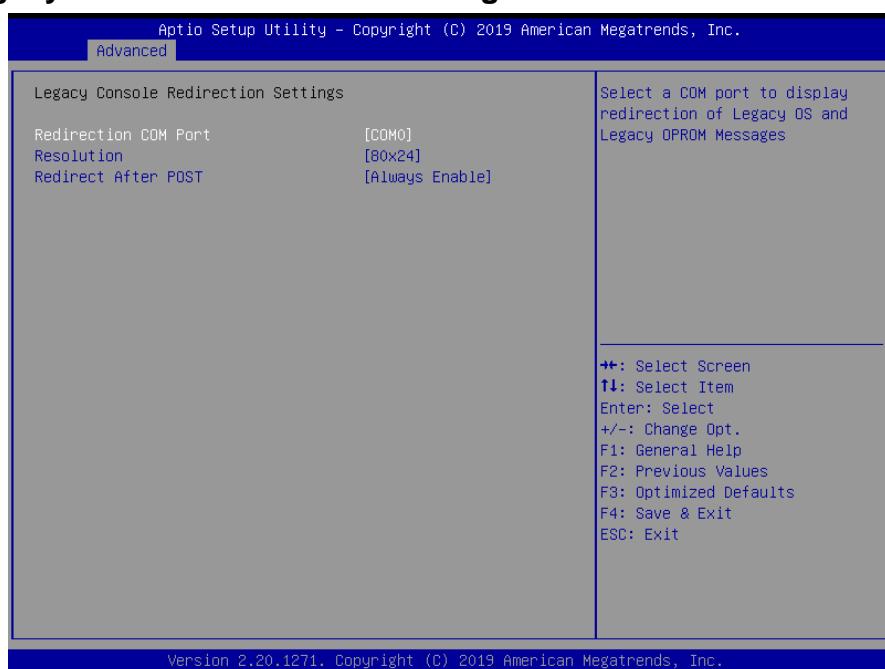
Item	Option	Description
Redirection COM Port	COM0	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Resolution	80X24**[Default]** 80X25	On Legacy OS, the Number of Rows and Columns supported redirection
Redirect After POST	Always Enable**[Default]** BootLoader	When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.

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

```
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          Advanced

         USB Configuration                                        The time-out value for
                                                                  Control, Bulk, and Interrupt
         USB Module Version               21                      transfers.

         USB Controllers:
              1 XHCI
         USB Devices:
              1 Drive, 1 Keyboard, 1 Mouse, 2 Hubs


         USB hardware delays and time-outs:
         USB transfer time-out            [20 sec]
         Device reset time-out            [20 sec]
         Device power-up delay            [Auto]                  →←: Select Screen
                                                                  ↑↓: Select Item
         Mass Storage Devices:                                    Enter: Select
         JetFlashTranscend 8GB 1100       [Auto]                  +/-: Change Opt.
                                                                  F1: General Help
                                                                  F2: Previous Values
                                                                  F3: Optimized Defaults
                                                                  F4: Save & Exit
                                                                  ESC: Exit



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```

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.
JetFlashTranscend 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

```
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 Network Stack                        [Disabled]            Enable/Disable UEFI Network
                                                            Stack









                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit




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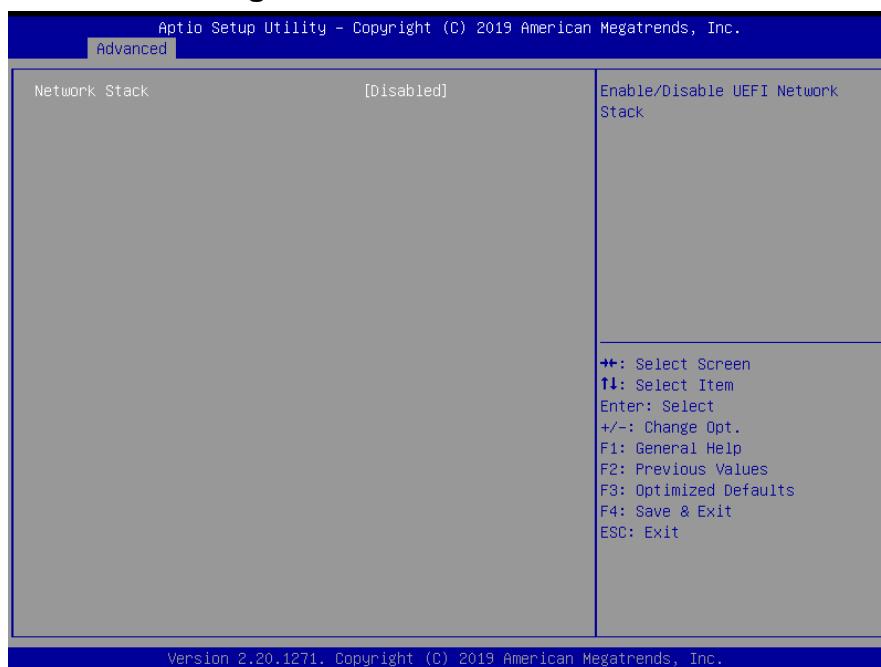
Item	Options	Description
Network Stack	Disabled**[Default]**, Enabled	Enable/Disable UEFI Network Stack.

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

3.6.2.11 NVMe Configuration

```
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 NVMe Configuration

 No NVME Device Found











                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit




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```

3.6.3 Chipset

```
              Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
         Main  Advanced  Chipset  Security  Boot  Save & Exit

    ▶ System Agent (SA) Configuration                        System Agent (SA) Parameters
    ▶ PCH-IO Configuration
    ▶ Board Configuration




                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




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```

3.6.3.1 System Agent (SA) Configuration

```
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                 Chipset

      System Agent (SA) Configuration                        Memory Configuration Parameters

      SA PCIe Code Version              7.0.71.80
      VT-d                              Supported

    ▶ Memory Configuration
    ▶ Graphics Configuration
    ▶ DMI/OPI Configuration
    ▶ PEG Port Configuration
      VT-d                              [Enabled]


                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit



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```

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

3.6.3.1.1 Memory Configuration

```
           Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
              Chipset

   Memory Configuration                                       Maximum Value of TOLUD.
                                                              Dynamic assignment would
   Memory RC Version              0.7.1.87                    adjust TOLUD automatically
   Memory Frequency               2133 MHz                    based on largest MMIO length
   Memory Timings (tCL-tRCD-tRP-tRAS)  15-15-15-36            of installed graphic controller

   Channel 0 Slot 0               Populated & Enabled
      Size                        4096 MB (DDR4)
      Number of Ranks             1
      Manufacturer                Transcend
   Channel 1 Slot 0               Not Populated / Disabled

   Max TOLUD                      [Dynamic]
                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




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```

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

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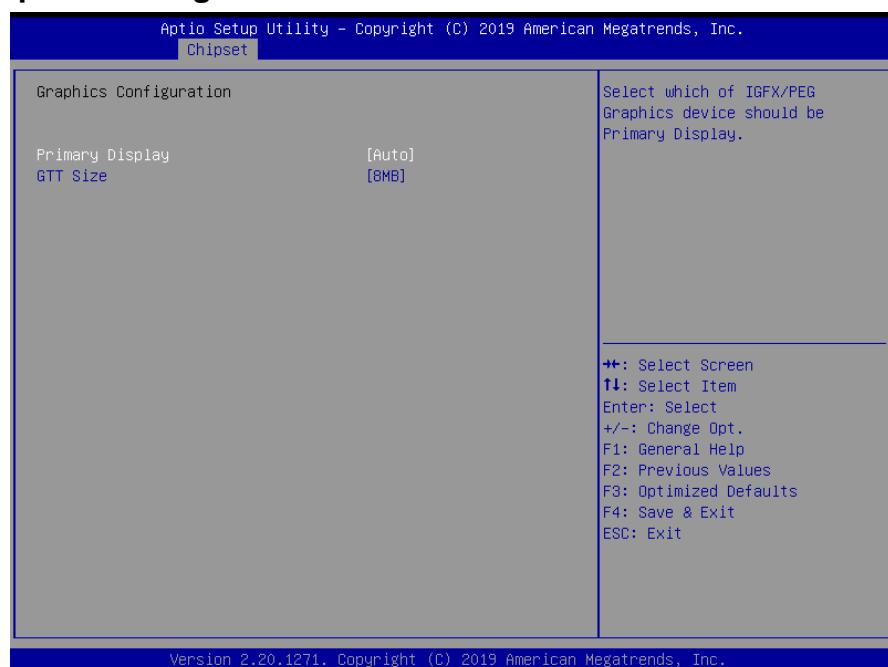
| Item	Option	Description
Primary Display	Auto**[Default]** IGFX PEG	Select which of IGFX/PEG/PCI Graphics device should be Primary Display
GTT Size	2MB 4MB 8MB**[Default]**	Select the GTT Size

