

LPC-0833

8" Multi-functional Touch Panel Computer

Quick Reference Guide

1st Ed – 28 December 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.

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

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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

- 1 x LPC-0833 Panel PC
- 1 x Power Adapter
- 4 x screws for VESA



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

1.3 System Specifications

| Component | |
|-------------------------------|---|
| Mother Board | ECM-APL(B) |
| CPU | Onboard Intel® Pentium®/Celeron®/Atom™ SoC BGA Processor (Apollo Lake Platform J3455/N3350 CPU) |
| CPU Cooler (Type) | Fanless Heatsink |
| Memory | One 204-pin DDR3L SODIMM Socket, Supports Up to 8GB DDR3L 1866MTs SDRAM (Non-ECC) |
| Power Supply | DC in |
| Adapter | +12 Vdc / 5 A (60W) power adaptor (ACC-ADP-060N-07R) |
| Wireless LAN | Option by mini PCIe module |
| Bluetooth | Option by mini PCIe module |
| Operating System | Windows 10 Android x86 8.1 Ubuntu 16.04 |
| Expansion Card | 1 x Full-Size Mini PCI Express Mini Card (for PCIe & USB2.0) 1 x M.2 (2242) B-Key |
| Storage | |
| Other Storage Device | 1 x M.2 B key (2242 support SATA/PCIex1/USB interface & with Micro SIM card connector) for SSD |
| Panel | |
| LCD Panel | 8", 4:3, SVGA |
| B/L Inverter/Converter | Built in LED backlight |
| Touch Screen | 5 Wires resistive |
| Touch Controller | USB (EETI) |
| External I/O | |
| Serial Port | 1 x DB-9 male connector for COM1 supports RS232 (BOM option for RS422/485) 1 x DB-9 male connector for COM2 supports RS232 |
| USB Port | 4 x USB 3.2 (Gen1x1, 5Gbps) |
| LAN Port | 2 x RJ-45 (Dual Intel® I211AT Gigabit LAN) |
| Wireless LAN Antenna | Reserved 1 for WiFi or 4G antenna |
| Switch | 1 x power switch |
| Indicator Light | LED for Power, HDD |
| Expansion Slots | 1 x Mini PCIe (for PCIe & USB2.0) |

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| | |
|------------------------------|--|
| | 1 x M.2 (2242) B-Key |
| Mechanical | |
| Power Type | 12 ~ 24V, AT/ATX |
| Power Connector Type | DC in |
| Dimension | 202.5 x 159.5 x 46.5 mm |
| Weight | 1.39 Kgs |
| Color | Front Silver & Rear panel Black |
| Fanless | Yes |
| OS Support | Windows 10 Android x86 8.1 Ubuntu 16.04 |
| Reliability | |
| EMI Test | CE/FCC Class B |
| Vibration Test | <p>Random Vibration Operation</p> <p>1 Test PSD : 0.00454G²/Hz , 1.5 Grms</p> <p>2 System condition : operation mode</p> <p>3 Test frequency : 5~500 Hz</p> <p>4 Test axis : X,Y and Z axis</p> <p>5 Test time : 30 minutes per each axis</p> <p>6 IEC60068-2-64 Test Fh</p> <p>6 Storage : mSATA</p> <p>Sine Vibration test (Non-operation)</p> <p>1 Test Acceleration : 2G</p> <p>2 Test frequency : 5~500 Hz</p> <p>3 Sweep : 1 Oct/ per one minute. (logarithmic)</p> <p>4 Test Axis : X,Y and Z axis</p> <p>5 Test time :30 min. each axis</p> <p>6 System condition : Non-Operating mode</p> <p>7. Reference IEC 60068-2-6 Testing procedures</p> <p>Package Vibration Test:</p> <p>1 Test PSD : 0.026G²/Hz , 2.16 Grms</p> <p>2 Test frequency : 5~500 Hz</p> <p>3 Test axis : X,Y and Z axis</p> <p>4 Test time : 30 minutes per each axis</p> <p>5 IEC 60068-2-64 Test Fh</p> |
| Mechanical Shock Test | <p>1 Wave from : Half Sine wave</p> <p>2 Acceleration Rate : 10g for operation mode</p> |

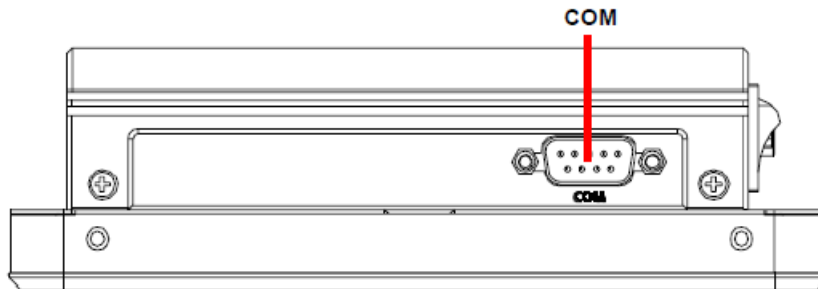
| | |
|------------------------------|---|
| | <p>3 Duration Time : 11ms</p> <p>4 No. of shock : Z axis 300 times</p> <p>5 Test Axis : Z axis</p> <p>6 operation mode</p> <p>7 Reference IEC 60068-2-27 testing procedures</p> <p>Test Eb : Shock Test</p> |
| Drop Test | <p>Package drop test</p> <p>Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed</p> <p>Test Ea : Drop Test</p> <p>1 Test phase : One corner, three edges, six faces</p> <p>2 Test high : 96.5cm</p> <p>3 Package weight : 1.39Kg</p> <p>4 Test drawing</p> |
| Operating Temperature | 0°C ~ 40°C (32°F ~ 104°F) |
| Operating Humidity | 40°C @ 95% Relative Humidity, Non-condensing |
| Storage Temperature | -20°C ~ 60°C (-4°F ~ 140°F) |



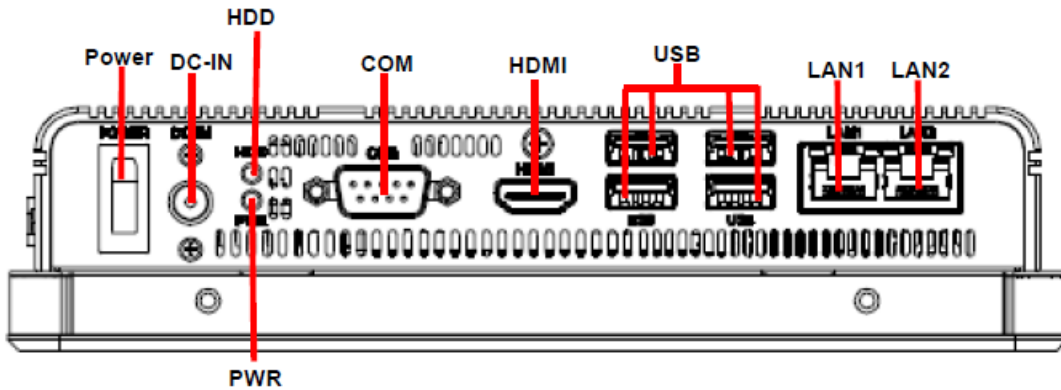
Note: Specifications are subject to change without notice.

1.4 System Overview

1.4.1 Right View



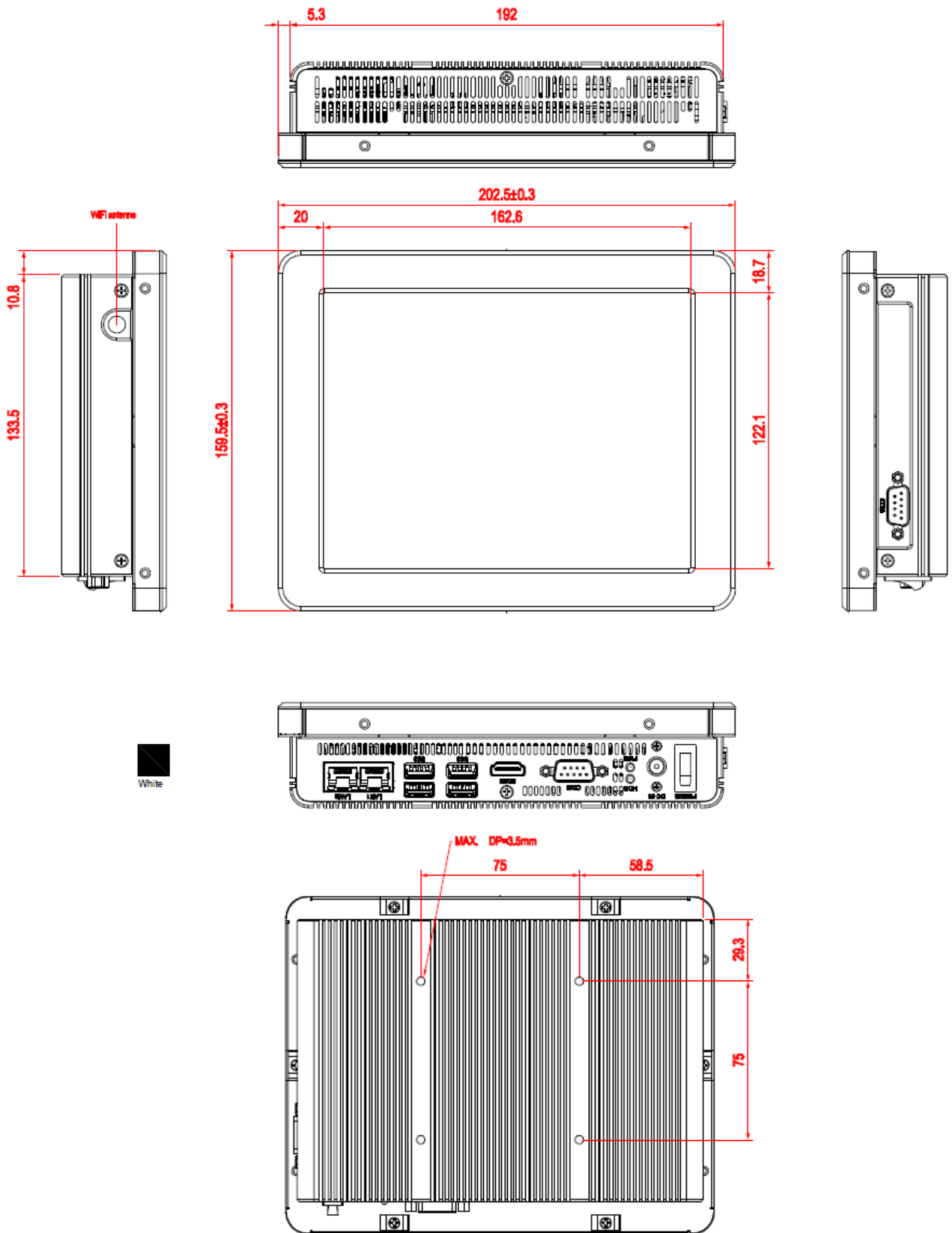
1.4.2 Bottom View



Connectors

| Label | Function | Note |
|---------------|------------------------------|---------------------|
| POWER | Power on button | |
| COM1/2 | Serial port 1/2 connector | DB-9 male connector |
| USB | 4 x USB 3.2 connector | |
| LAN1/2 | RJ-45 Ethernet connector 1/2 | |
| HDMI | HDMI connector | |
| HDD | HDD indicator | |
| PWR | System power indicator | |
| DC-IN | DC Power-in connector | |

1.5 System Dimensions



(Unit: mm)

2. Hardware Configuration

For advanced information, please refer to:

- 1- ECM-APL-B1 User's Manual

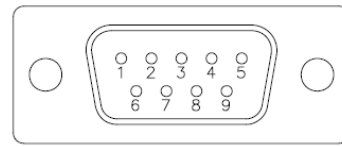
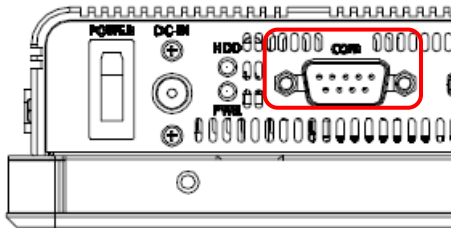


Note: If you need more information, please visit our website:

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

2.1 LPC-0833 connector mapping

2.1.1 Serial port 1 connector (COM1)



* Default

Note:

supports RS232 (BOM option for RS422/485)

RS-232*

| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| NDCD# | 1 | 6 | NDSR# |
| NRXD | 2 | 7 | NRTS# |
| NTXD | 3 | 8 | NCTS# |
| NDTR# | 4 | 9 | NRI# |
| GND | 5 | | |

RS-422(BOM option)

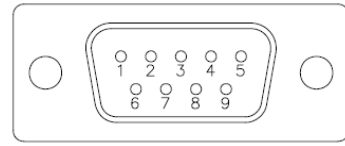
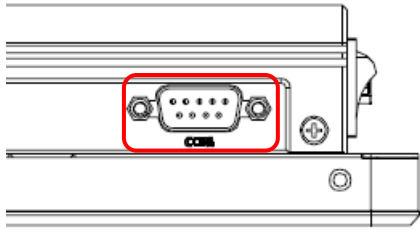
| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| TxD- | 1 | 6 | NC |
| TxD+ | 2 | 7 | NC |
| RxD+ | 3 | 8 | NC |
| RxD- | 4 | 9 | NC |
| GND | 5 | | |

RS-485(BOM option)

| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| DATA- | 1 | 6 | NC |
| DATA+ | 2 | 7 | NC |
| NC | 3 | 8 | NC |
| NC | 4 | 9 | NC |
| GND | 5 | | |

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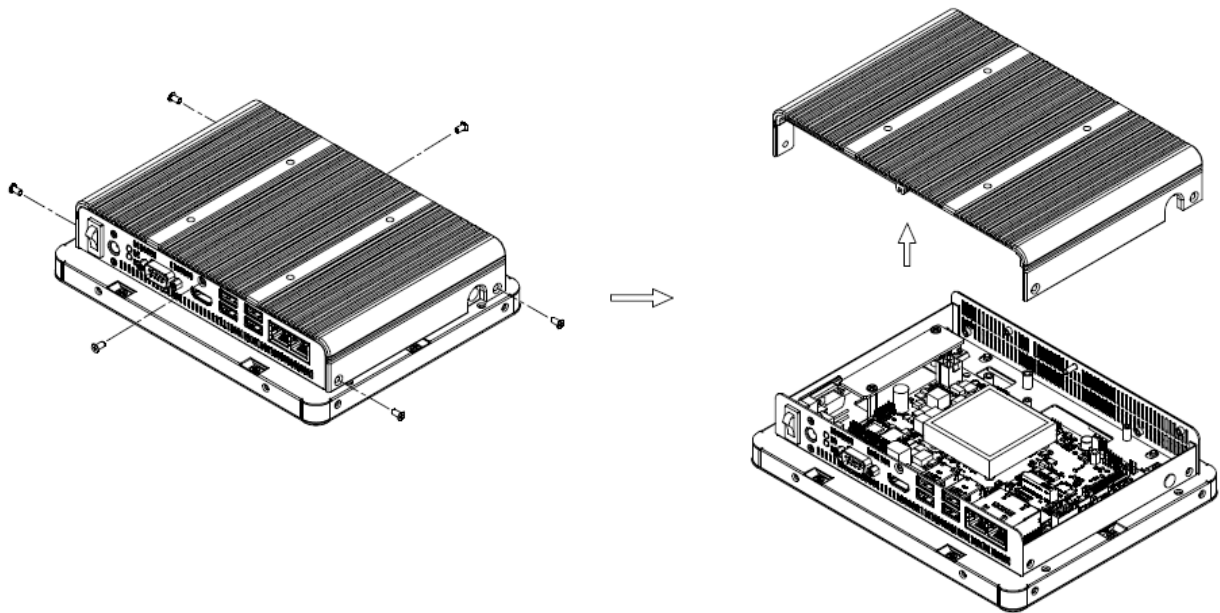
2.1.2 Serial port 2 connector (COM2)



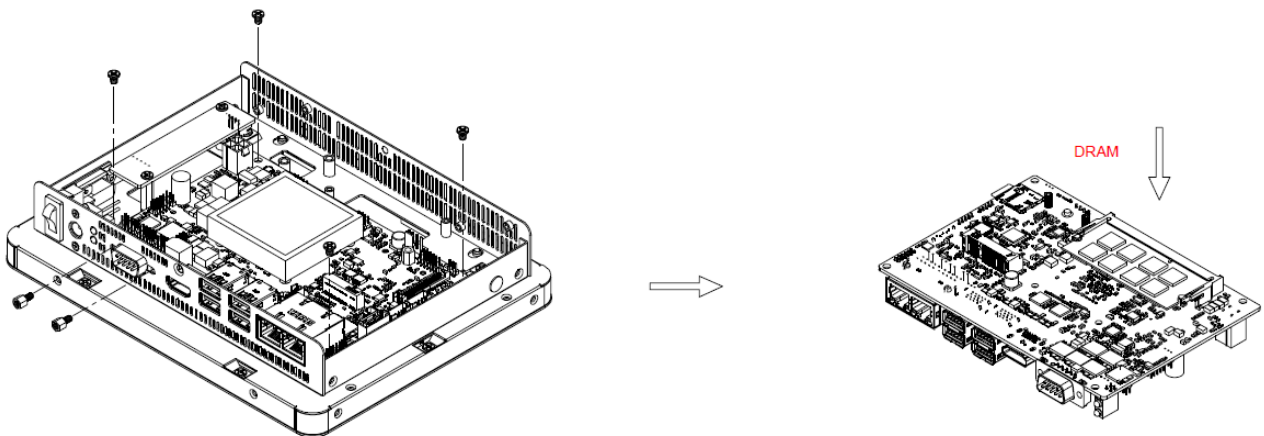
RS-232

| Signal | PIN | PIN | Signal |
|--------|-----|-----|--------|
| NDCD# | 1 | 6 | NDSR# |
| NRXD | 2 | 7 | NRTS# |
| NTXD | 3 | 8 | NCTS# |
| NDTR# | 4 | 9 | NRI# |
| GND | 5 | | |

2.2 Installing Memory



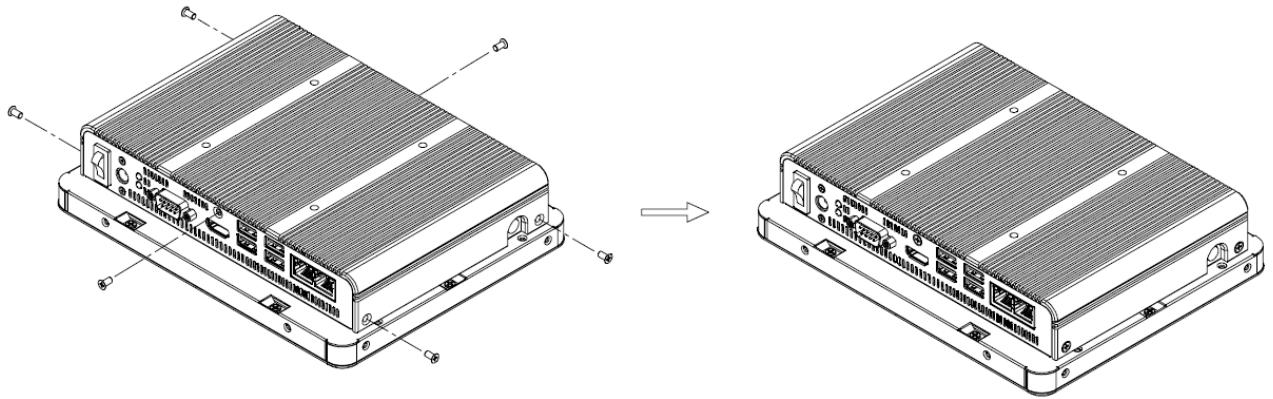
Step 1. Unfasten 6 screws to remove the bottom chassis.