3.6.3.1.3 DMI/OPI Configuration

3.6.3.1.4 PEG Port Configuration

```
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                   Chipset

      PEG Port Configuration                              Enable or Disable the Root Port

      PEG 0:1:0 (PCIEX1)              Not Present
        Enable Root Port             [Auto]
        Max Link Speed               [Auto]
        Max Link Width               [Auto]
        ASPM                         [Auto]
      PEG0 (PCIEX1) Max Payload size [Auto]

    ▶ PEG Port Feature Configuration
      Program PCIe ASPM after OpROM   [Disabled]


                                                       →←: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Opt.
                                                       F1: General Help
                                                       F2: Previous Values
                                                       F3: Optimized Defaults
                                                       F4: Save & Exit
                                                       ESC: Exit



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```

| 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 Auto**[Default]** ASPM L0s ASPM L1 ASPM L0sL1	Control ASPM support for the PEG0. 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.

BMX-T540

3.6.3.1.4.1   PEG Port Feature Configuration
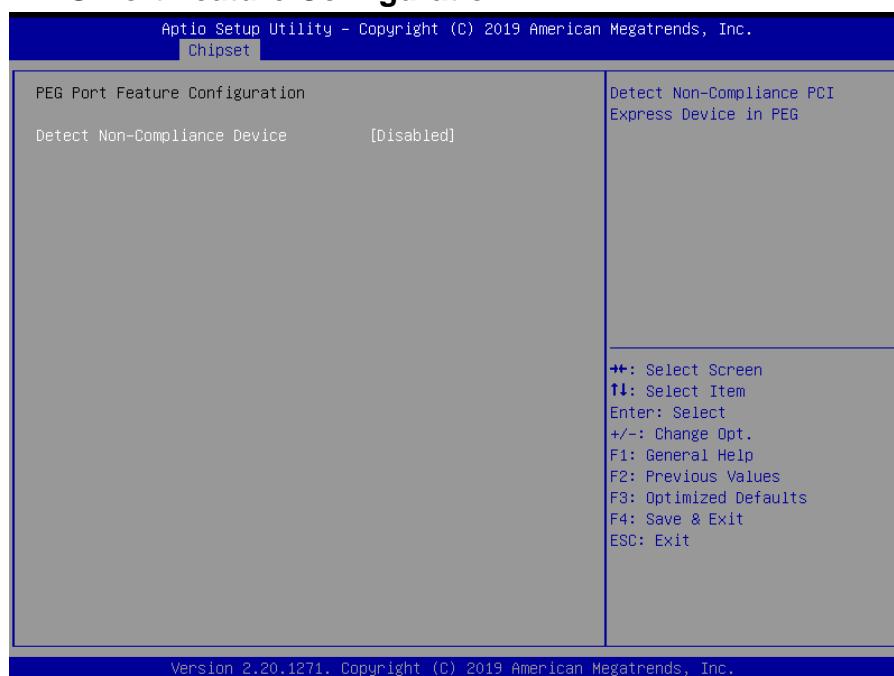
| Item	Option	Description
Detect Non-Compliance Device	Disabled**[Default]** Enabled	Detect Non-Compliance PCI Express Device in PEG

3.6.3.2   PCH-IO Configuration
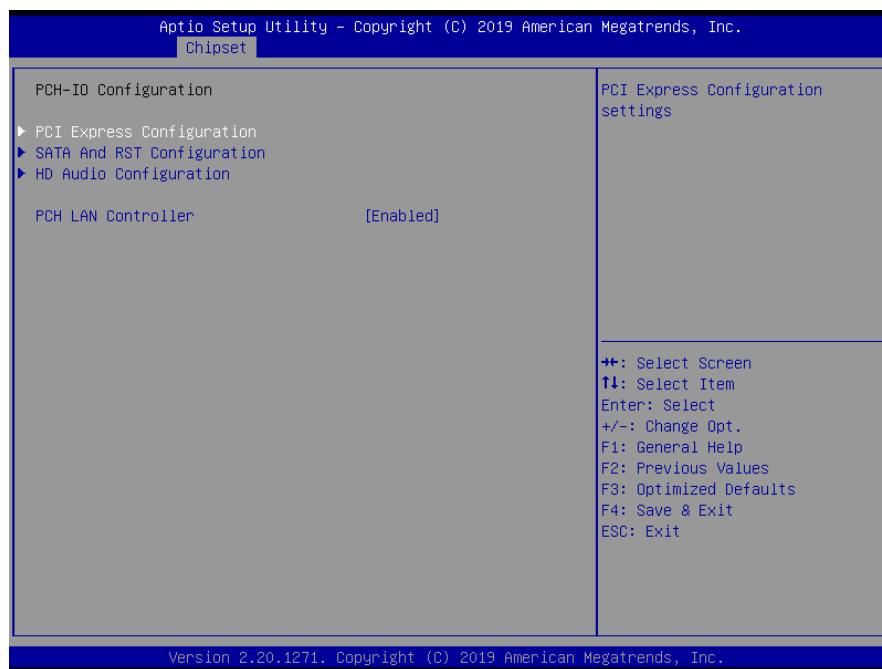
Item	Option	Description
PCH LAN Controller	Enabled**[Default]** Disabled	Enable/Disable onboard NIC.

3.6.3.2.1 PCI Express Configuration
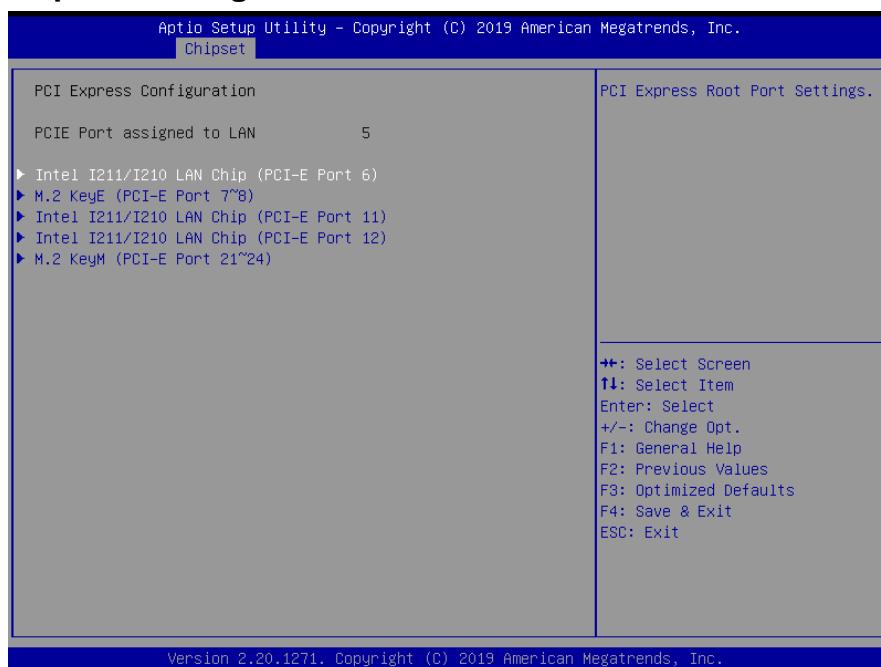
3.6.3.2.1.1 Intel I211 LAN Chip (PCI-E Port 6)
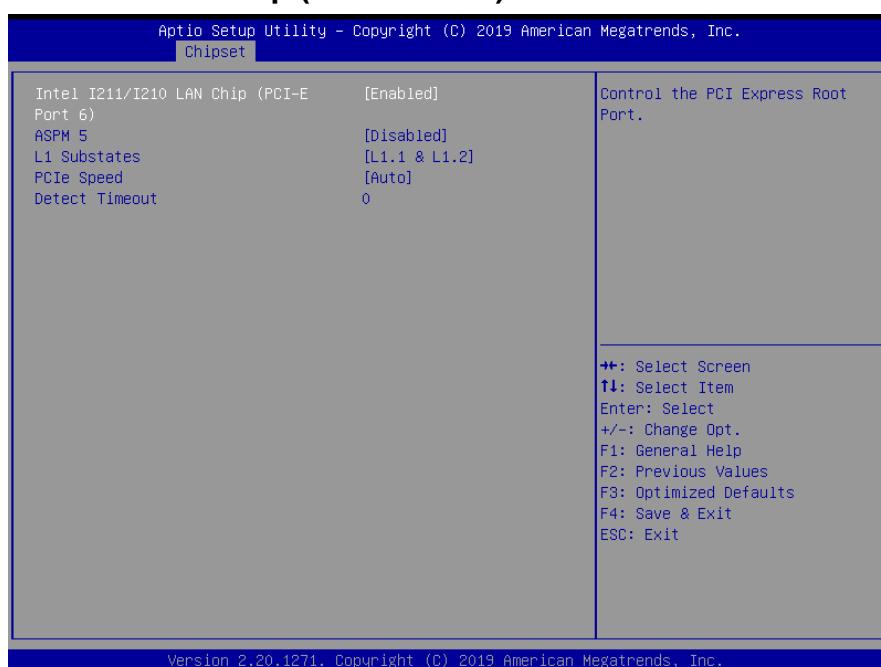
Item	Option	Description
Intel I211 LAN Chip (PCI-E Port 6)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM 5	Disabled**[Default]** L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.

	Disabled	
L1 Substates	L1.1	PCI Express L1 Substates settings.
	L1.1 & L1.2**[Default]**	
	Auto**[Default]**	
PCIe Speed	Gen1	Configure PCIe Speed
	Gen2	
	Gen3	
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   M.2 KeyE (PCI-E Port 7~8)
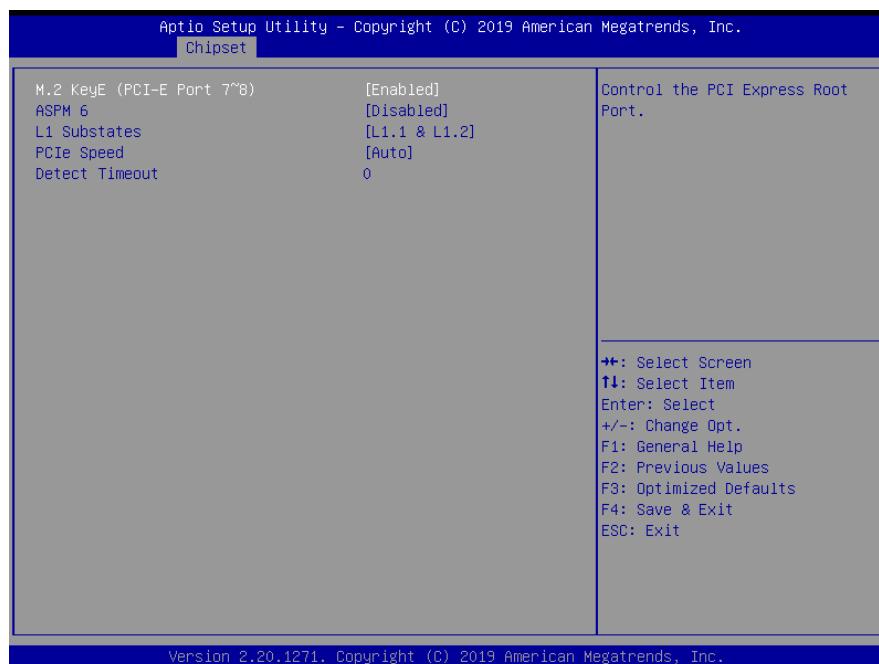
Item	Option	Description
M.2 KeyE (PCI-E Port 7~8)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM 6	Disabled**[Default]** L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	Disabled L1.1 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.

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

```
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              Chipset

   Intel I211/I210 LAN Chip (PCI-E        [Enabled]           Control the PCI Express Root
   Port 11)                                                   Port.
   ASPM 10                               [Disabled]
   L1 Substates                          [L1.1 & L1.2]
   PCIe Speed                            [Auto]
   Detect Timeout                        0




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit




            Version 2.20.1271. Copyright (C) 2019 American Megatrends, Inc.
```
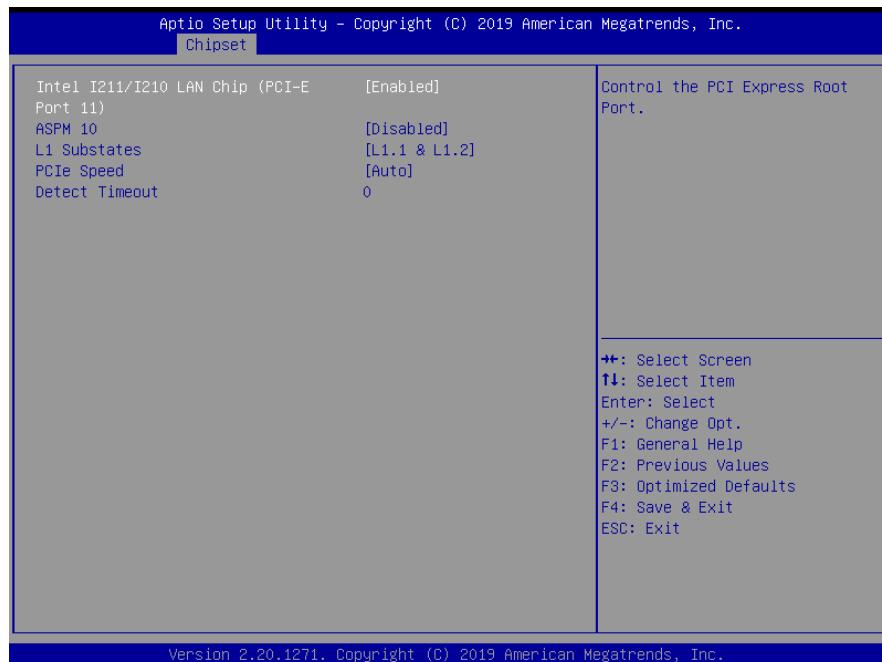
| Item	Option	Description
Intel I211/I210 LAN Chip (PCI-E Port 11)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM 10	Disabled**[Default]** L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	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.

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

```
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                Chipset

   Intel I211/I210 LAN Chip (PCI-E      [Enabled]            Control the PCI Express Root
   Port 12)                                                 Port.
   ASPM 11                              [Disabled]
   L1 Substates                         [L1.1 & L1.2]
   PCIe Speed                           [Auto]
   Detect Timeout                       0