Step 2. Unlock 2 coppers from the rear I/O of VGA & COM ports.

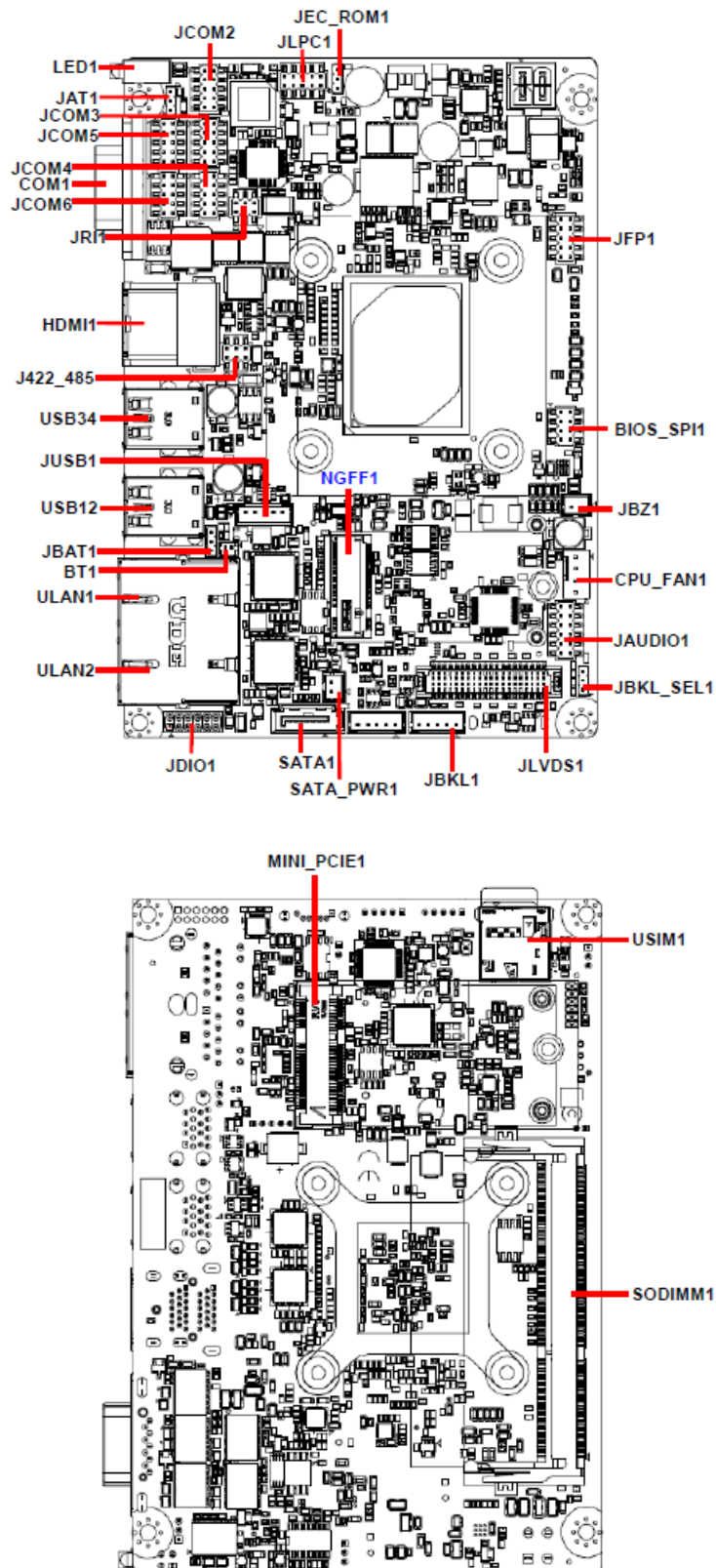
Step 3. Release 4 screws to take off the board, and install the RAM module into the memory slot.

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Step 4. Assemble the board and bottom chassis back as step 3 to step 1.

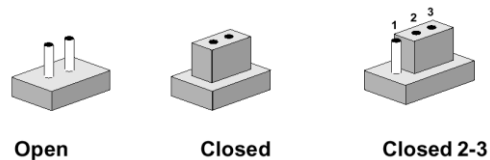
2.2 ECM-APL-B1 Overview



2.3 ECM-APL-B1 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board’s jumpers and connectors.

Jumpers

| Label | Function | Note |
|------------------|-------------------------------------|-----------------------------|
| JBAT1 | Clear CMOS | 3 x 1 header, pitch 2.00 mm |
| JRI1 | Serial port 1 pin9 signal select | 3 x 2 header, pitch 2.00 mm |
| JAT1 | AT/ ATX Input power select | 3 x 1 header, pitch 2.00 mm |
| JBKL_SEL1 | LCD backlight brightness adjustment | 3 x 1 header, pitch 2.00 mm |

Connectors

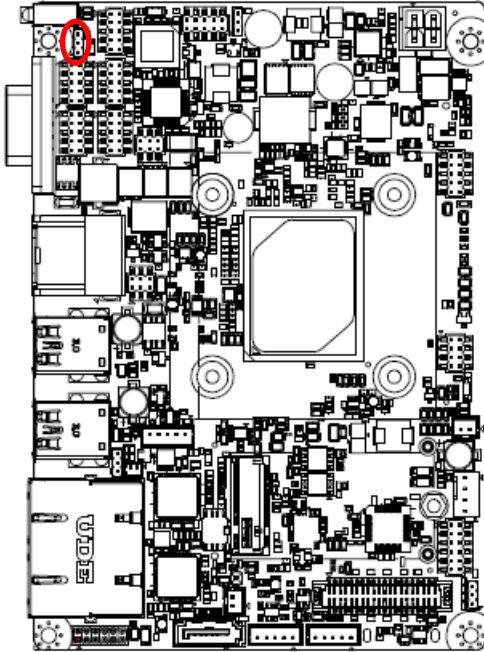
| Label | Function | Note |
|-----------------|------------------------|-----------------------------|
| BT1 | Battery connector | 2 x 1 wafer, pitch 1.25 mm |
| CPU_FAN1 | CPU fan connector | 4 x 1 wafer, pitch 2.54 mm |
| JAUDIO1 | Audio connector | 6 x 2 header, pitch 2.00 mm |
| JBKL1 | LCD inverter connector | 5 x 1 wafer, pitch 2.00 mm |

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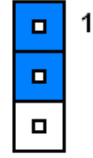
| | | |
|----------------------|-----------------------------------|---|
| | | Matching Connector: JST PHR-5 |
| J422_485 | Serial port 1 in RS-422/485 mode | 3 x 2 header, pitch 2.00 mm |
| COM1 | Serial port 1 connector | D-sub 9-pin, male |
| JCOM2/3/4/5/6 | Serial port 2/3/4/5/6 connector | 5 x 2 header, pitch 2.00 mm |
| JDIO1 | General purpose I/O connector | 6 x 2 header, pitch 2.00 mm |
| JFP1 | Miscellaneous setting connector | 5 x 2 header, pitch 2.00 mm |
| JLPC1 | Low pin count interface | 5 x 2 header, pitch 2.00 mm |
| JLVDS1 | LVDS connector | 20 x 2 wafer, pitch 1.25 mm Matching Connector: Hirose DF13-40DS-1.25C |
| USB12/34 | On-board connector for USB3.0 x 4 | |
| JUSB1 | On-board header for USB2.0 | 5 x 1 wafer, pitch 2.00 mm |
| JEC_ROM1 | EC Debug connector | 3 x 1 header, pitch 2.00 mm |
| ULAN1/2 | RJ-45 Ethernet connector 1/2 | |
| LED1 | HDD/Power LED indicator | |
| JBZ1 | PC Buzzer header | 2 x 1 wafer, pitch 2.00 mm |
| SATA_PWR1 | SATA power header | 2 x 1 wafer, pitch 2.00 mm |
| SATA1 | Serial ATA connector 1 | |
| HDMI1 | HDMI connector | |
| BIOS_SPI1 | BIOS SPI header | 4 x 2 header, pitch 2.00 mm |
| NGFF1 | M.2 B key slot | |
| MINI_PCIE1 | Mini-PCI connector | |
| SO_DIMM1 | DDR3 SODIMM connector | |
| USIM1 | Sim card slot | |

2.4 ECM-APL-B1 Jumpers & Connectors settings

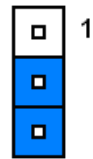
2.4.1 AT/ ATX Input power select (JAT1)



AT*

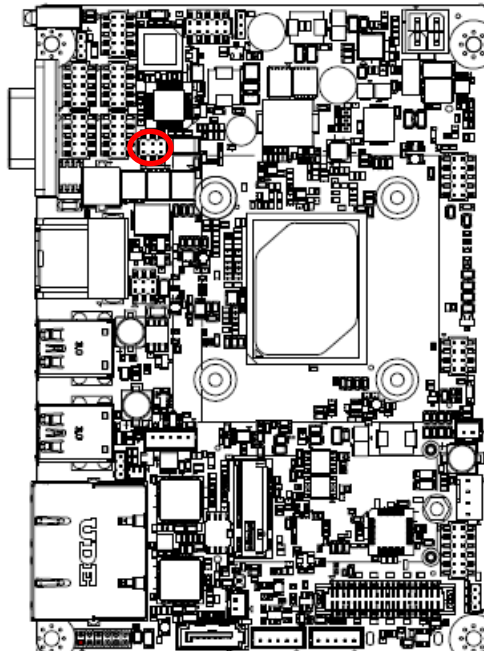


ATX

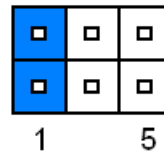


* Default

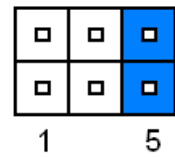
2.4.2 Serial port 1 pin9 signal select (JRI1)



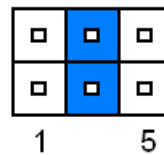
Ring*



+12V

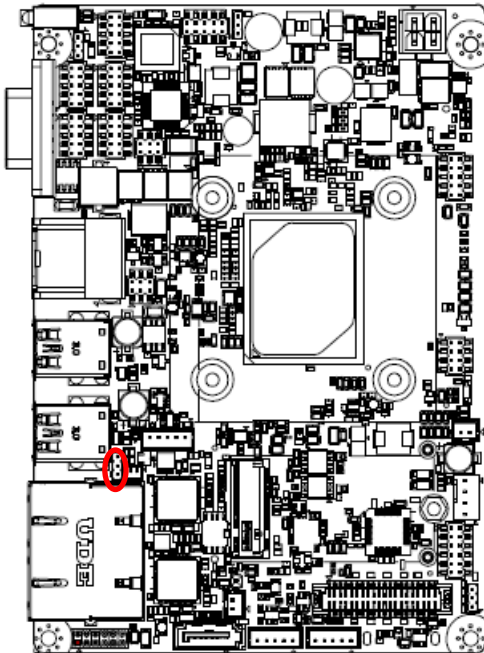


+5V

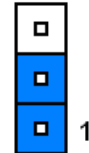


* Default

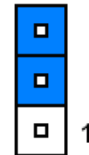
2.4.3 Clear CMOS (JBAT1)



Protect*

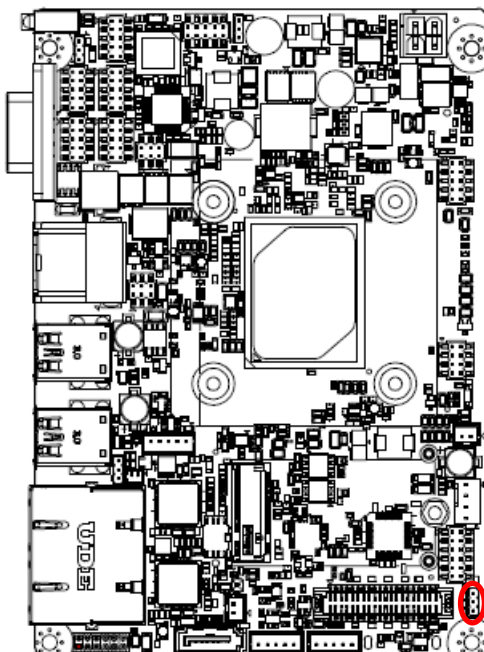


Clear CMOS

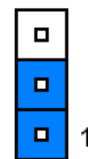


* Default

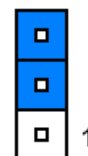
2.4.4 LCD backlight brightness adjustment (JBKL_SEL1)



PWM Mode*

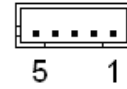
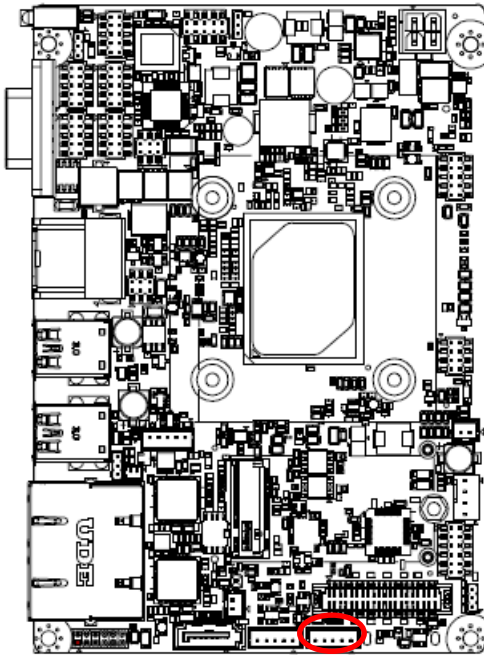


DC Mode



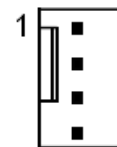
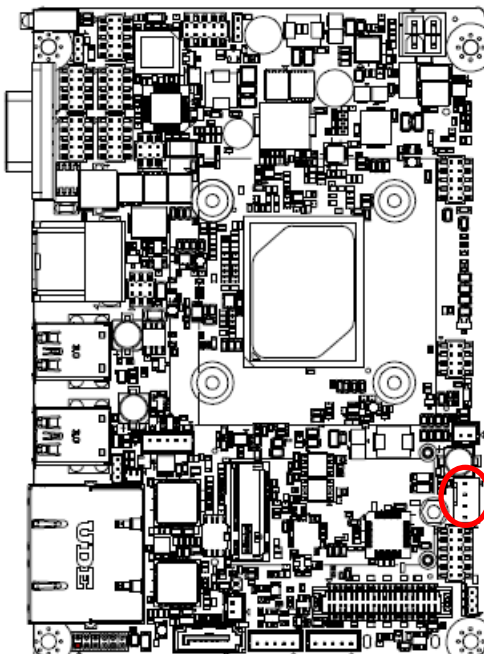
* Default

2.4.5 LCD Inverter connector (JBKL1)



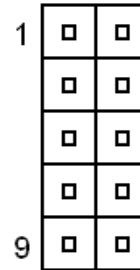
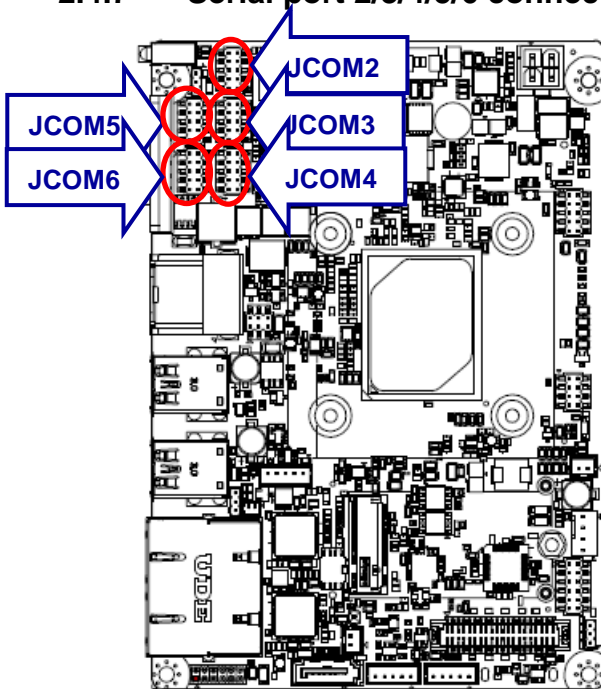
| Signal | PIN |
|---------|-----|
| +12V | 1 |
| GND | 2 |
| BKLEN | 3 |
| VBRIGHT | 4 |
| +5V | 5 |

2.4.6 CPU fan connector (CPU_FAN1)



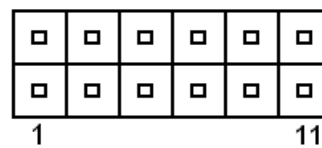
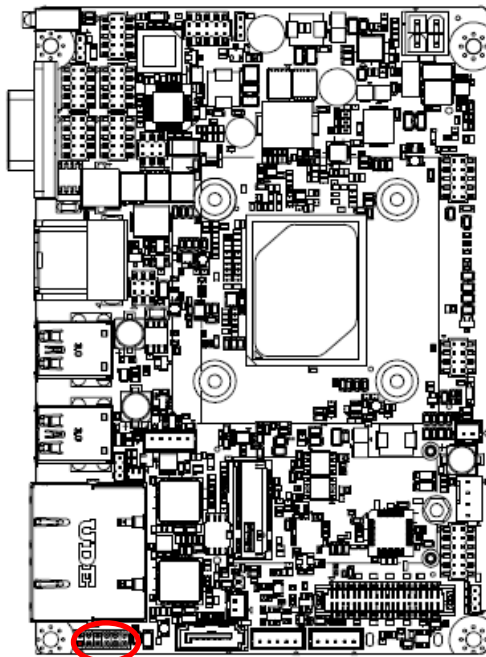
| Signal | PIN |
|----------|-----|
| GND | 1 |
| +12V | 2 |
| EC_TACH0 | 3 |
| FAN_PWM0 | 4 |