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit




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```
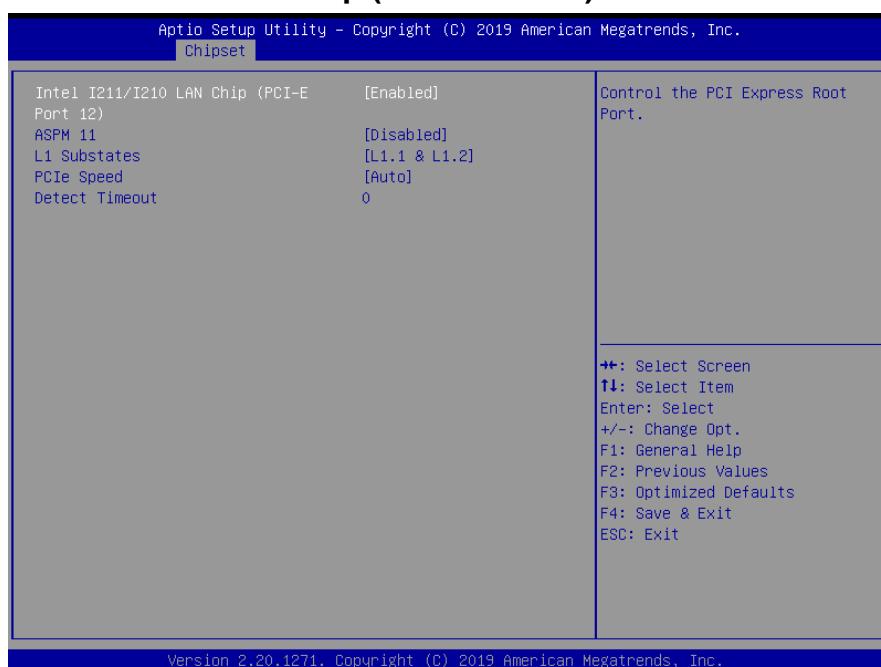
| Item	Option	Description
Intel I211/I210 LAN Chip (PCI-E Port 12)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM 11	Disabled**[Default]** L0s L1 L0sL1 Auto	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM.
L1 Substates	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.

3.6.3.2.1.5   M.2 KeyM (PCI-E Port 21~24)

```
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                  Chipset

    M.2 KeyM (PCI-E Port 21~24)         [Enabled]              Control the PCI Express Root
    ASPM 20                             [Disabled]             Port.
    L1 Substates                        [L1.1 & L1.2]
    PCIe Speed                          [Auto]
    Detect Timeout                      0




                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Exit
                                                              ESC: Exit




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```

Item	Option	Description
M.2 KeyM (PCI-E Port 21~24)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.
ASPM 20	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
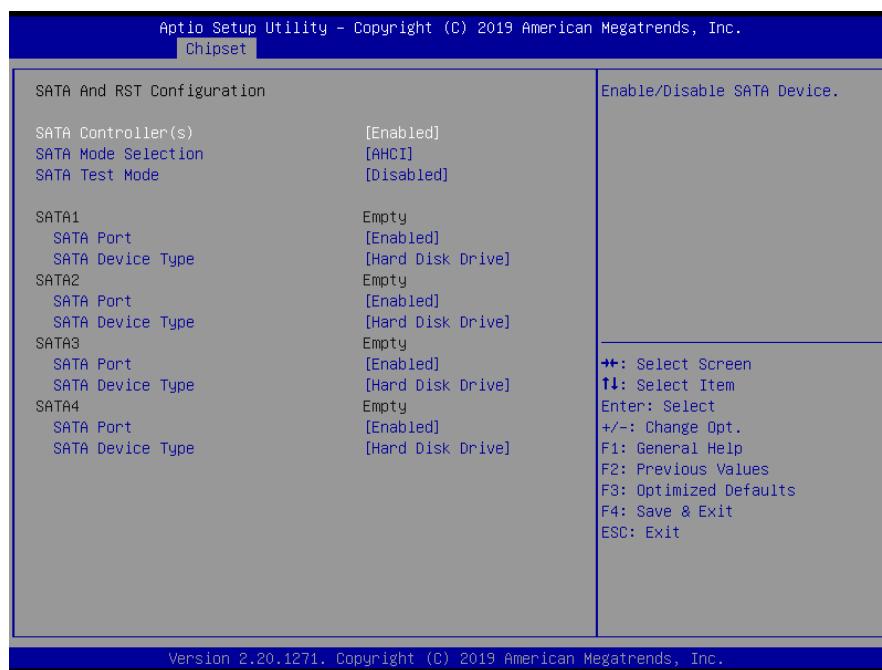
Item	Options	Description
SATA Configuration(S)	Enabled**[Default]**, Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI**[Default]**, RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**,	Test Mode Enable/Disable (Loop Back).
SATA Port	Disabled Enabled**[Default]**,	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

```
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                   Chipset

    HD Audio Subsystem Configuration Settings              Control Detection of the
                                                           HD-Audio device.
    HD Audio                        [Enabled]              Disabled = HDA will be
                                                           unconditionally disabled
                                                           Enabled = HDA will be
                                                           unconditionally enabled.




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit




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```

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

```
                   Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
                   Chipset

    Board Configuration                                    Active Internal
                                                           LVDS(eDP->Ch7511-to-LVDS)
    Active Panel(eDP/LVDS)          [Disabled]

    ErP Function                    [Disabled]
    PWR-On After PWR-Fail           [Off]
    Watch Dog                       [Disabled]
    Wake Up by Ring                 [Enabled]
    Amplifier Gain                  [19db]
    USB Standby Power               [Enabled]




                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit




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```

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

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]**,	Enable/Disable USB Standby Power during S3/S4/S5

3.6.4 Security

```
             Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
       Main  Advanced  Chipset  Security  Boot  Save & Exit

    Password Description                                  Set Administrator Password

    If ONLY the Administrator's password is set,
    then this only limits access to Setup and is
    only asked for when entering Setup.
    If ONLY the User's password is set, then this
    is a power on password and must be entered to
    boot or enter Setup. In Setup the User will
    have Administrator rights.
    The password length must be
    in the following range:
    Minimum length               3
    Maximum length              20

                                                         →←: Select Screen
    Administrator Password                               ↑↓: Select Item
    User Password                                        Enter: Select
                                                         +/-: Change Opt.
    ▶ Secure Boot                                        F1: General Help
                                                         F2: Previous Values
                                                         F3: Optimized Defaults
                                                         F4: Save & Exit
                                                         ESC: Exit


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```

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

3.6.4.1 Secure Boot

```
          Aptio Setup Utility - Copyright (C) 2019 American Megatrends, Inc.
                      Security

  System Mode                      Setup                  Secure Boot feature is Active
                                                          if Secure Boot is Enabled,
  Secure Boot                      [Disabled]             Platform Key(PK) is enrolled
                                   Not Active             and the System is in User mode.
                                                          The mode change requires
  Secure Boot Mode                 [Custom]               platform reset
▶ Restore Factory Keys
▶ Reset To Setup Mode

▶ Key Management


                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Exit
                                                          ESC: Exit



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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

```
              Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
                      Security

   System Mode                      Setup                    Secure Boot feature is Active
                                                             if Secure Boot is Enabled,
   Secure Boot                      [Disabled]               Platform Key(PK) is enrolled
                                    Not Active               and the System is in User mode.
                                                             The mode change requires
   Secure Boot Mode                 [Custom]                 platform reset
 ▶ Restore Factory Keys
 ▶ Reset To Setup Mode

 ▶ Key Management

                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


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```

```
              Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc.
                      Security

   System Mode                      Setup                    Force System to User Mode.
                                                             Install factory default Secure
   Secure Boot                      [Disabled]               Boot key databases
                                    Not Active

   Secure Boot Mode                 [Custom]
 ▶ Restore Factory Keys
 ▶ Reset To Setup Mode

 ▶ Key Management         ┌──────── Install factory defaults ────────┐
                          │                                          │
                          │  Press 'Yes' to proceed 'No' to cancel   │
                          │                                          │
                          │                                          │
                          │      Yes                   No            │
                          └──────────────────────────────────────────┘
                                                             elect Screen
                                                             elect Item
                                                             : Select
                                                             Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit


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```

3.6.4.1.2 Key Management

3.6.5 Boot
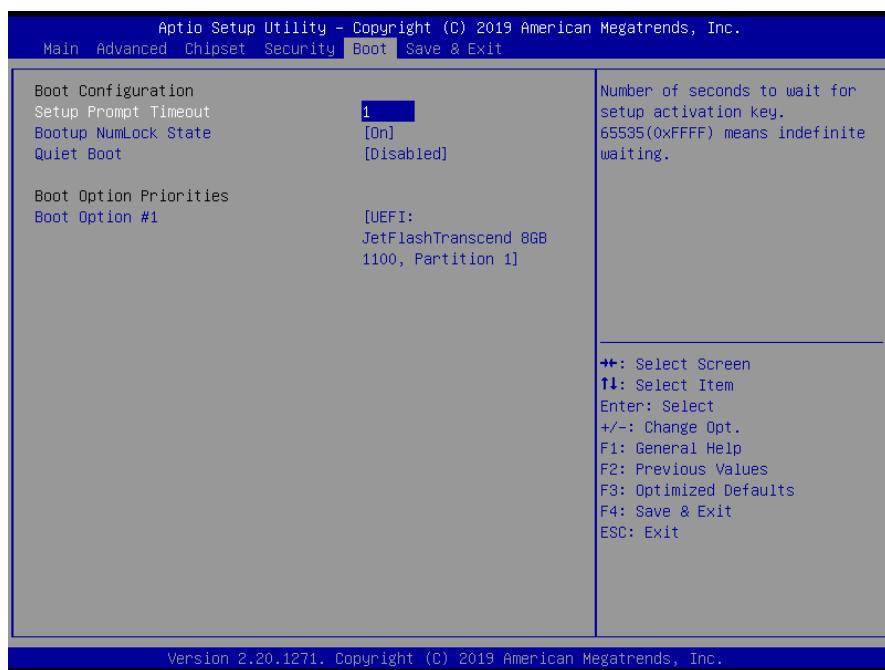
Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state.
Quiet Boot	Disabled**[Default]** Enabled	Enable or disable Quiet Boot option.
Boot Option #1	Sets the system boot order	

3.6.6 Save & Exit
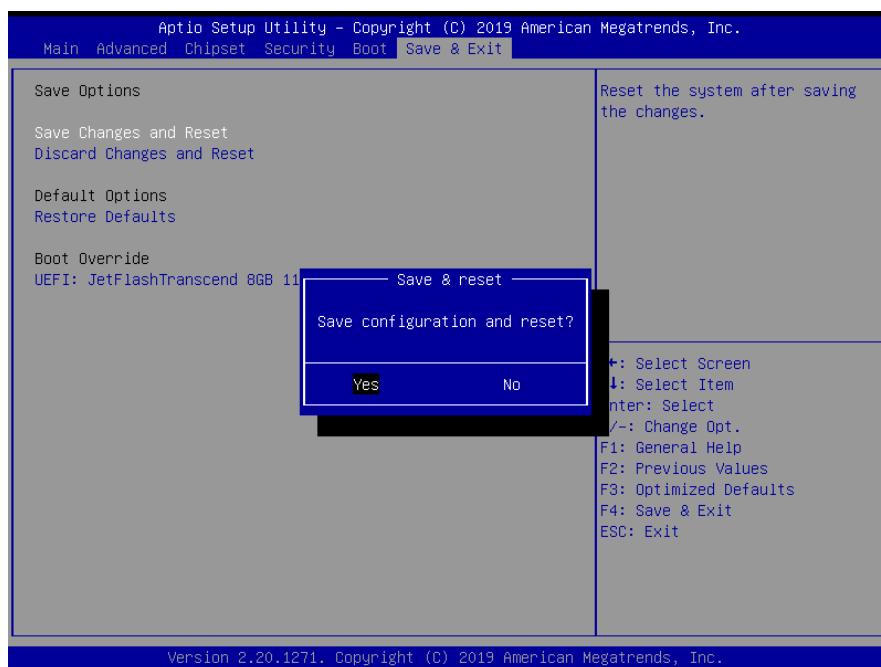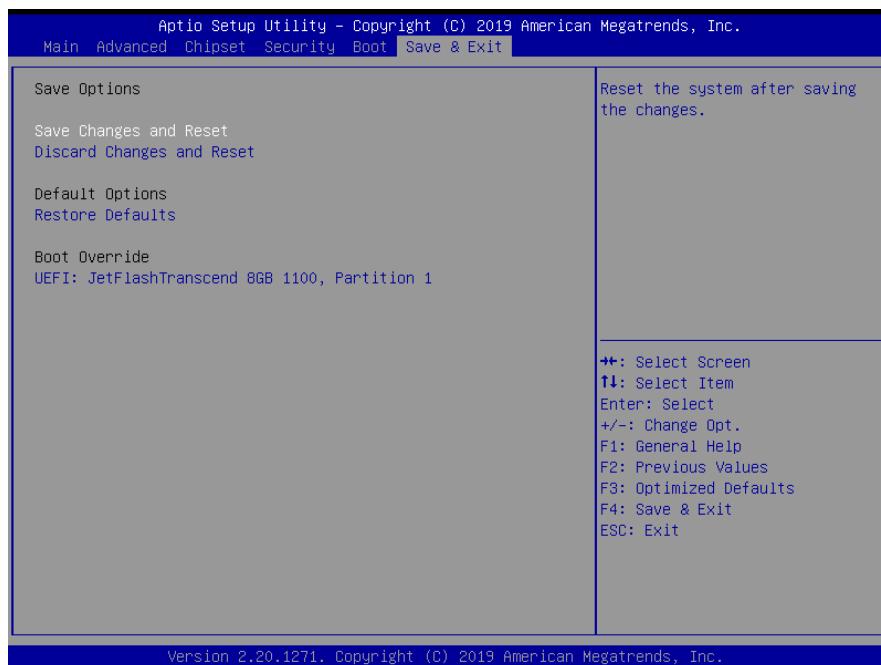
3.6.5.1   Save Changes and Reset

Reset the system after saving the changes.

3.6.5.2   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.

3.6.5.3   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.

3.6.5.4   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**.
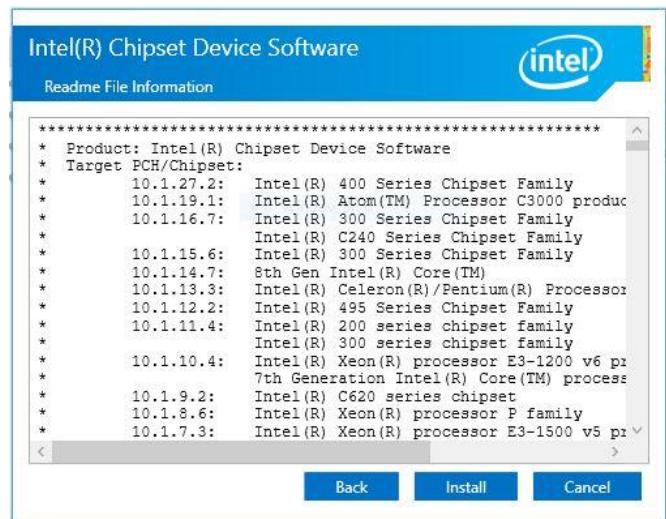
Step1. Click **Next**.

Step 4. Complete setup.

Step 2. Click **Accept**.