2.4.7 Serial port 2/3/4/5/6 connector (JCOM2/3/4/5/6)



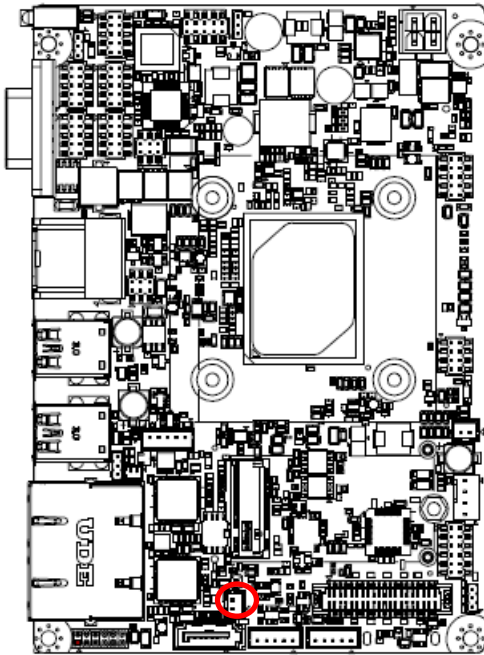
| Signal | PIN | PIN | Signal |
|----------|-----|-----|----------|
| COM_DCD# | 1 | 2 | COM_RXD |
| COM_TXD | 3 | 4 | COM_DTR# |
| GND | 5 | 6 | COM_DSR# |
| COM_RTS# | 7 | 8 | COM_CTS# |
| COM_RI# | 9 | 10 | NC |

2.4.8 General purpose I/O connector (JDIO1)



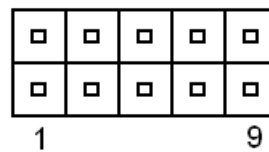
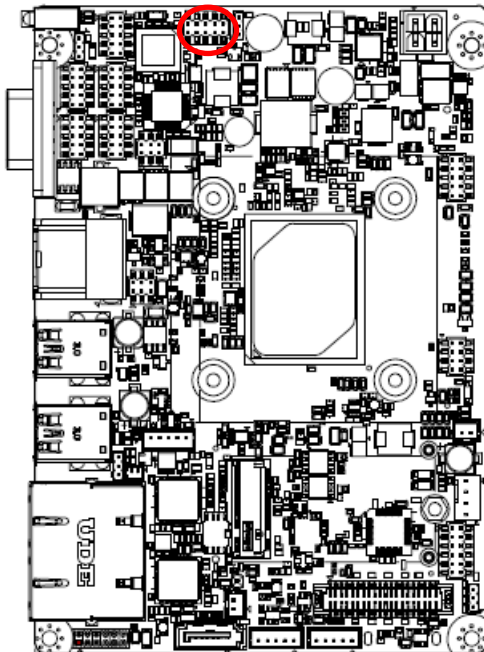
| Signal | PIN | PIN | Signal |
|------------|-----|-----|------------|
| DIO_GP20 | 1 | 2 | DIO_GP10 |
| DIO_GP21 | 3 | 4 | DIO_GP11 |
| DIO_GP22 | 5 | 6 | DIO_GP12 |
| DIO_GP23 | 7 | 8 | DIO_GP13 |
| SMB_SCL_S0 | 9 | 10 | SMB_SDA_S0 |
| GND | 11 | 12 | +5V |

2.4.9 SATA Power header (SATA_PWR1)



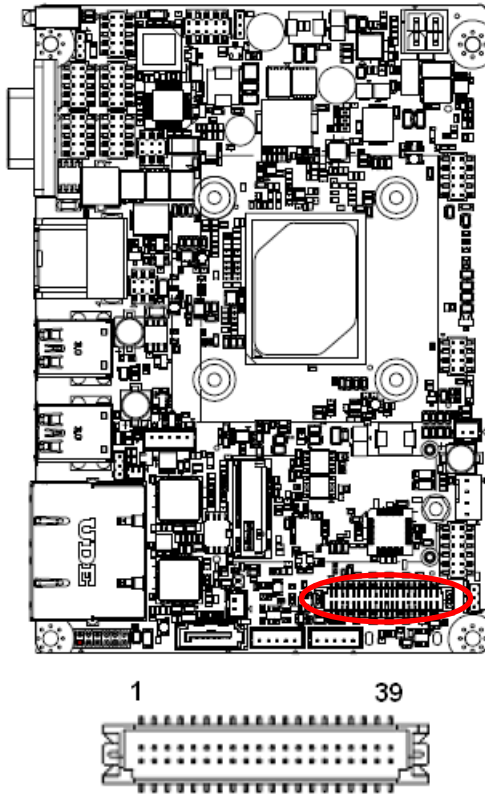
| Signal | PIN |
|--------|-----|
| +5V | 2 |
| GND | 1 |

2.4.10 Low pin count interface (JLPC1)



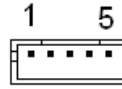
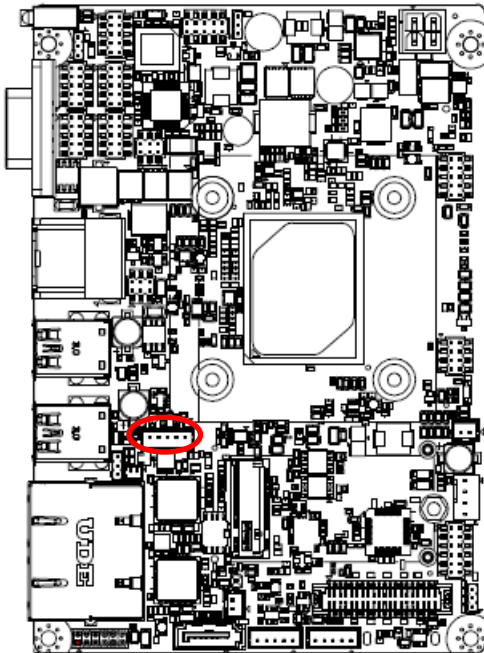
| Signal | PIN | PIN | Signal |
|------------|-----|-----|----------------|
| LPC_AD0 | 1 | 2 | +3.3V |
| LPC_AD1 | 3 | 4 | PLT_RST_BUF# |
| LPC_AD2 | 5 | 6 | LPC_FRAME# |
| LPC_AD3 | 7 | 8 | LPC_PORT80_CLK |
| LPC_SERIRQ | 9 | 10 | GND |

2.4.11 LVDS connector (JLVDS1)



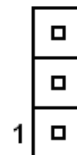
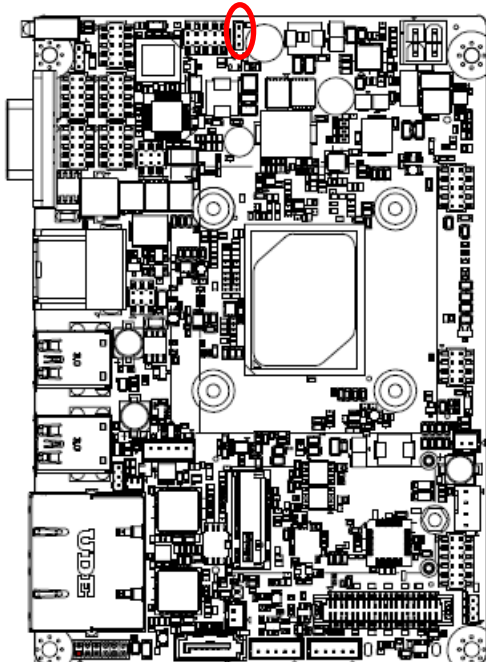
| Signal | PIN | PIN | Signal |
|--------------|-----|-----|--------------|
| +5V | 2 | 1 | +3.3V |
| +5V | 4 | 3 | +3.3V |
| NC | 6 | 5 | NC |
| GND | 8 | 7 | GND |
| LVDS_DATA0_P | 10 | 9 | LVDS_DATA1_P |
| LVDS_DATA0_N | 12 | 11 | LVDS_DATA1_N |
| GND | 14 | 13 | GND |
| LVDS_DATA2_P | 16 | 15 | LVDS_DATA3_P |
| LVDS_DATA2_N | 18 | 17 | LVDS_DATA3_N |
| GND | 20 | 19 | GND |
| LVDS_DATA4_P | 22 | 21 | LVDS_DATA5_P |
| LVDS_DATA4_N | 24 | 23 | LVDS_DATA5_N |
| GND | 26 | 25 | GND |
| LVDS_DATA6_P | 28 | 27 | LVDS_DATA7_P |
| LVDS_DATA6_N | 30 | 29 | LVDS_DATA7_N |
| GND | 32 | 31 | GND |
| LVDS_CLK1_P | 34 | 33 | LVDS_CLK2_P |
| LVDS_CLK1_N | 36 | 35 | LVDS_CLK2_N |
| GND | 38 | 37 | GND |
| +12V | 40 | 39 | +12V |

2.4.12 On-board header for USB2.0 (JUSB1)



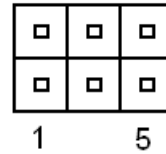
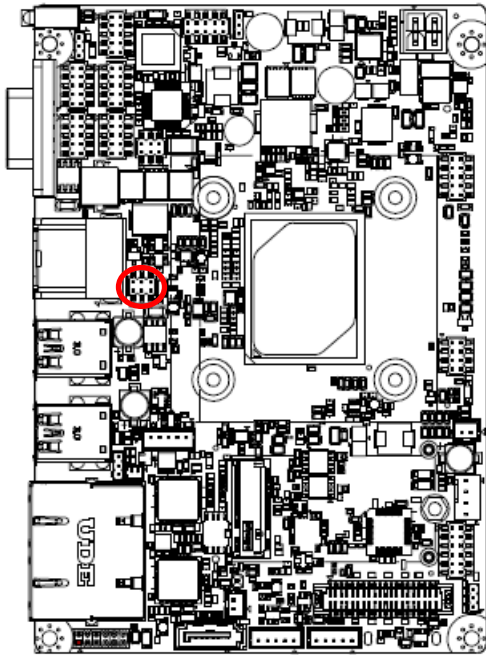
| Signal | PIN |
|-----------|-----|
| +5VSB | 1 |
| USB_R_DN7 | 2 |
| USB_R_DP7 | 3 |
| GND | 4 |
| GND | 5 |

2.4.13 EC Debug connector (JEC_ROM1)



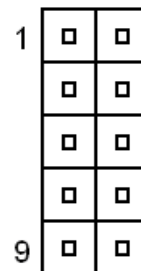
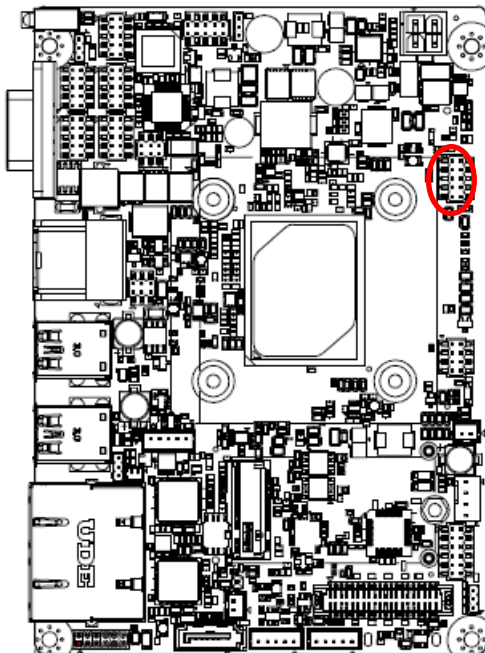
| Signal | PIN |
|----------------|-----|
| GND | 3 |
| EC_SMDAT_DEBUG | 2 |
| EC_SMCLK_DEBUG | 1 |

2.4.14 Serial port 1 in RS-422/485 mode (J422_485)



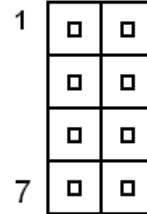
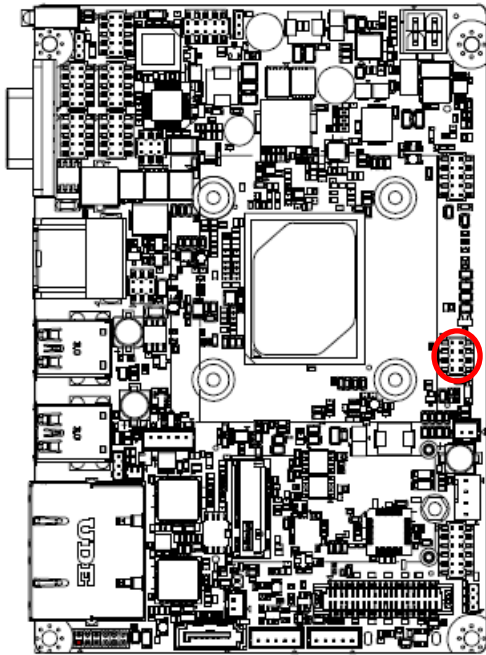
| Signal | PIN | PIN | Signal |
|---------|-----|-----|---------|
| 485TX2- | 1 | 2 | 485TX2+ |
| 485RX2+ | 3 | 4 | 485RX2- |
| +5V | 5 | 6 | GND |

2.4.15 Miscellaneous setting connector (JFP1)



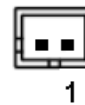
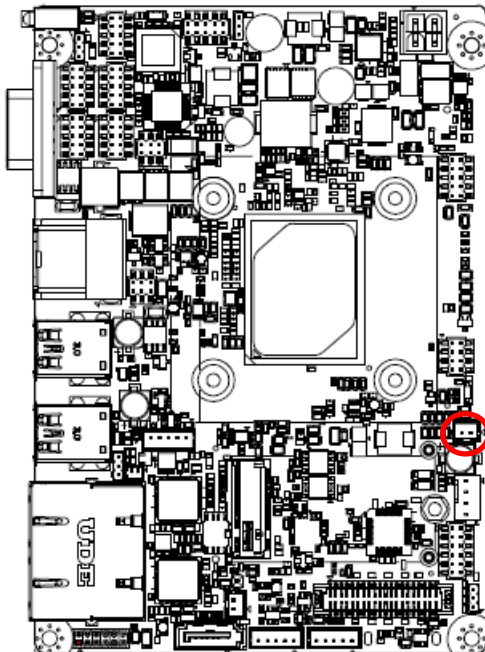
| Signal | PIN | PIN | Signal |
|----------------|-----|-----|----------|
| PWR_BTN_IN_EC# | 1 | 2 | GND |
| PMU_RSTBTN# | 3 | 4 | GND |
| FP_PWR_LED+ | 5 | 6 | PWR_LED# |
| HDD_LED# | 7 | 8 | +5V |
| CASE_OPEN# | 9 | 10 | GND |

2.4.16 BIOS SPI header (BIOS_SPI1)



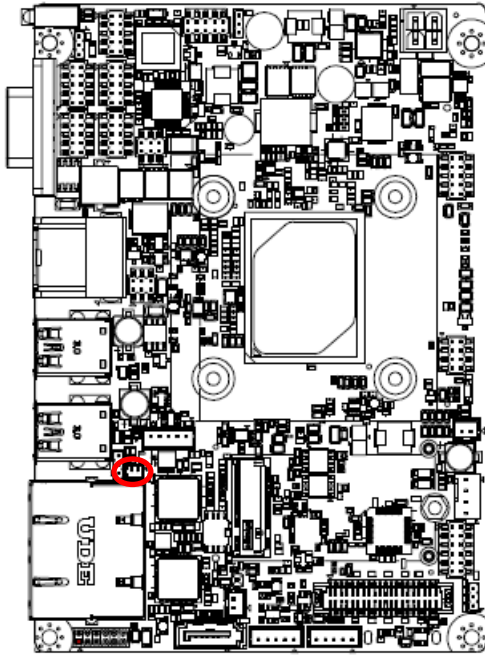
| Signal | PIN | PIN | Signal |
|-----------|-----|-----|----------|
| +1.8VSB | 1 | 2 | GND |
| SPI_CS#0 | 3 | 4 | CPI_CLK |
| SPI_MISO | 5 | 6 | SPI_MOSI |
| SPI_HOLD# | 7 | 8 | SPI_WP# |

2.4.17 PC Buzzer header (JBZ1)



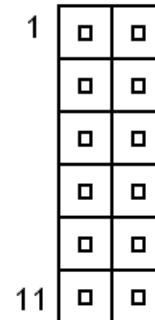
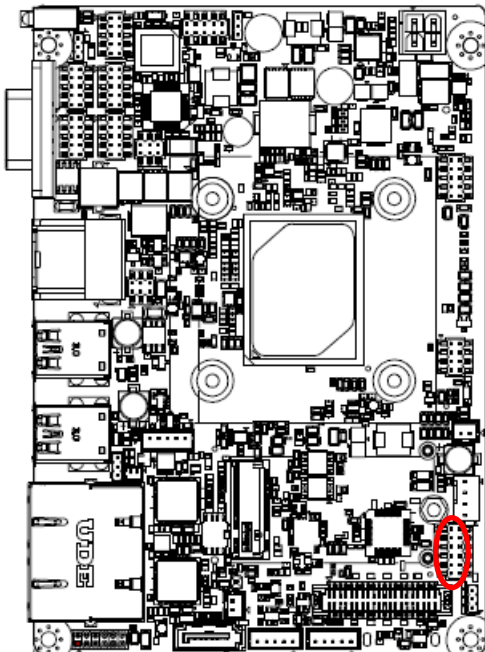
| Signal | PIN |
|------------|-----|
| SOC_SPKR_R | 1 |
| +5V | 2 |

2.4.18 Battery connector (BT1)



| Signal | PIN |
|----------|-----|
| +RTCBATT | 1 |
| GND | 2 |

2.4.19 Audio connector (JAUDIO1)



| Signal | PIN | PIN | Signal |
|-------------|-----|-----|-------------|
| FRONT-R-OUT | 1 | 2 | FRONT-L-OUT |
| HD_AGND | 3 | 4 | HD_AGND |
| LINE1-R-IN | 5 | 6 | LINE1-L-IN |
| MIC1-R-IN | 7 | 8 | MIC1-L-IN |
| FRONT-JD | 9 | 10 | LINE1-JD |
| MIC1-JD | 11 | 12 | HD_AGND |

2.4.19.1 Signal Description – Audio connector (JAUDIO1)

| Signal | Signal Description |
|----------|----------------------------------|
| LINE1-JD | AUDIO IN (LINE_RIN/LIN)sense pin |
| FRONT-JD | AUDIO Out(ROUT/LOUT) sense pin |
| MIC1-JD | MIC IN (MIC_RIN/LIN) sense pin |

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

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 <ESC> immediately after switching the system on, or

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

Press or <ESC> 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.

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 |
| Enter | Select |
| +/- | Value |
| ESC | Exit |
| F1 key | General Help |
| F2 key | Previous Values |
| F3 key | Optimized Defaults |
| F4 key | Save & Exit Setup |
| <K> | Scroll help area upwards |
| <M> | Scroll help area downwards |

- **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 <Enter> key.

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.

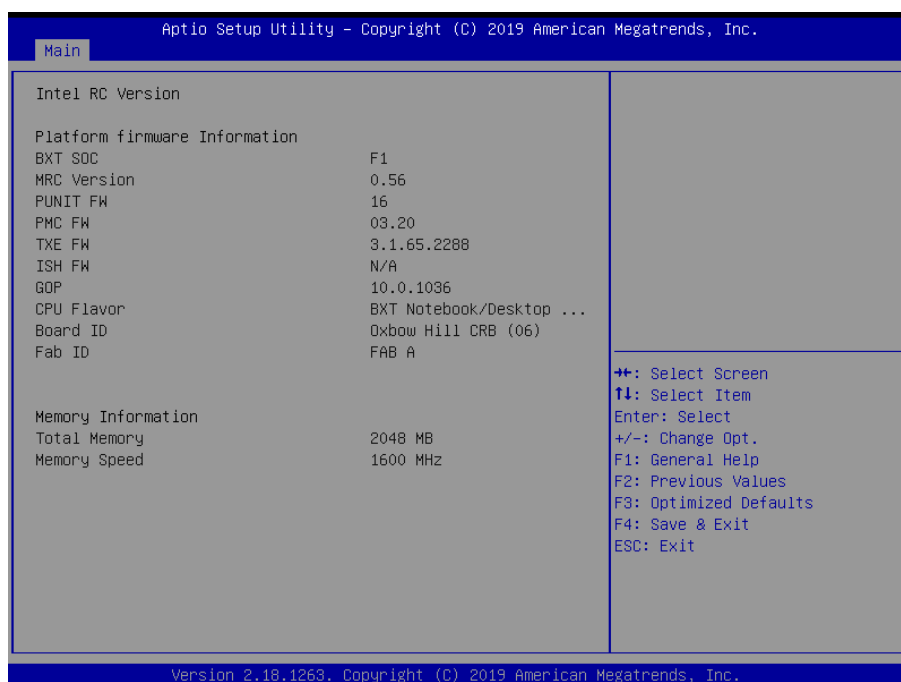
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance 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.



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.

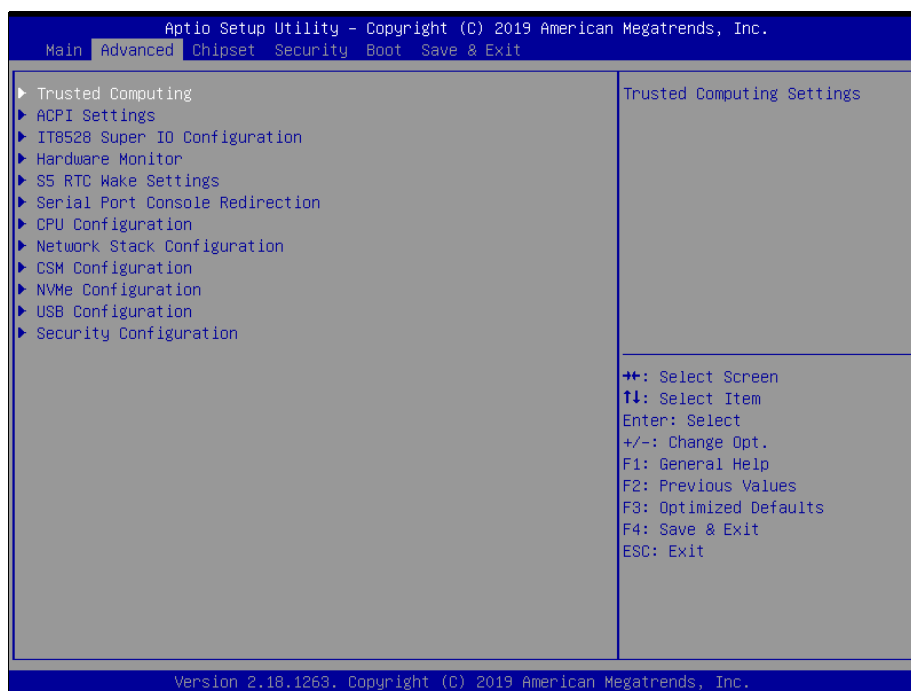


Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

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.

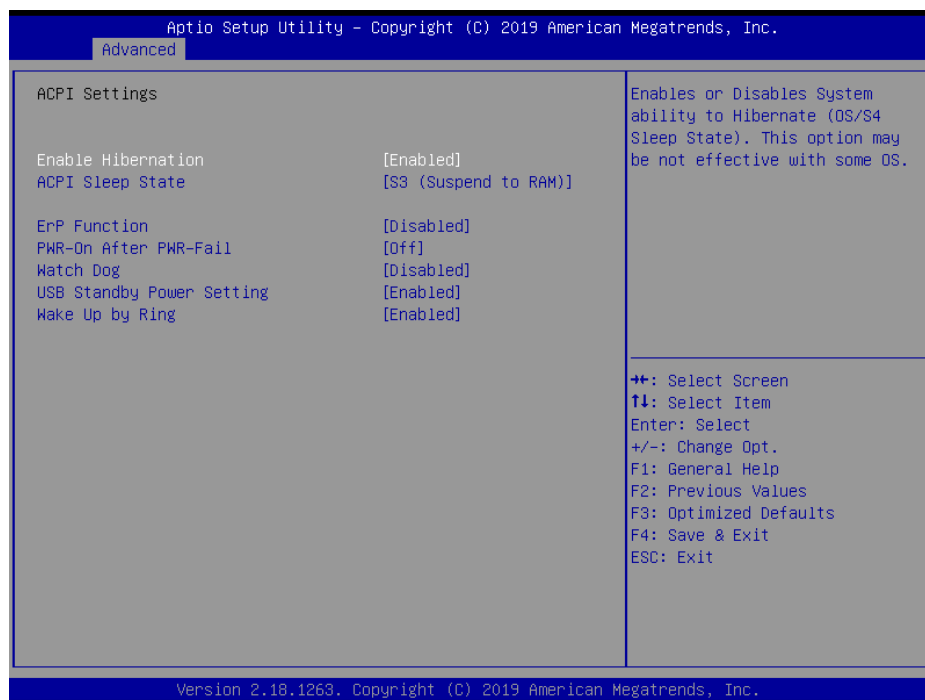


3.6.2.1 Trusted Computing



| 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. |

3.6.2.2 ACPI Settings

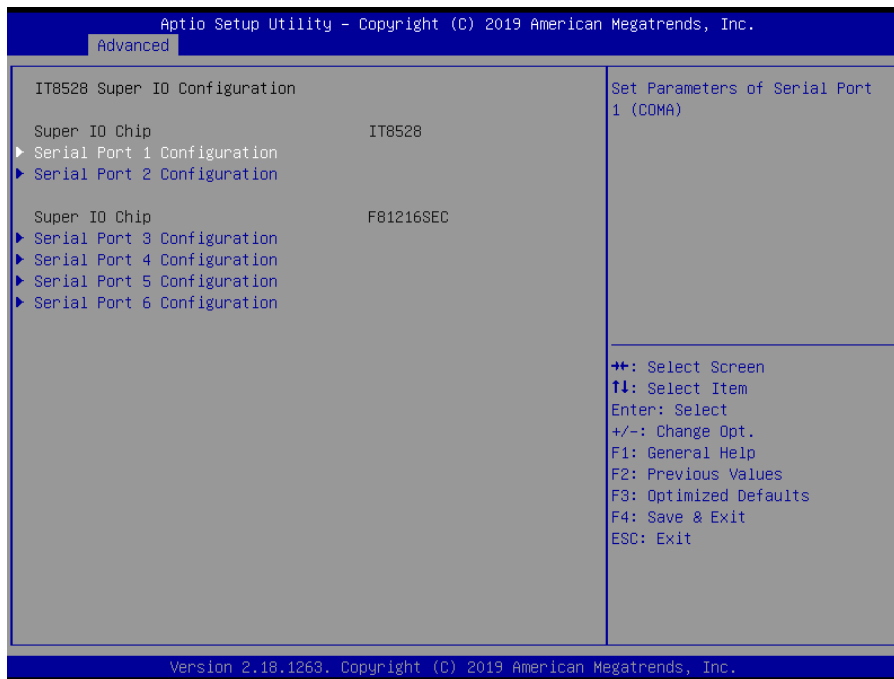


Quick Reference Guide

| Item | Options | Description |
|----------------------------------|--|---|
| Enable Hibernation | Disabled Enabled[Default] | Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS. |
| ACPI Sleep State | Suspend Disabled, S3 (Suspend to RAM)[Default] | Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. |
| 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. |
| USB Standby Power Setting | Disabled Enabled[Default] | Enabled/Disabled USB Standby Power during S3/S4/S5. |
| Wake Up By Ring | Disabled Enabled[Default] | Wake Up by Ring from S3/S4/S5. |

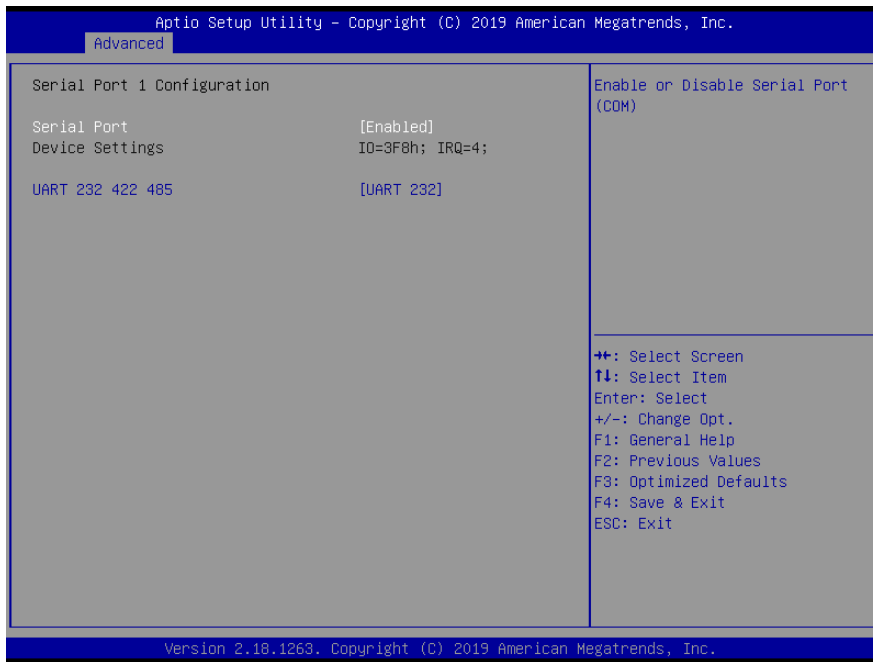
3.6.2.3 IT8528 Super IO Configuration

You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.3.1~ 3.6.2.3.6 for more information.



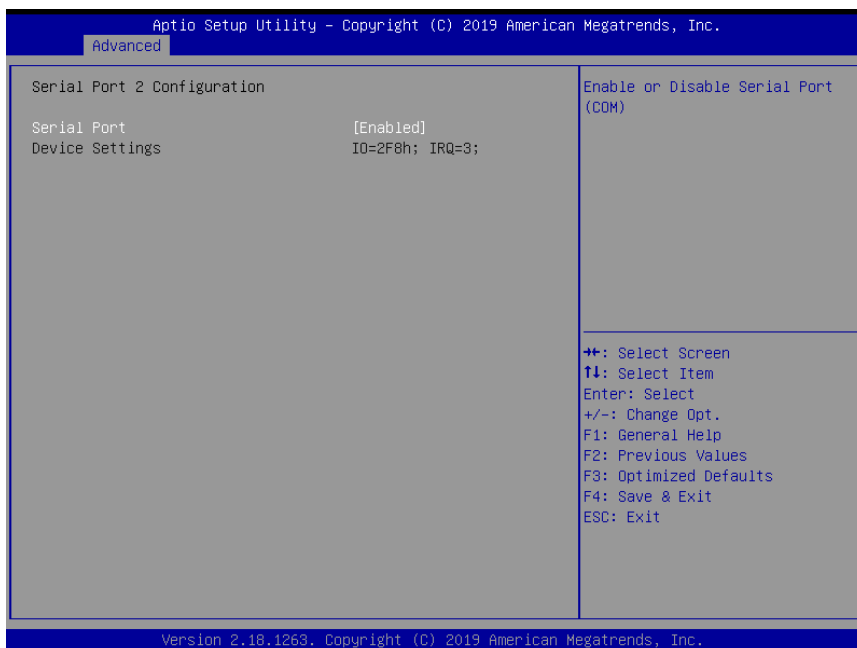
| Item | Description |
|------------------------------------|---|
| Serial Port 1 Configuration | Set Parameters of Serial Port 1 (COMA). |
| Serial Port 2 Configuration | Set Parameters of Serial Port 2 (COMB). |
| Serial Port 3 Configuration | Set Parameters of Serial Port 3 (COMC). |
| Serial Port 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). |

3.6.2.3.1 Serial Port 1 Configuration



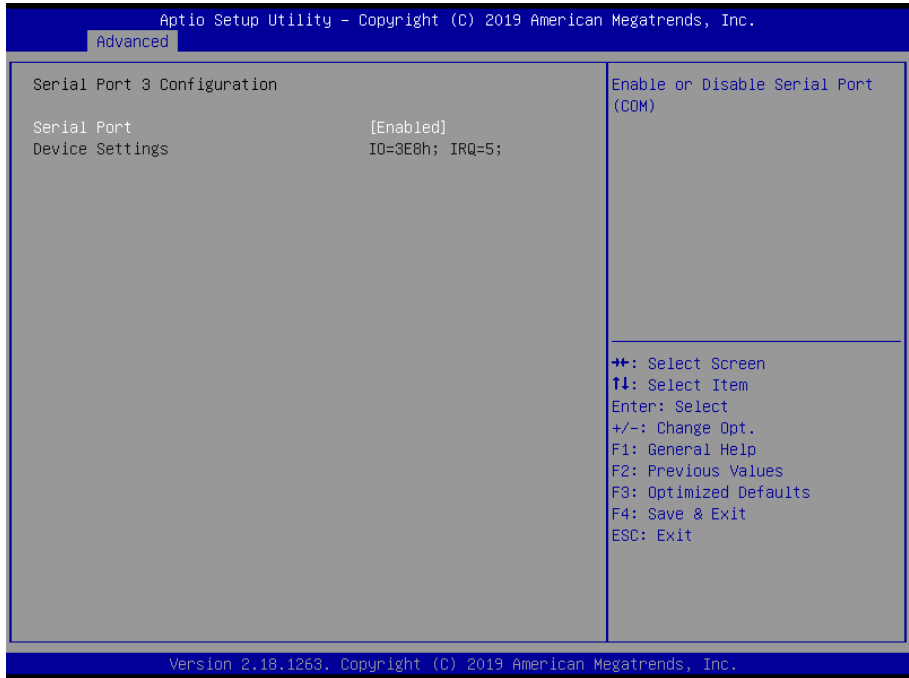
| Item | Option | Description |
|------------------|---|--|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |
| UART 232 422 485 | UART 232[Default] UART 422 UART 485 | Change the Serial Port as RS232/422/485. |

3.6.2.3.2 Serial Port 2 Configuration



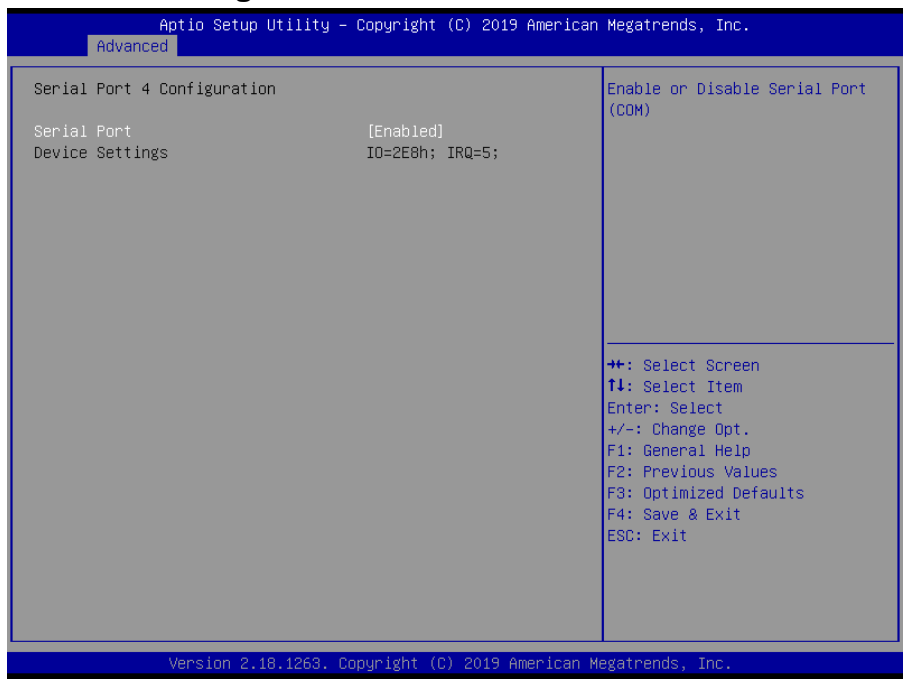
| Item | Option | Description |
|-------------|------------------------------|--------------------------------------|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |

3.6.2.3.3 Serial Port 3 Configuration



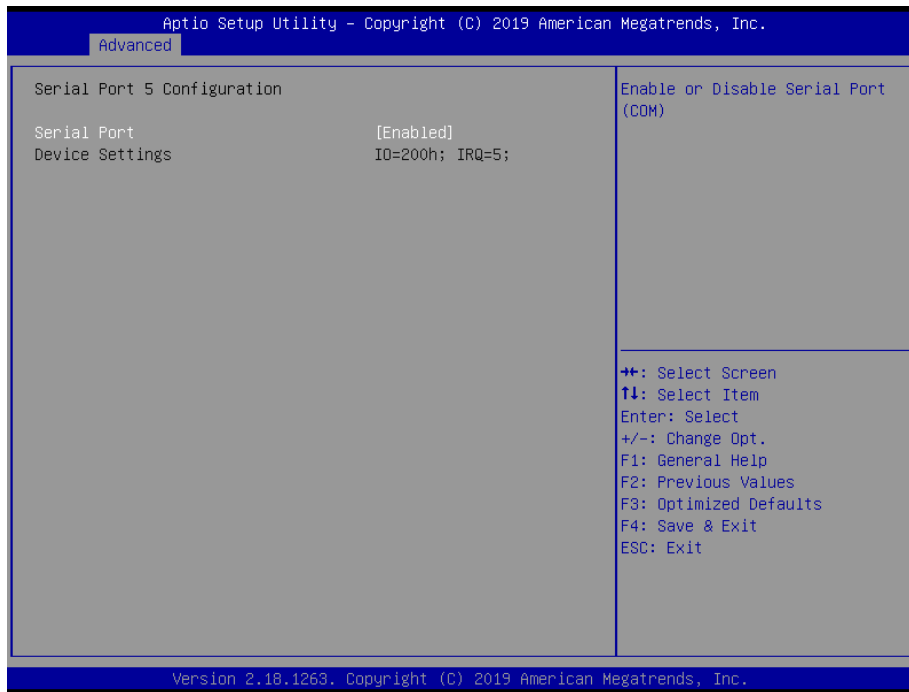
| Item | Option | Description |
|-------------|------------------------------|--------------------------------------|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |

3.6.2.3.4 Serial Port 4 Configuration



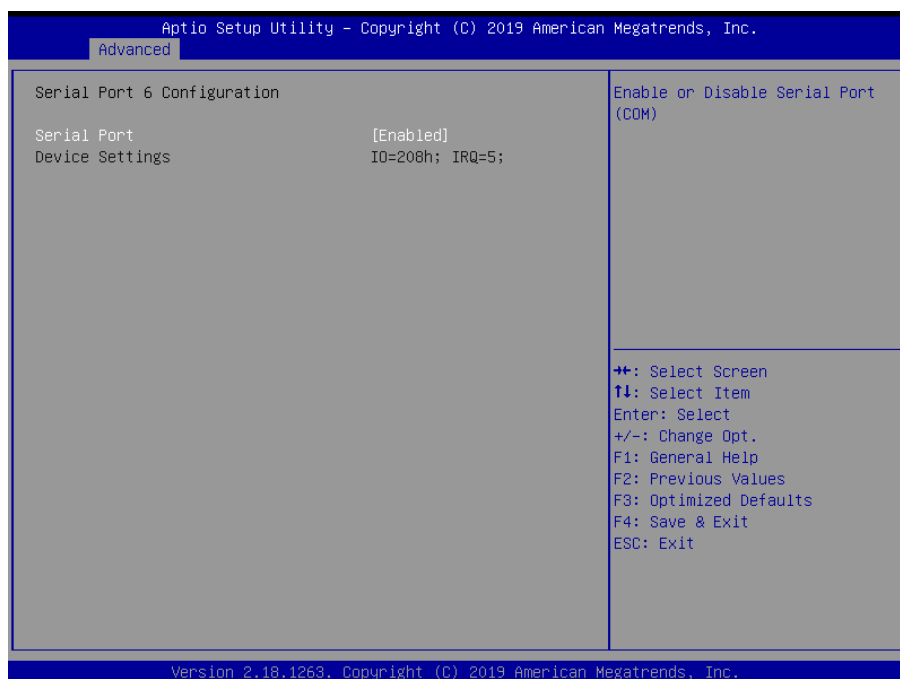
| Item | Option | Description |
|-------------|------------------------------|--------------------------------------|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |

3.6.2.3.5 Serial Port 5 Configuration



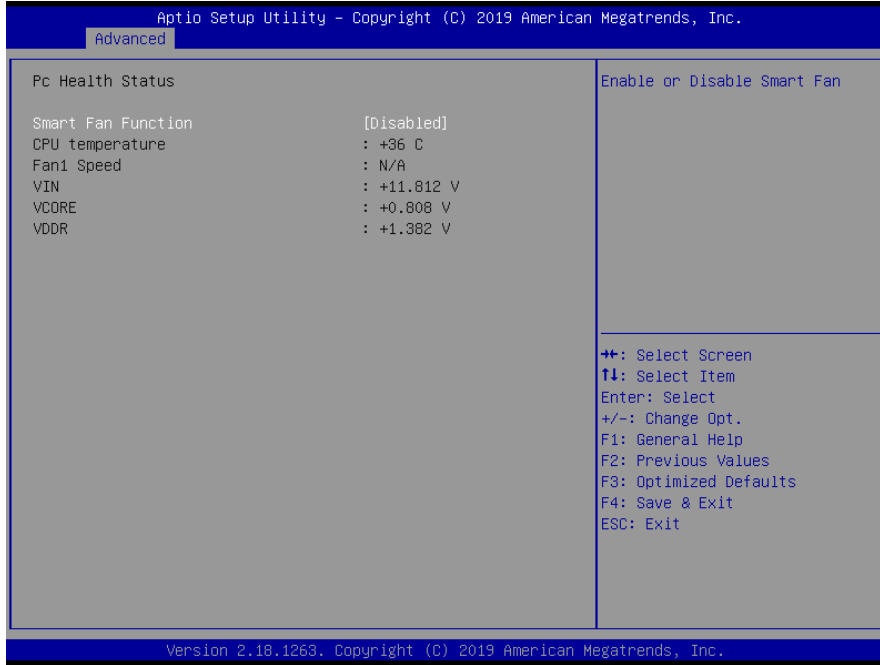
| Item | Option | Description |
|-------------|------------------------------|--------------------------------------|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |

3.6.2.3.6 Serial Port 6 Configuration



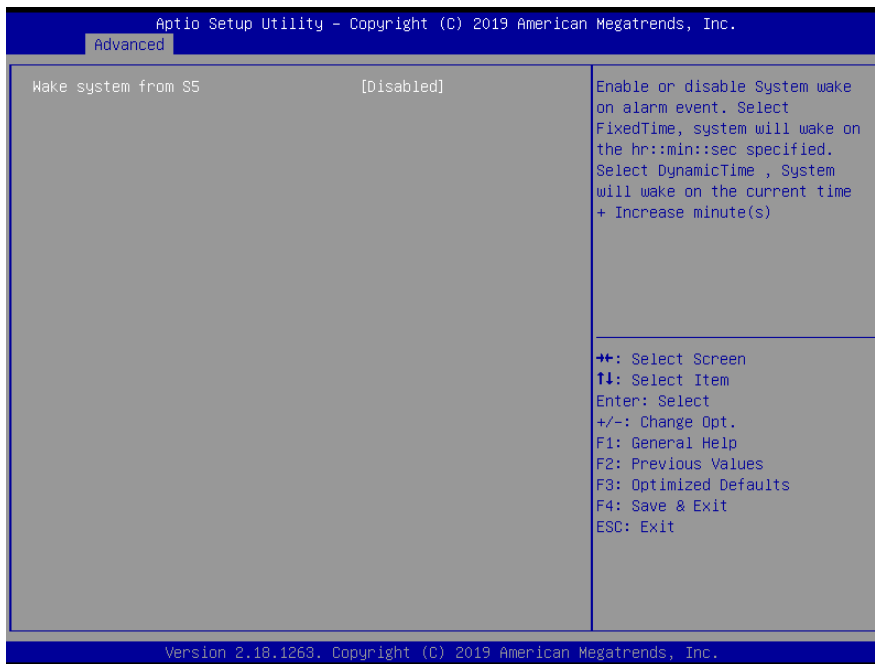
| Item | Option | Description |
|-------------|------------------------------|--------------------------------------|
| Serial Port | Disabled Enabled[Default] | Enable or Disable Serial Port (COM). |

3.6.2.4 H/W Monitor



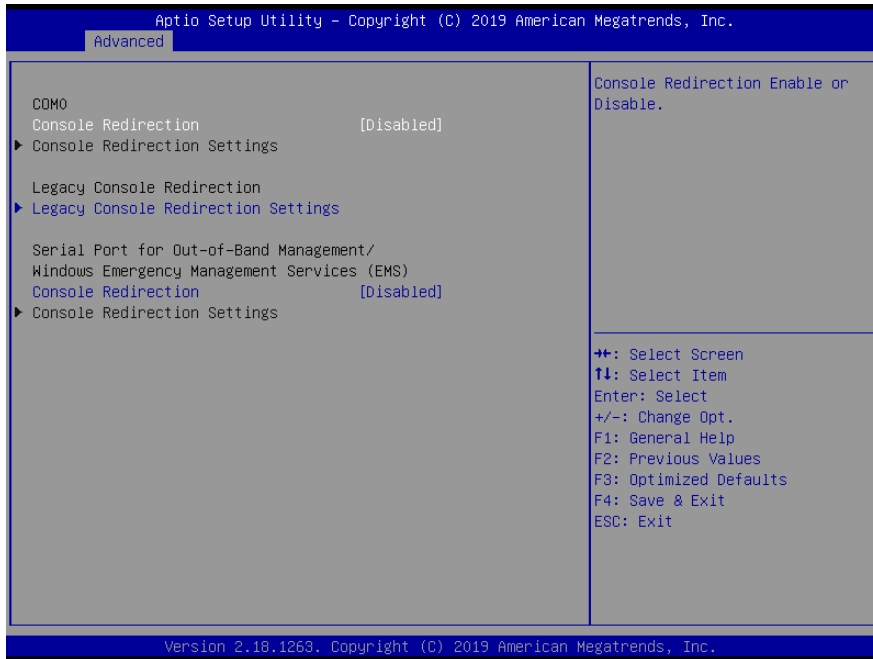
| Item | Options | Description |
|--------------------|-------------------------------|--------------------------------|
| Smart Fan Function | Enabled, Disabled[Default] | Enables or Disables Smart Fan. |

3.6.2.5 S5 RTC Wake Settings



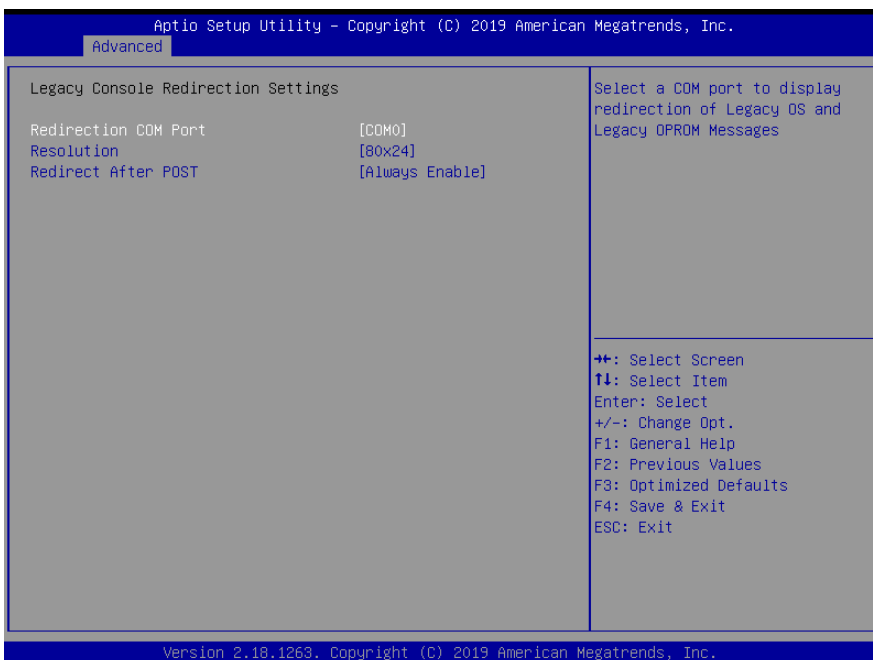
| Item | Options | Description |
|---------------------|--|--|
| Wake system from S5 | Disabled[Default], Fixed Time Dynamic Time | Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time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

3.6.2.6 Serial Port Console Redirection



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

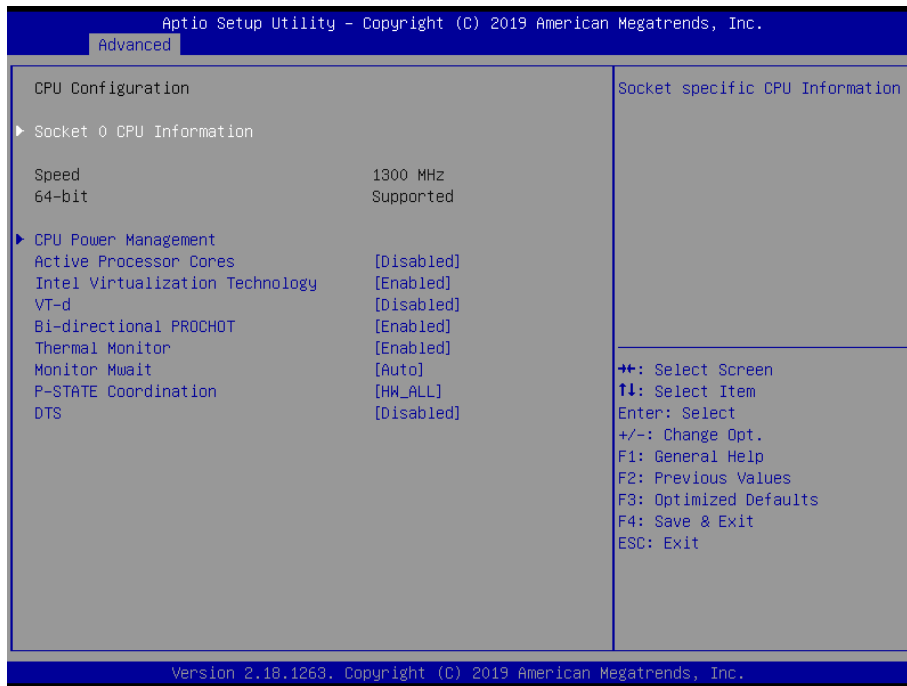
3.6.2.6.1 Legacy Console Redirection Settings



| Item | Option | Description |
|----------------------|--------------------------------------|--|
| Redirection COM Port | COM0[Default] | 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. |

3.6.2.7 CPU Configuration

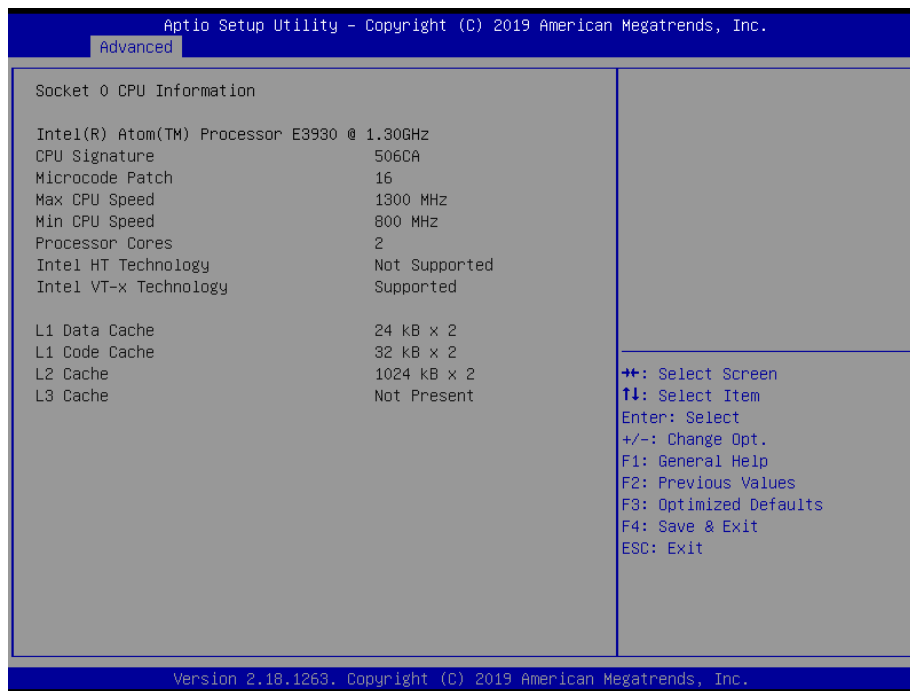
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



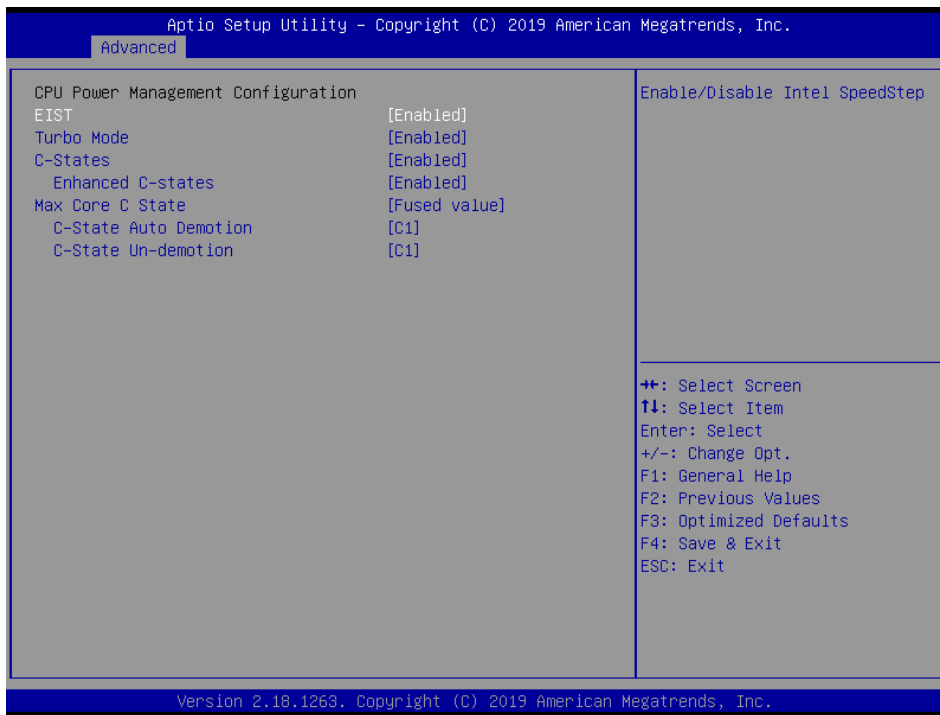
| Item | Options | Description |
|---------------------------------|------------------------------|---|
| Active Processor Cores | Disabled[Default] Enabled | Number of cores to enable in each processor package. |
| Intel Virtualization Technology | Disabled Enabled[Default] | When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. |
| VT-d | Disabled[Default] Enabled | Enable/Disable CPU VT-d. |
| Bi-directional PROCHOT | Disabled Enabled[Default] | When a processor thermal sensor trips (either core), the PROCHOT# will be driven. If bi-direction is enabled, external agents can drive PROCHOT# to throttle the processor. |

| | | |
|-----------------------------|--------------------------------------|--|
| Thermal Monitor | Disabled Enabled[Default] | Enable/Disable Thermal Monitor. |
| Monitor Mwait | Disabled Enabled Auto[Default] | Enable/Disable Monitor Mwait. |
| P-STATE Coordination | HW_ALL[Default] SW_ALL SW_ANY | Change P-STATE Coordination type. |
| DTS | Disabled[Default] Enabled | Enable/Disable Digital Thermal Sensor. |