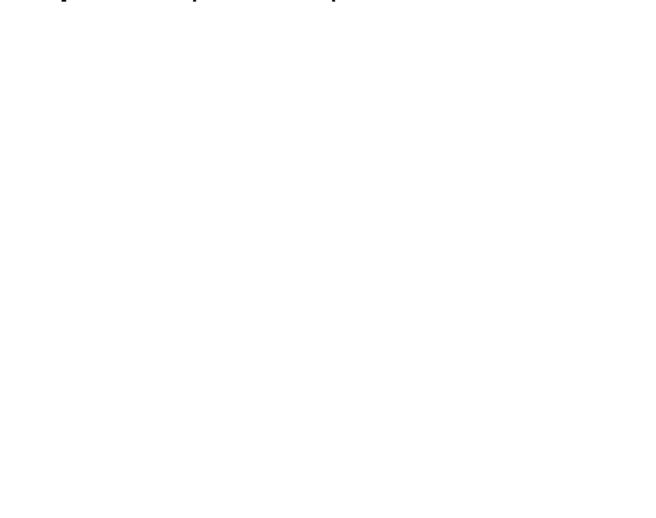
4.2 Install VGA Driver

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.
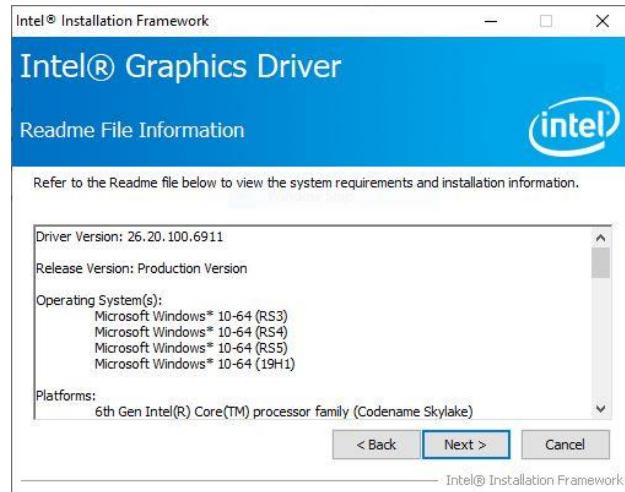
Step 3. Click **Next.**
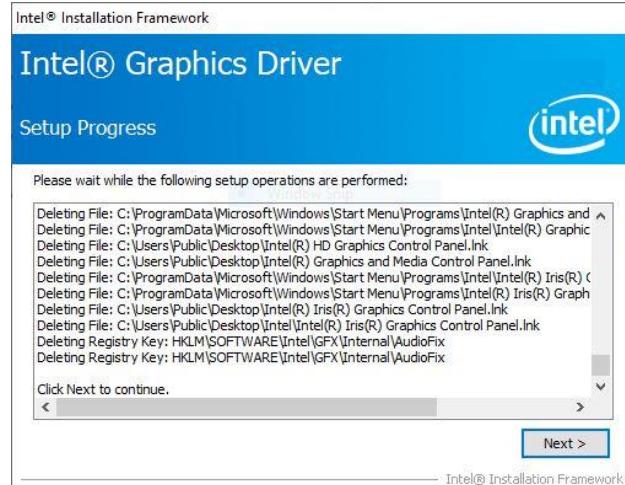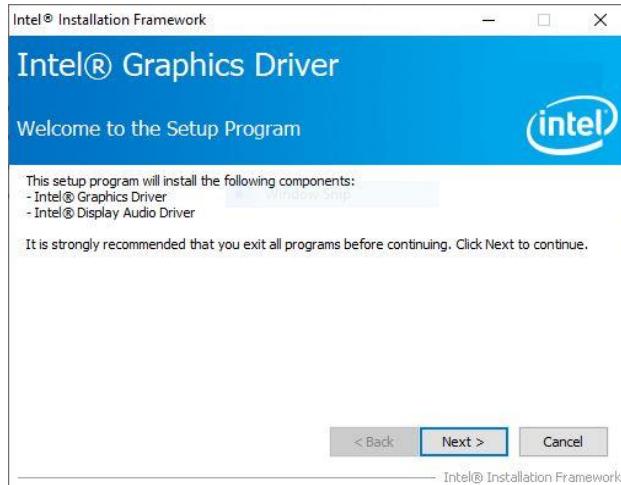
Step 1. Click **Next** to continue installation.
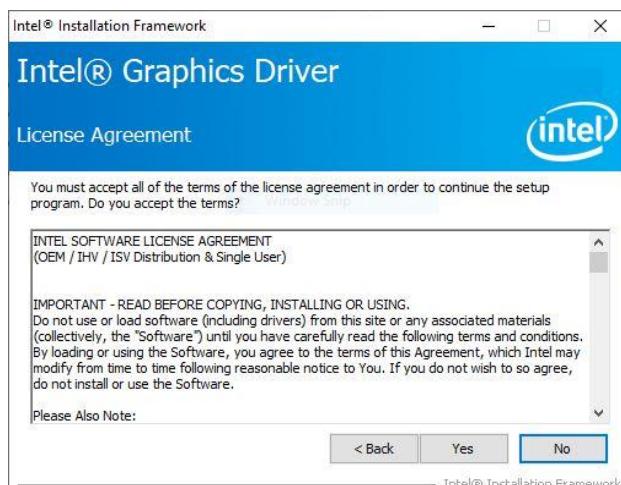
Step 4. Click **Next**.

Step 2. Click **Yes**.
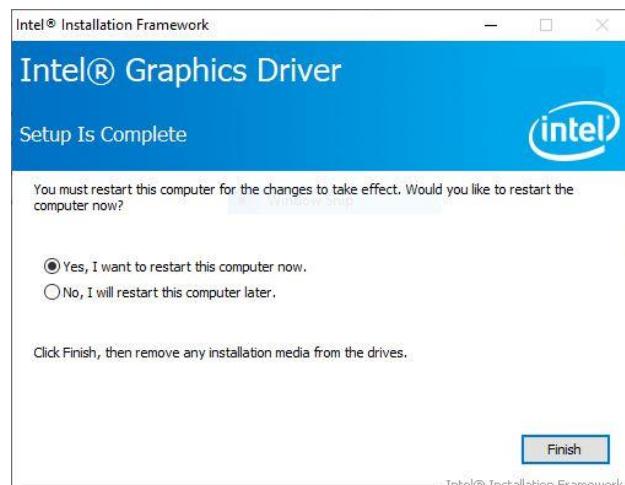
Step 5. Click **Finish** to complete setup.

4.3 Install LAN 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.
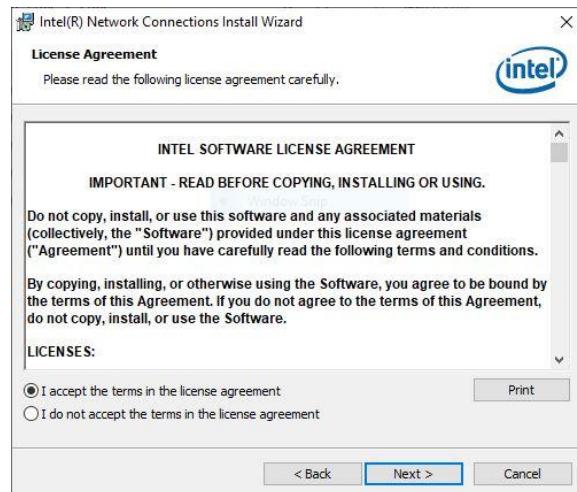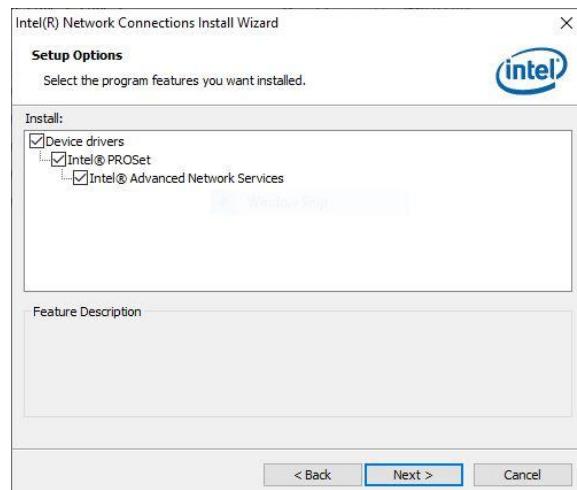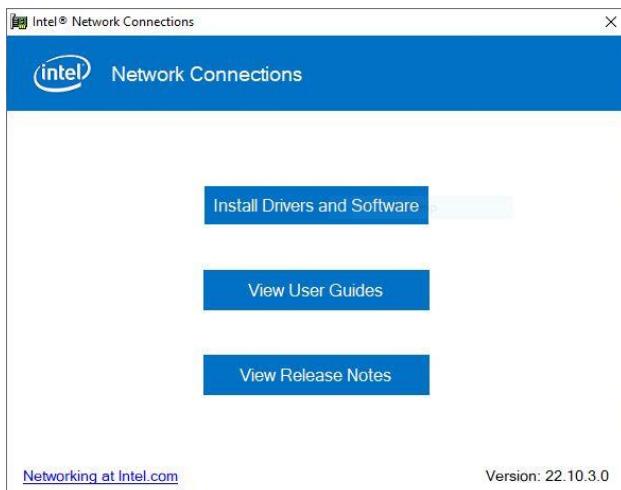

Step 3. Click **Next**.

Step 1. Click **Install Drivers and Software**
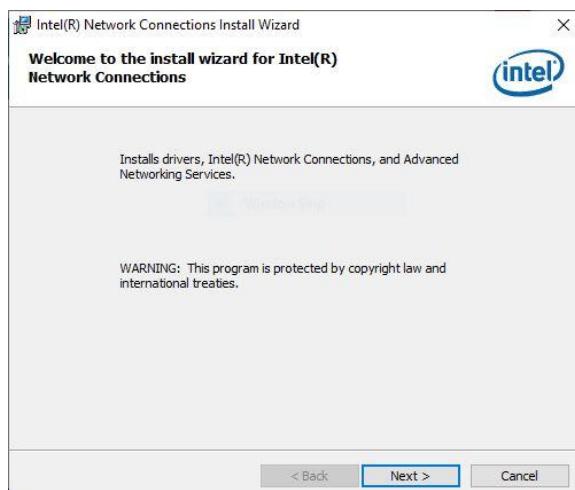
Step 4. Click **Next**.

Step 2. Click **Next** to continue installation.
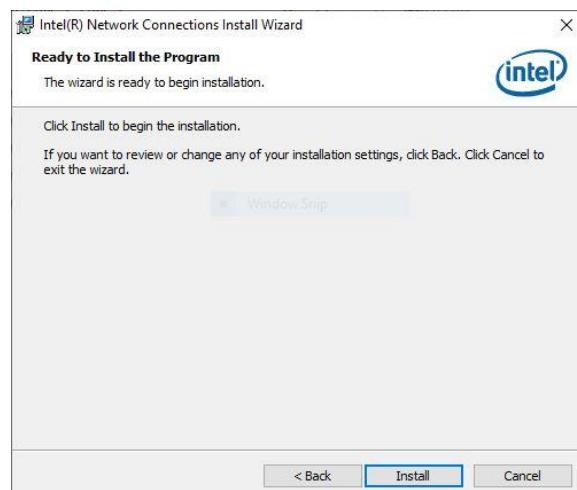
Step 5. Click **Install**.
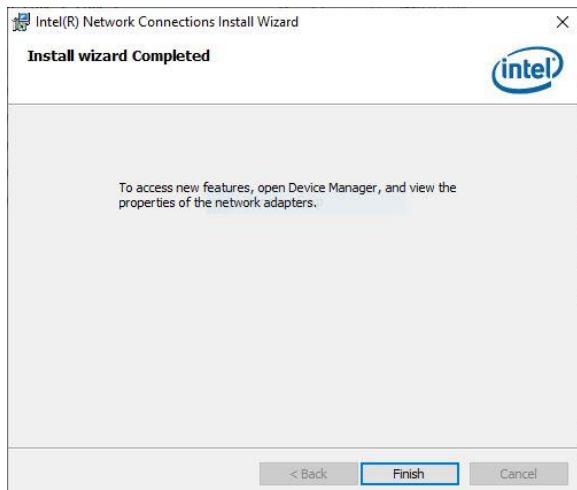
Step 6. Click **Finish** to complete setup.

4.4 Install Audio Driver (For Realtek ALC662 HD Audio)

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.
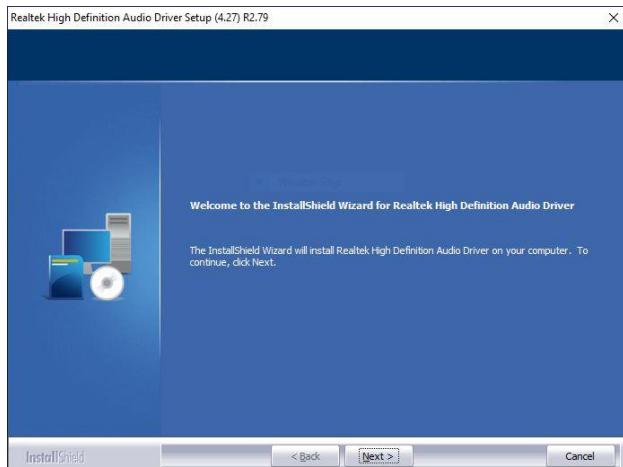