3.6.2.7.1 Socket 0 CPU Information



3.6.2.7.2 CPU Power Management Configuration



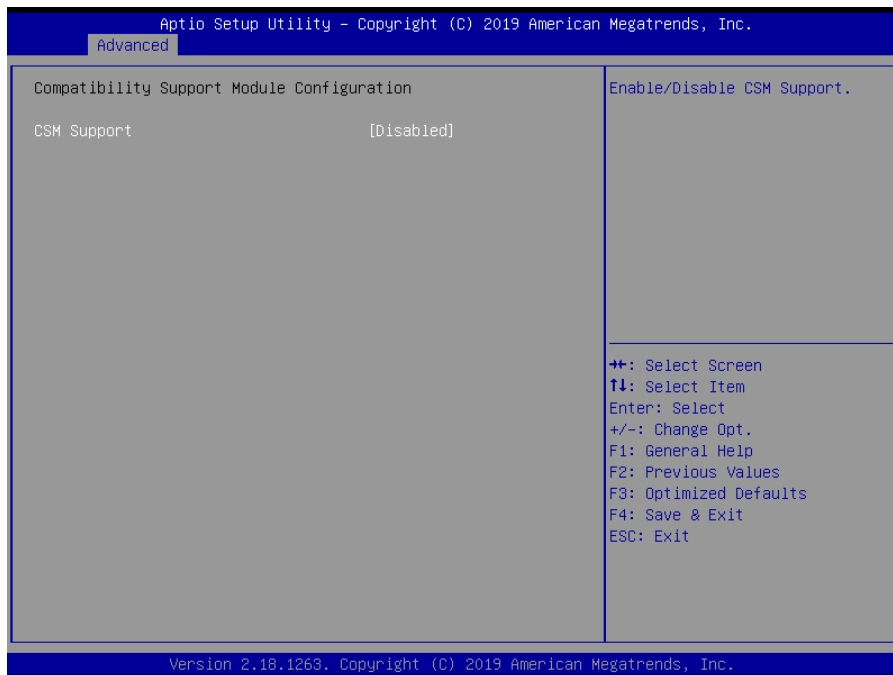
| Item | Option | Description |
|------------------------------|--|--|
| EIST | Disabled Enabled[Default] | Enable/Disable Intel SpeedStep. |
| Turbo Mode | Disabled Enabled[Default] | Turbo Mode. |
| C-States | Disabled Enabled[Default] | Enable/Disable C-States. |
| Enhanced C-states | Disabled Enabled[Default] | Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State. |
| Max Core C State | Fused value[Default] Core C10 Core C9 Core C8 Core C7 Core C6 Core C1 Unlimited | This option controls the Max Core C State that cores will support. |
| C-State Auto Demotion | Disabled C1[Default] | Configure C-State Auto Demotion. |
| C-State Un-demotion | Disabled C1[Default] | Configure C-State Un-demotion. |

3.6.2.8 Network Stack Configuration



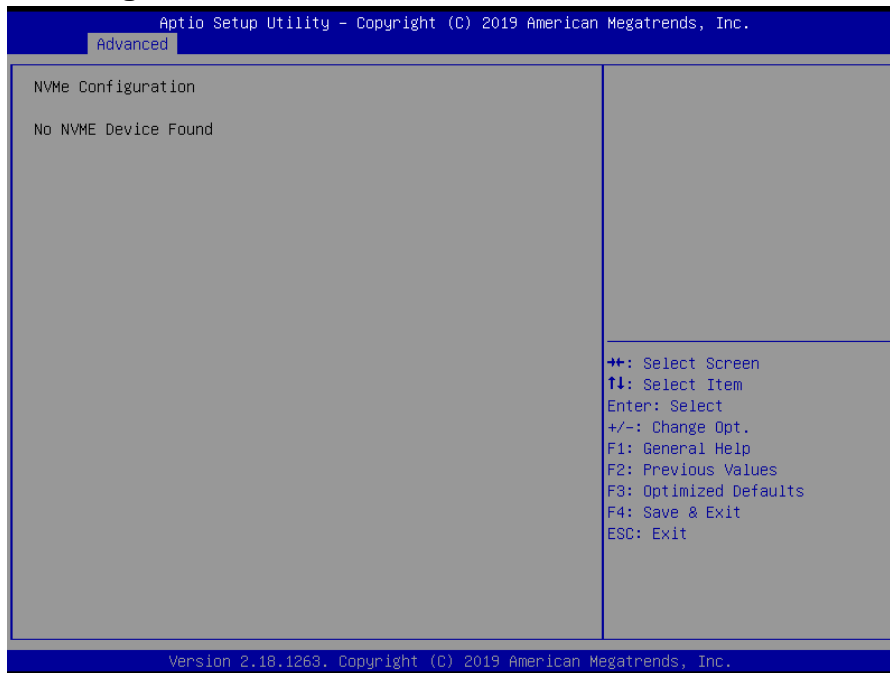
| Item | Options | Description |
|----------------------|------------------------------|------------------------------------|
| Network Stack | Disabled[Default] Enabled | Enable/Disable UEFI Network Stack. |

3.6.2.9 CSM Configuration



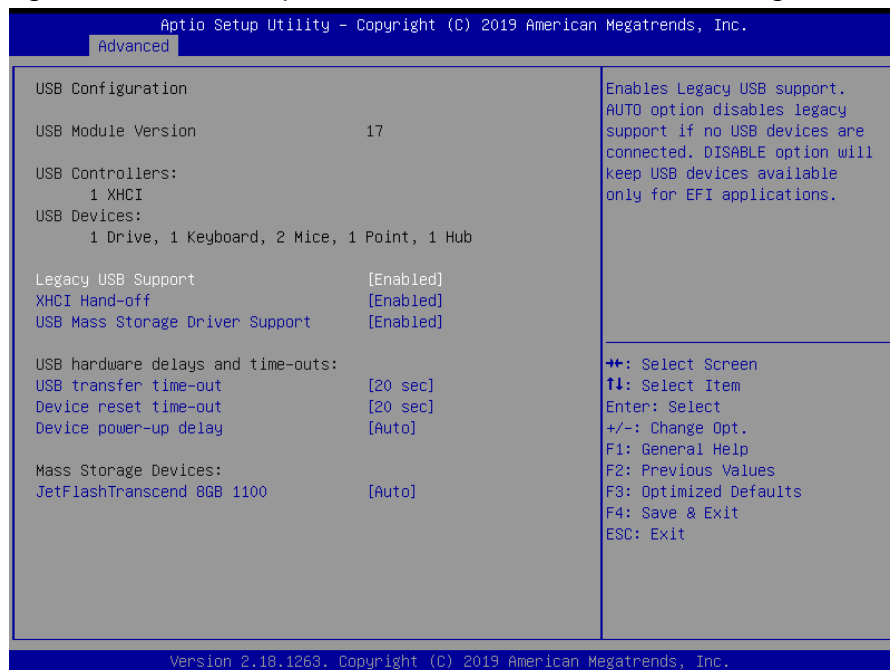
| Item | Options | Description |
|--------------------|------------------------------|-----------------------------|
| CSM Support | Disabled[Default] Enabled | Enable/Disable CSM Support. |

3.6.2.10 NVMe Configuration



3.6.2.11 USB Configuration

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

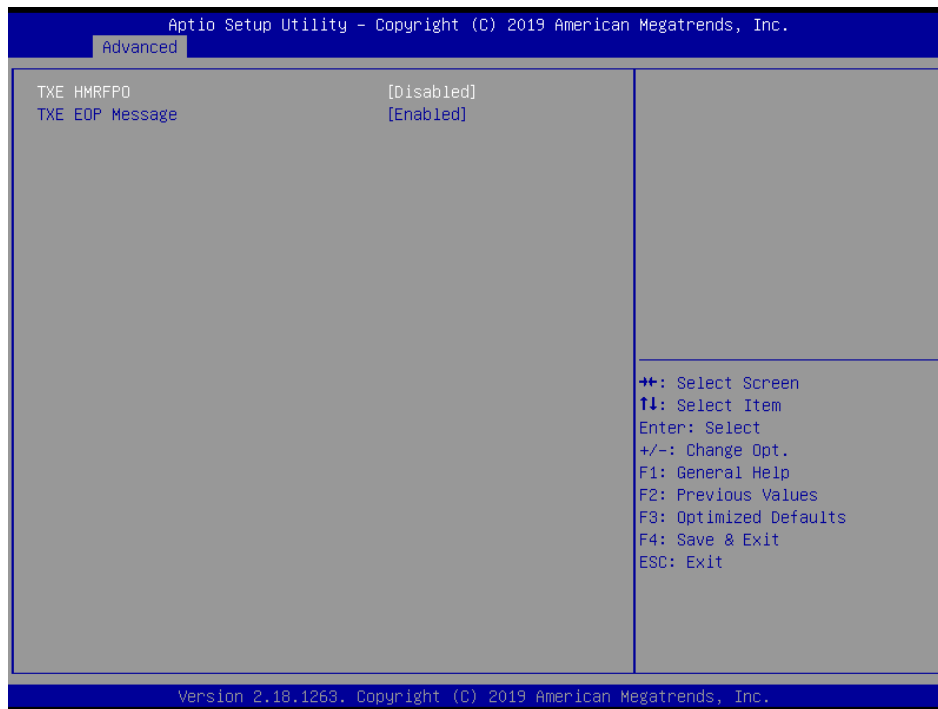


| Item | Options | Description |
|---------------------------|--------------------------------------|--|
| Legacy USB Support | Enabled[Default] Disabled Auto | Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. |
| XHCI Hand-off | Disabled Enabled[Default] | This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. |

Quick Reference Guide

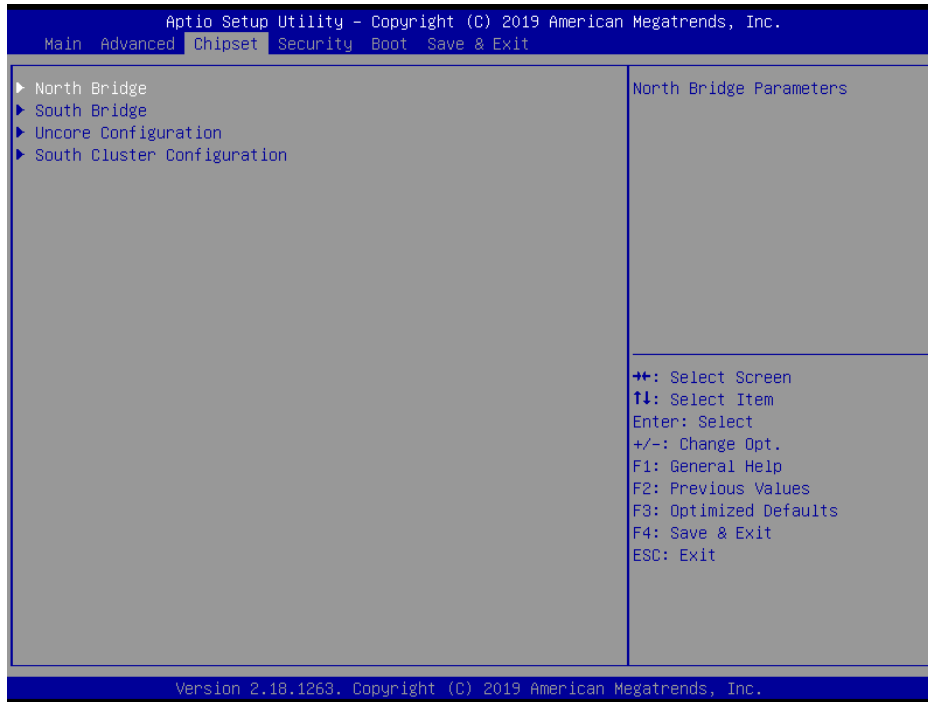
| | | |
|--|---|--|
| USB Mass Storage Driver Support | Disabled Enabled[Default] | Enable/Disable USB Mass Storage Driver Support. |
| USB transfer time-out | 1 sec 5 sec 10 sec 20 sec[Default] | The time-out value for Control, Bulk, and Interrupt transfers. |
| Device reset time-out | 10 sec 20 sec[Default] 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. |
| Mass Storage Devices | 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. |

3.6.2.12 Security Configuration



| Item | Options | Description |
|------------------------|---------------------------------------|-----------------------------------|
| TXE HMRFP0 | Enabled Disabled[Default] | TXE HMRFP0. |
| TXE EOP Message | Enabled[Default] Disabled | Send EOP Message Before Enter OS. |

3.6.3 Chipset



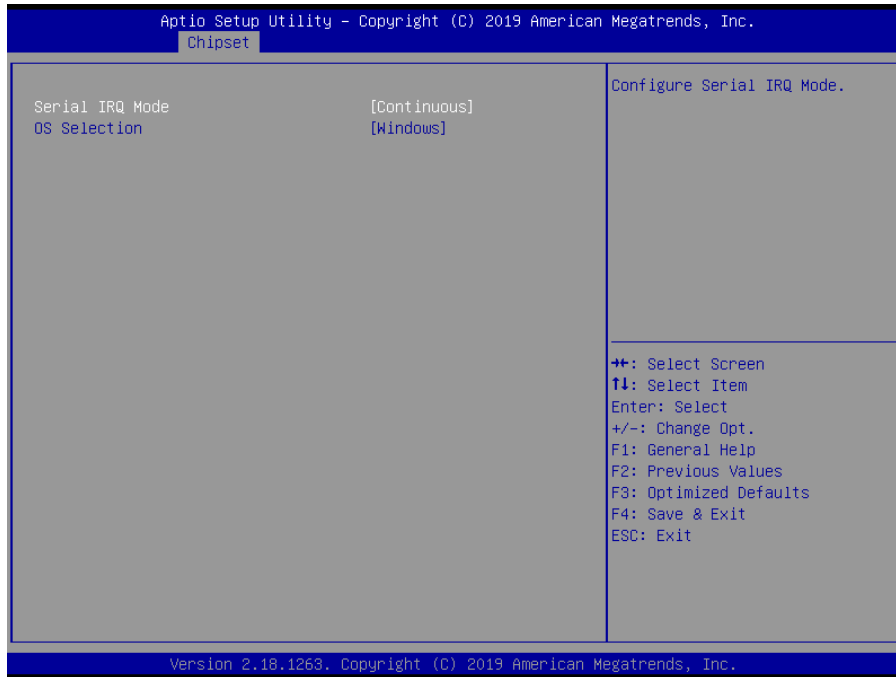
3.6.3.1 North Bridge



| Item | Option | Description |
|------------------|----------------------|-------------------------|
| Max TOLUD | 2 GB[Default] | Maximum Value of TOLUD. |
| | 2.25 GB | |
| | 2.5 GB | |
| | 2.75 GB | |

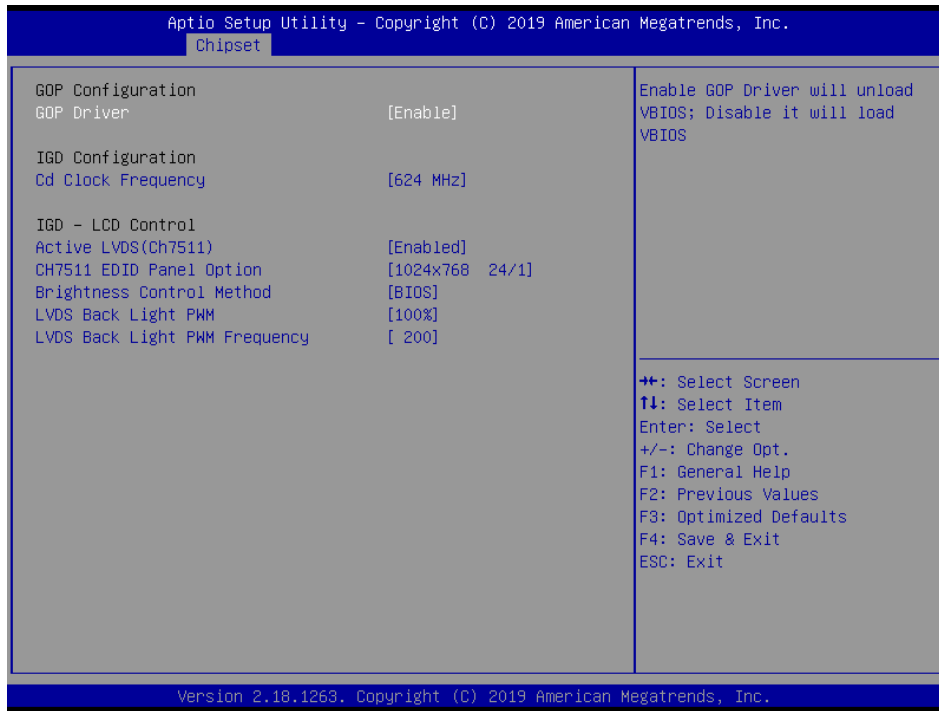
| | | |
|---------------------------------------|---------------------------------------|--|
| Above 4GB MMIO BIOS assignment | Enabled Disabled[Default] | Enable/Disable above 4GB MemoryMappedIO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB. |
|---------------------------------------|---------------------------------------|--|

3.6.3.2 South Bridge



| Item | Option | Description |
|------------------------|---|----------------------------|
| Serial IRQ Mode | Quiet Continuous[Default] | Configure Serial IRQ Mode. |
| OS Selection | Windows[Default] Android Intel Linux | Select the target OS. |

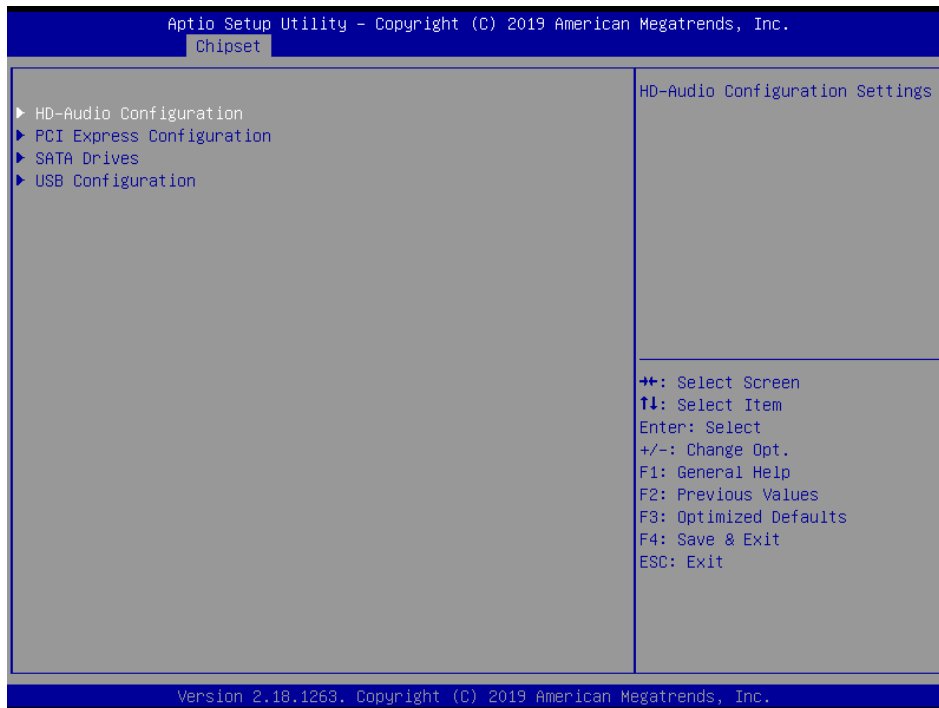
3.6.3.3 Uncore Configuration



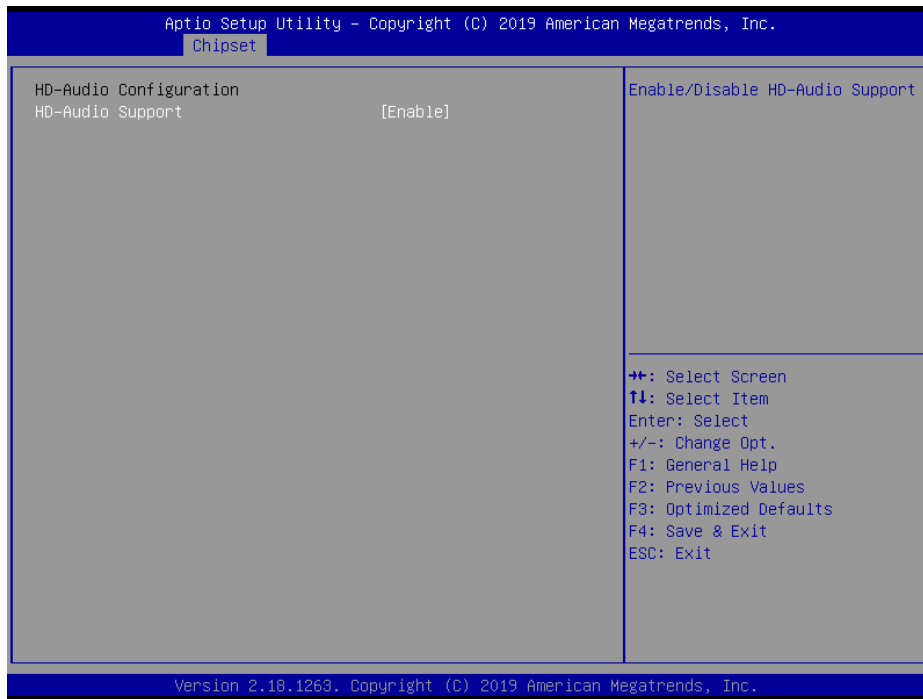
| Item | Option | Description |
|----------------------------------|---|---|
| GOP Driver | Enable[Default] Disable | Enable GOP Driver will unload VBIOS ; Disable it will load VBIOS. |
| Cd Clock Frequency | 144 MHz 288 MHz 384 MHz 576 MHz 624 MHz[Default] | Select the highest Cd Clock frequency supported by the platform. |
| Active LVDS (CH7511) | Disabled Enabled[Default] | Active Internal LVDS(eDP->Ch7511-to-LVDS). |
| CH7511 EDID Panel Option | 1024x768 24/1 800x600 18/1[Default] 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. |
| Brightness Control Method | BIOS[Default] OS Driver | LVDS Brightness Control Method. 1.BIOS 2.Brightness Button 3.Variable Resistor 4.OS Driver. |

| | | |
|---|--|--|
| <p>LVDS Back Light PWM</p> | <p>00% 25% 50% 75% 100%[Default]</p> | <p>Select LVDS back light PWM duty.</p> |
| <p>LVDS Back Light PWM Frequency</p> | <p>200 300 400 500 700 1k 2k 3k 5k 10k 20k[Default]</p> | <p>Select LVDS back light PWM Frequency.</p> |

3.6.3.4 South Cluster Configuration

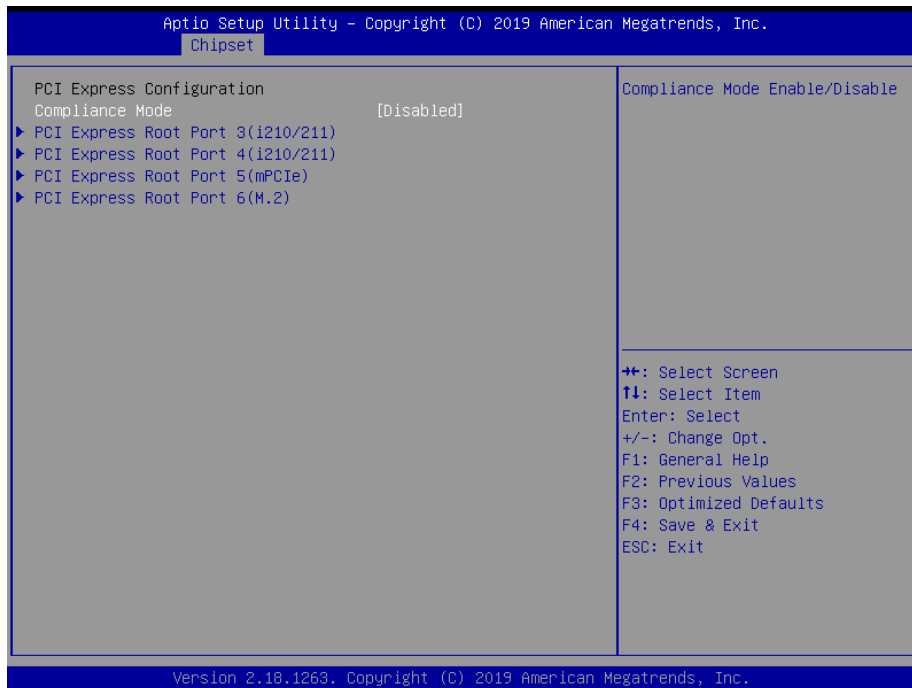


3.6.3.4.1 HD-Audio Configuration



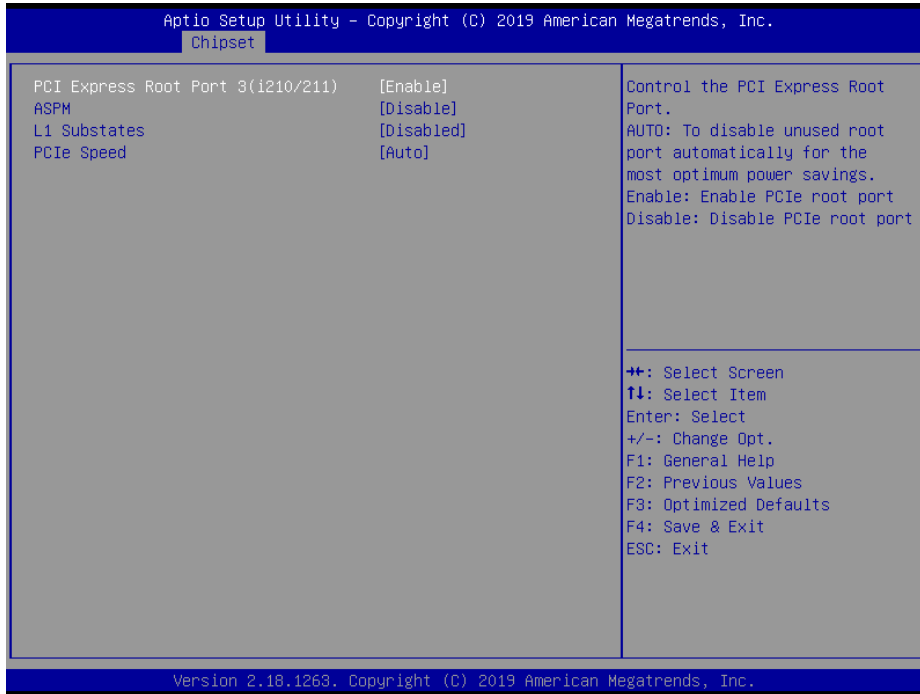
| Item | Option | Description |
|------------------|----------------------------|----------------------------------|
| HD-Audio Support | Disable Enable[Default] | Enable/Disable HD-Audio Support. |

3.6.3.4.2 PCI Express Configuration



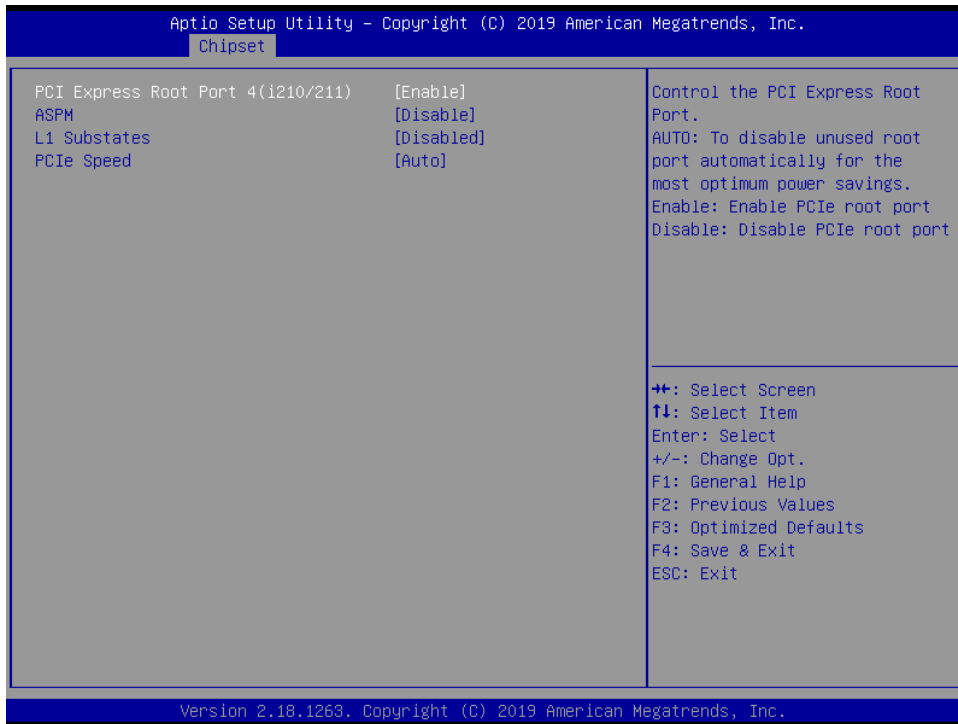
| Item | Option | Description |
|------------------------|---------------------------------------|---------------------------------|
| Compliance Mode | Disabled[Default] Enabled | Compliance Mode Enable/Disable. |

3.6.3.4.2.1 PCI Express Root Port 3(i210/211)



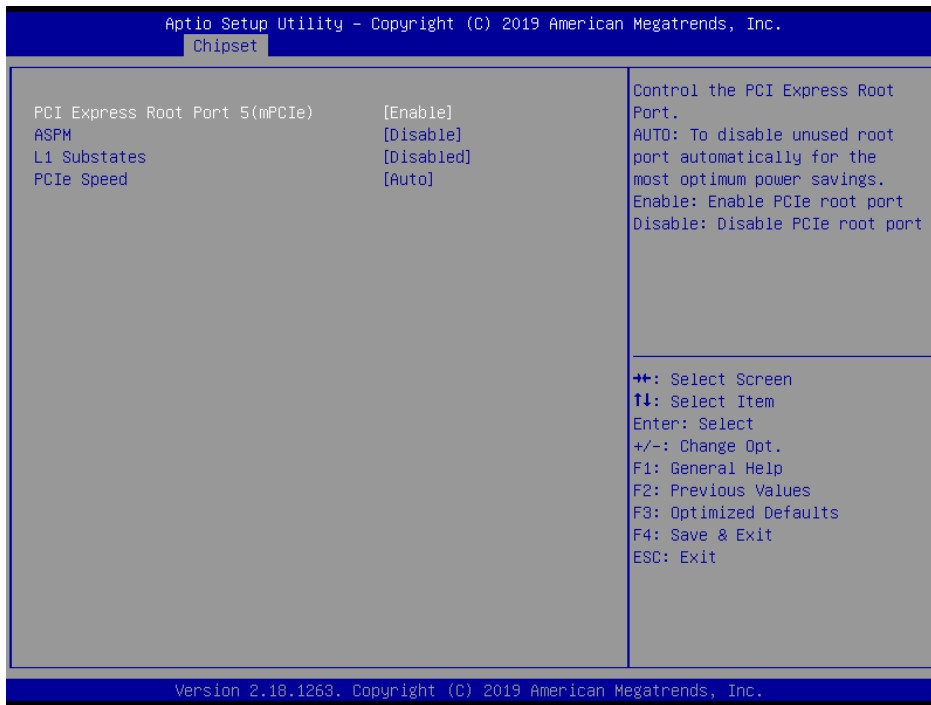
| Item | Option | Description |
|--|---|---|
| PCI Express Root Port 3(i210/211) | Enabled[Default], Disabled | Control the PCI Express Root Port. AUTO: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port. |
| ASPM | Disable[Default] L0s L1 L0sL1 Auto | PCI Express Active State Power Management settings. |
| L1 Substates | Disabled[Default] L1.1 L1.2 L1.1 & L1.2 | PCI Express L1 Substates settings. |
| PCIe Speed | Auto[Default] Gen1 Gen2 | Configure PCIe Speed. |

3.6.3.4.2.2 PCI Express Root Port 4(i210/211)



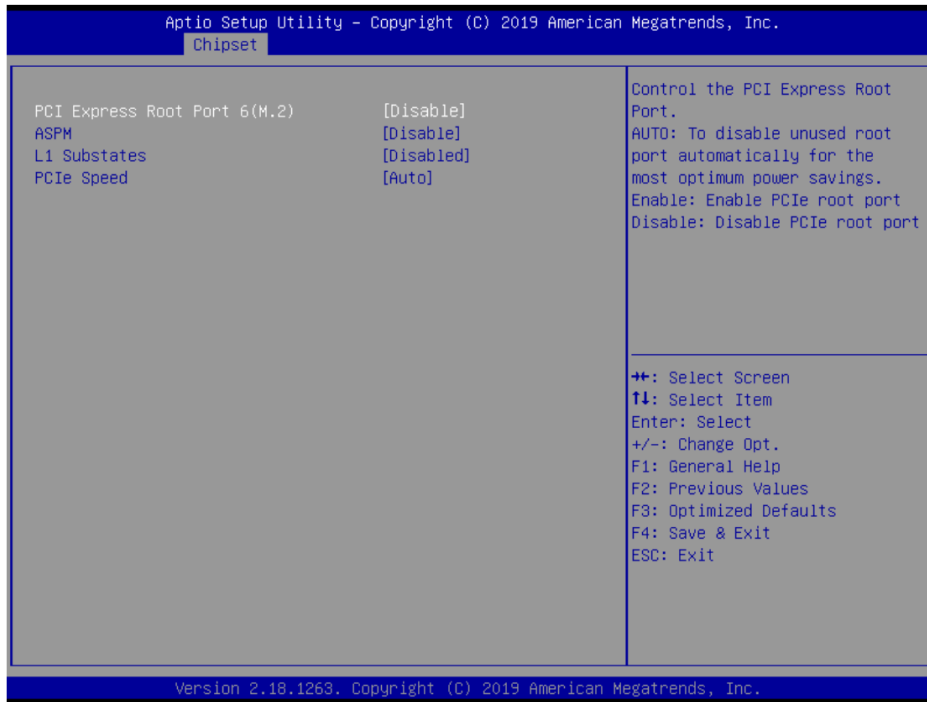
| Item | Option | Description |
|--|--|---|
| PCI Express Root Port 4(i210/211) | Enabled[Default], Disabled | Control the PCI Express Root Port. AUTO: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port. |
| ASPM | Disable[Default] L0s L1 L0sL1 Auto | PCI Express Active State Power Management settings. |
| L1 Substates | Disabled[Default] L1.1 L1.2 L1.1 & L1.2 | PCI Express L1 Substates settings. |
| PCIe Speed | Auto[Default] Gen1 Gen2 | Configure PCIe Speed. |

3.6.3.4.2.3 PCI Express Root Port 5(mPCIe)



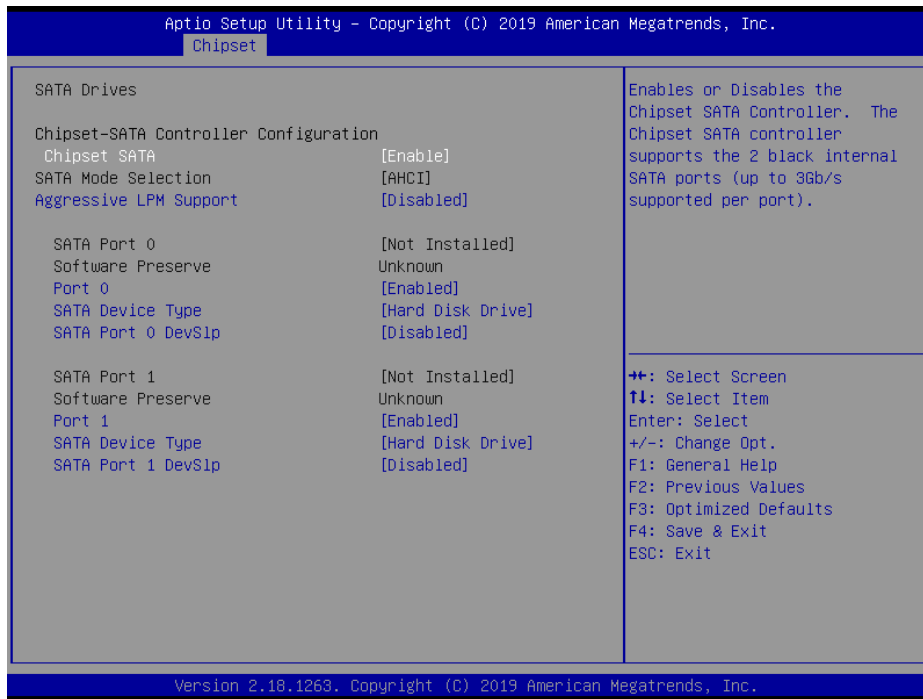
| Item | Option | Description |
|---------------------------------------|---|---|
| PCI Express Root Port 5(mPCIe) | Enabled[Default], Disabled | Control the PCI Express Root Port. AUTO: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port. |
| ASPM | Disable[Default] L0s L1 L0sL1 Auto | PCI Express Active State Power Management settings. |
| L1 Substates | Disabled[Default] L1.1 L1.2 L1.1 & L1.2 | PCI Express L1 Substates settings. |
| PCIe Speed | Auto[Default] Gen1 Gen2 | Configure PCIe Speed. |