Step1. Click **Next** to Install.
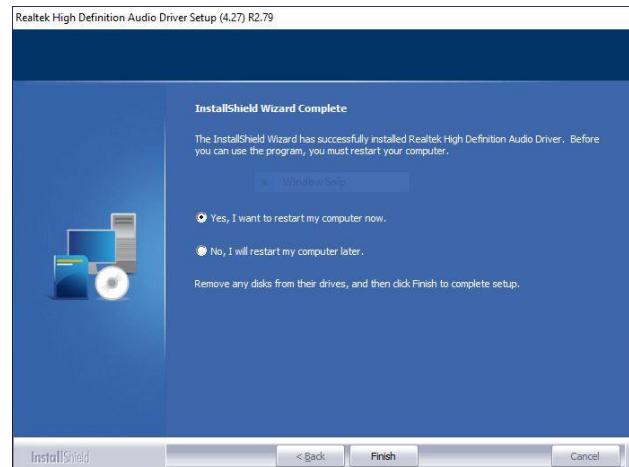
Step 2. Select **Finish** to complete Installation.

4.5 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 3.** Click **Next**

Step 1. Click **Next** to continue setup.
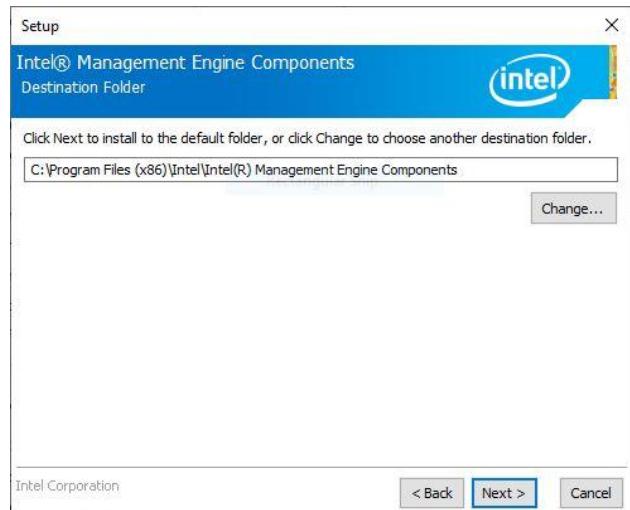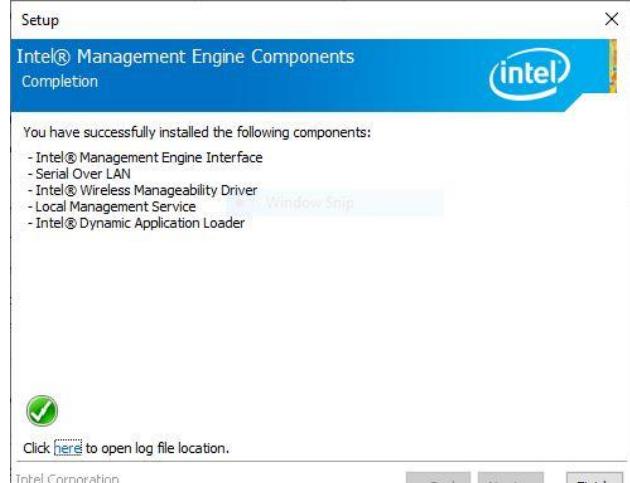
Step 4. Click **Finish** to complete the setup
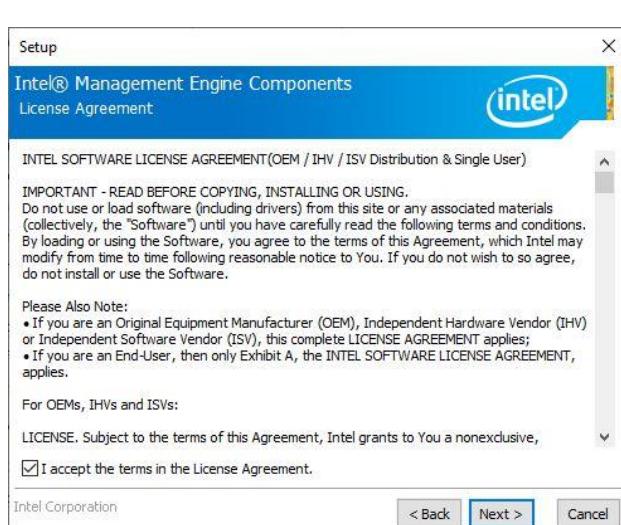
Step 2. Click **Next**.

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. If the warning message
appears while the installation
process, click Continue to go on.
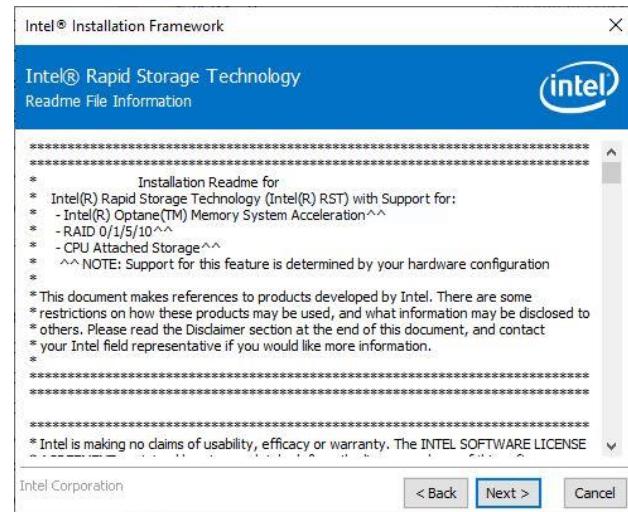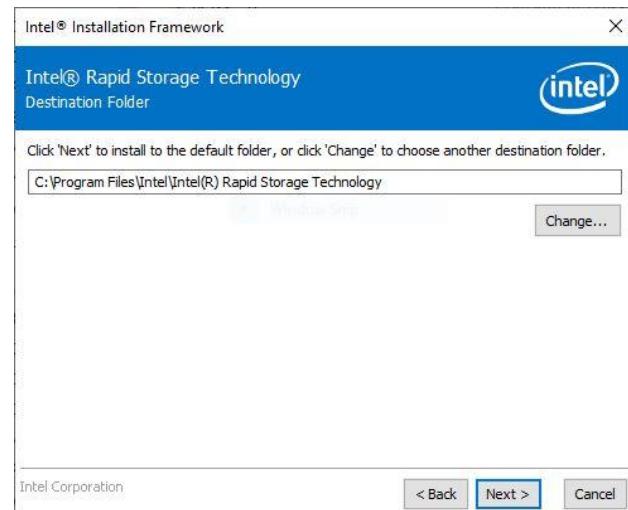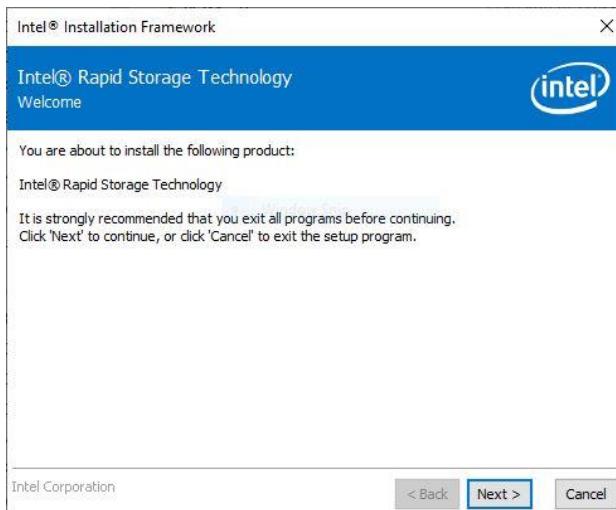
Step 3. Click **Next.**

Step 1. Click **Next** to continue installation.
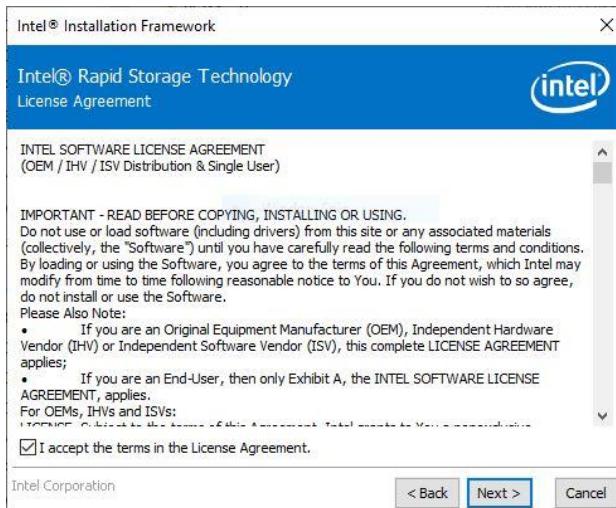
Step 4. Click **Next**.

Step 2. Click **Next**.

Step 5. Click **Finish** to complete setup.
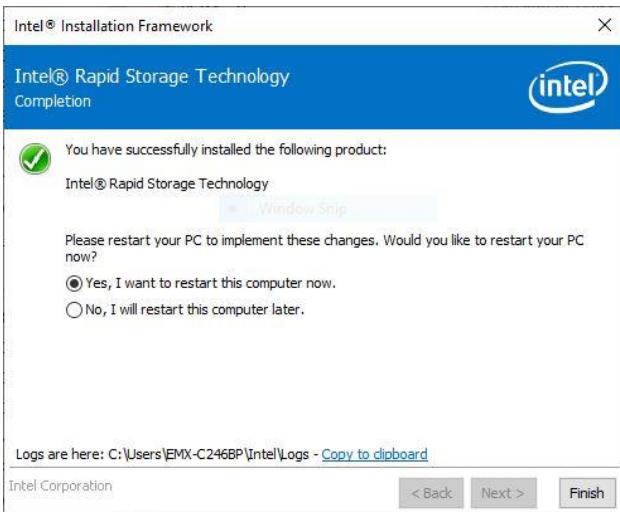
Step 6. Click **Finish** to complete setup.

4.7 Install Serial IO 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 **Next**.

Step 5. Click **Finish** to complete setup.