3.6.3.4.2.4 PCI Express Root Port 6(M.2)



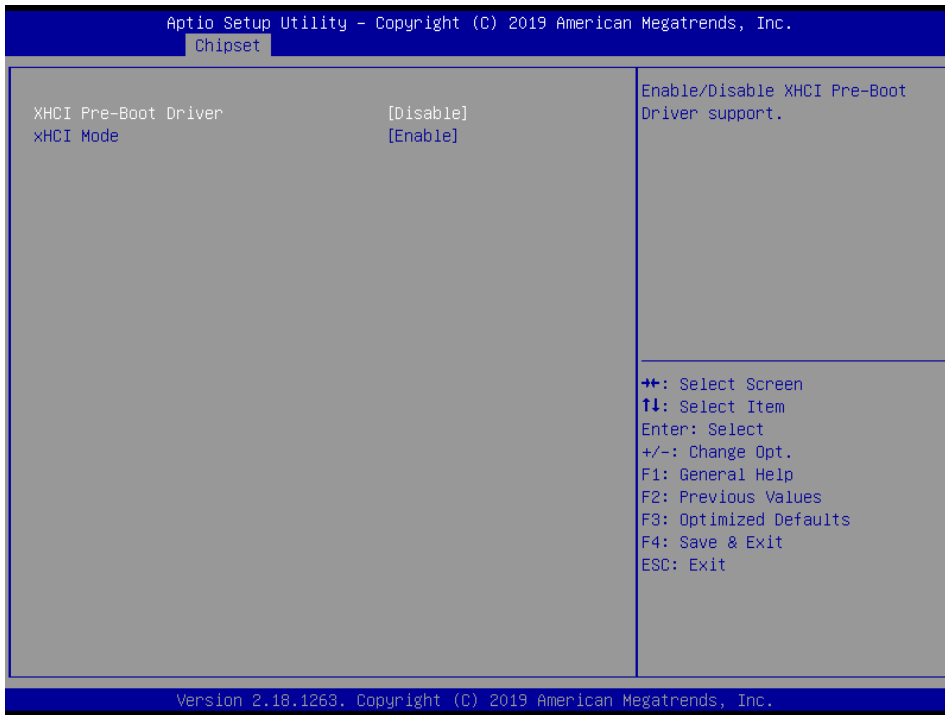
| Item | Option | Description |
|-------------------------------------|--|---|
| PCI Express Root Port 6(M.2) | Enabled Disabled[Default], | Control the PCI Express Root Port. AUTO: To disable unused root port automatically for the most optimum power savings. Enable: Enable PCIe root port Disable: Disable PCIe root port. |
| ASPM | Disable[Default] L0s L1 L0sL1 Auto | PCI Express Active State Power Management settings. |
| L1 Substates | Disabled[Default] L1.1 L1.2 L1.1 & L1.2 | PCI Express L1 Substates settings. |
| PCIe Speed | Auto[Default] Gen1 Gen2 | Configure PCIe Speed. |

3.6.3.4.3 SATA Drivers



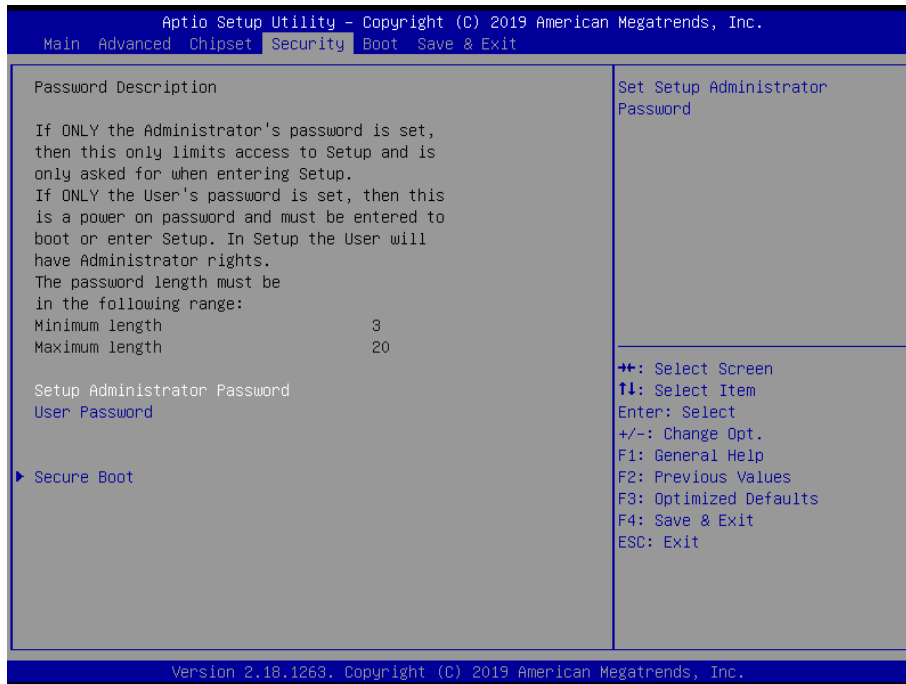
| Item | Option | Description |
|-------------------------------|---|---|
| Chipset SATA | Enable[Default] Disable | Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port). |
| Aggressive LPM Support | Disabled[Default] Enabled | Enable PCH to aggressively enter link power state. |
| Port 0/1 | 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. |
| SATA Port 0/1 DevSlp | Disabled[Default] Enabled | Enable/Disable SATA Port 0/1 DevSlp. Board rework for LP needed before enable. |

3.6.3.4.4 USB Configuration



| Item | Option | Description |
|-----------------------------|---------------------------------------|---|
| XHCI Pre-Boot Driver | Enable Disable [Default] | Enable/Disable XHCI Pre-Boot Driver support. |
| xHCI Mode | Enable [Default] Disable | Once disabled, XHCI controller would be function disabled, none of the USB devices are detectable and usable during boot and in OS. Do not disable it unless for debug purpose. |

3.6.4 Security



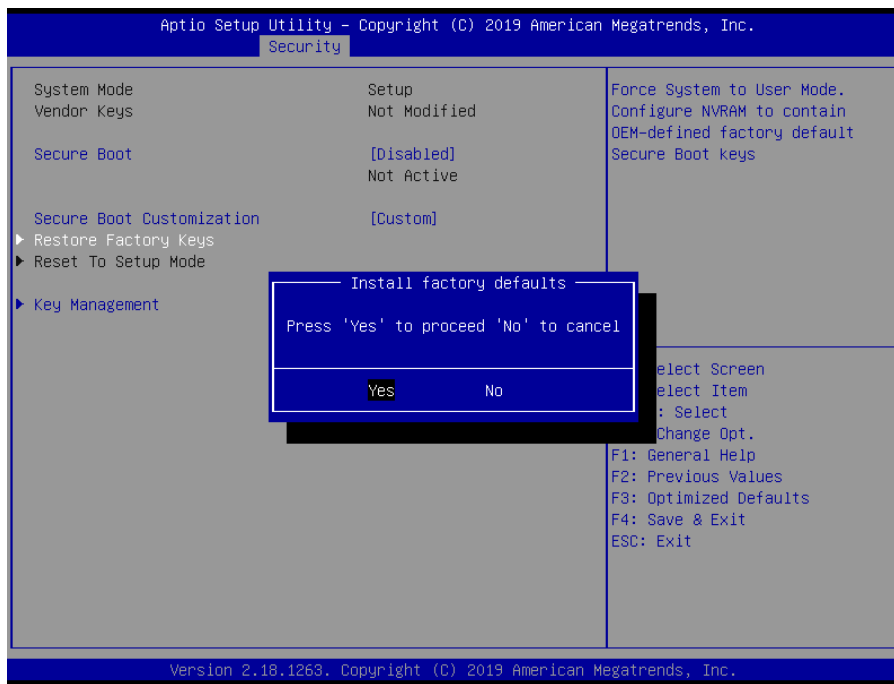
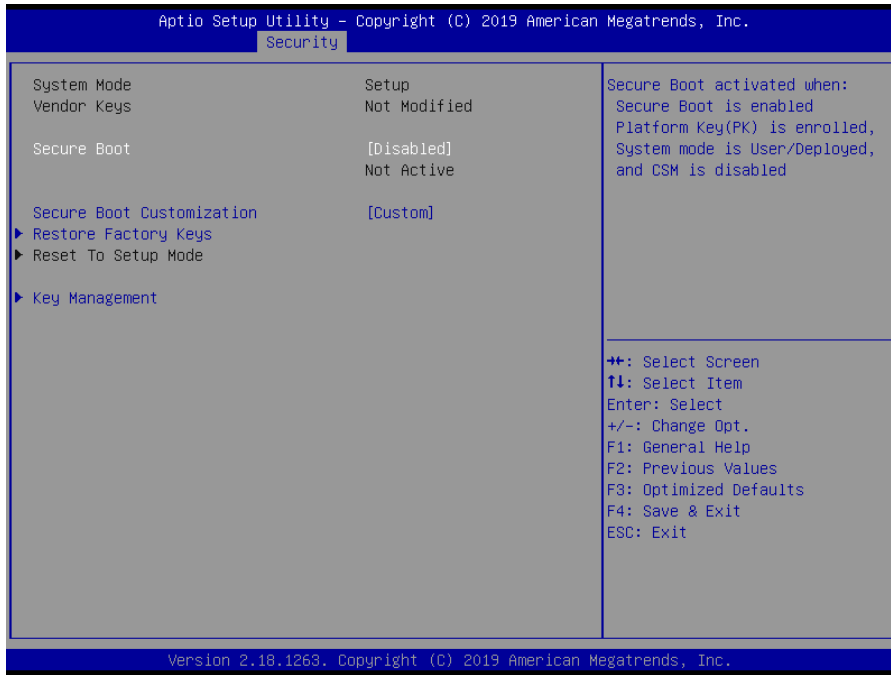
- **Setup Administrator Password**

Set setup Administrator Password

- **User Password**

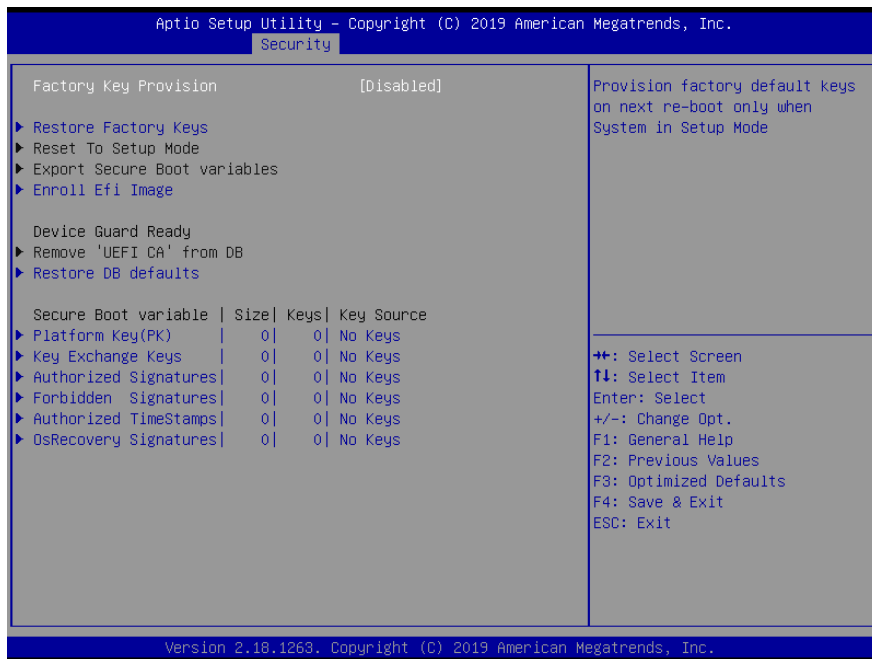
Set User Password

3.6.4.1 Secure Boot



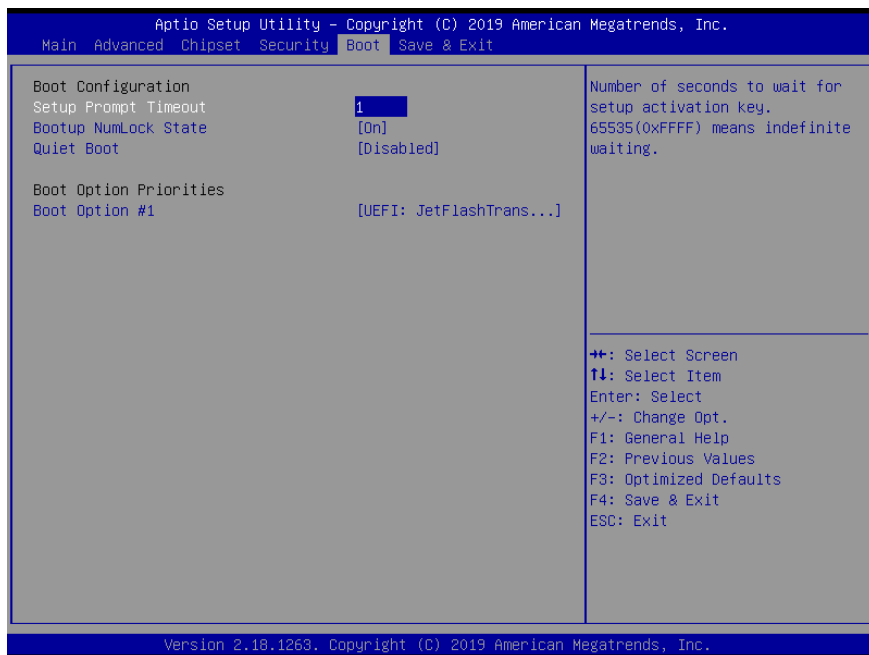
| Item | Option | Description |
|----------------------------------|---------------------------------|--|
| Secure Boot | Disabled[Default] Enabled | Secure Boot activated when: Secure Boot is enabled. Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled. |
| Secure Boot Customization | Standard Customized[Default] | Secure Boot Mode – Custom_Standard, Set UEFI Secure Boot Mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode. |

3.6.4.1.1 Key Management



| Item | Option | Description |
|----------------------------|------------------------------|--|
| Provision Factory Defaults | Disabled[Default] Enabled | Provision factory default keys on next re-boot when System is in Setup Mode. |

3.6.5 Boot

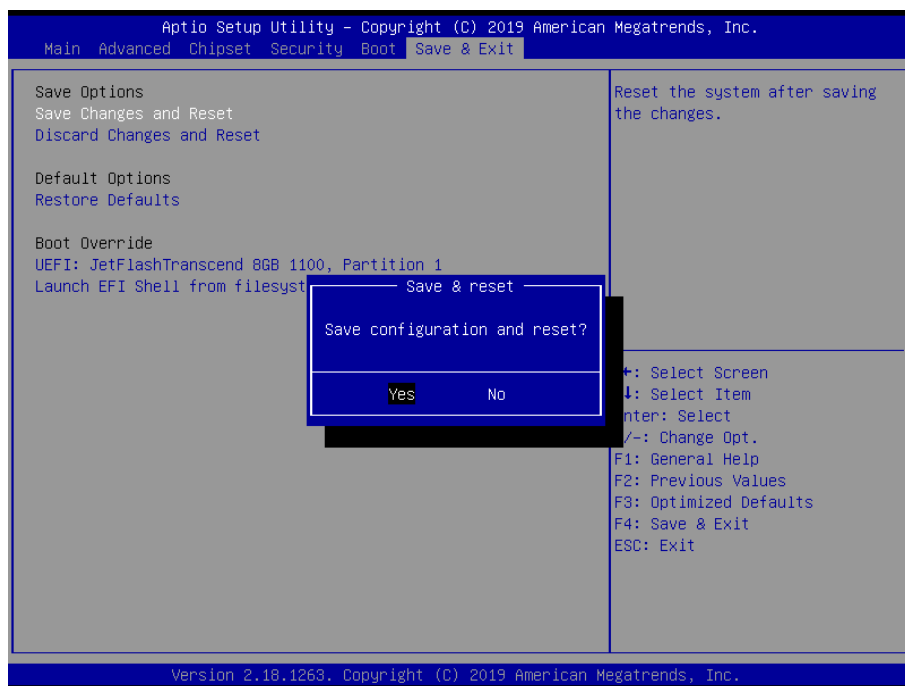
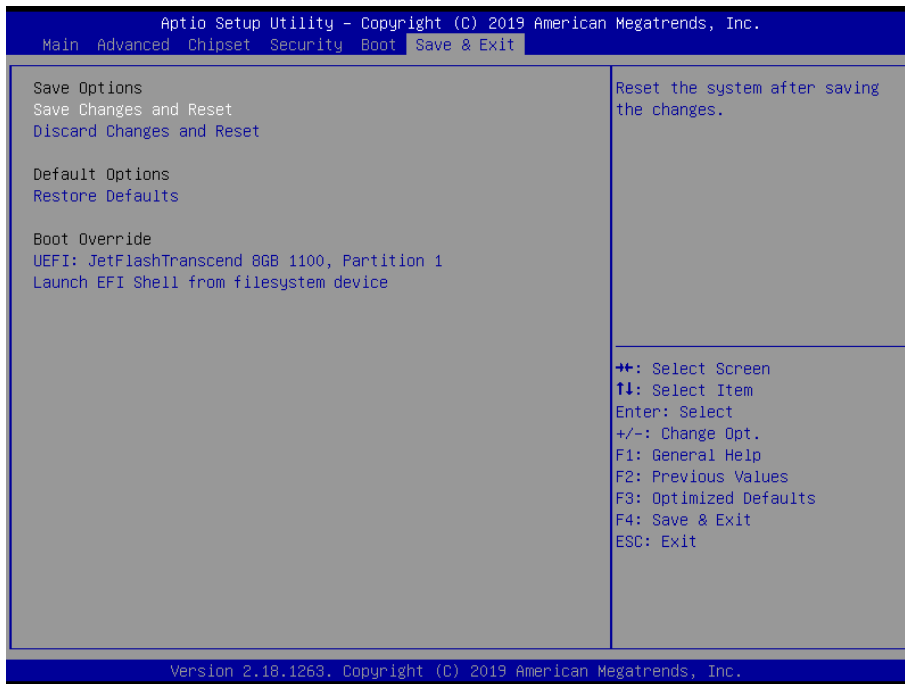


| Item | Option | Description |
|----------------------|----------|---|
| Setup Prompt Timeout | 1~ 65535 | Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting. |

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| | | |
|-----------------------------|---------------------------------------|---------------------------------------|
| Bootup NumLock State | On[Default] Off | Select the Keyboard NumLock state |
| Quiet Boot | Disabled[Default] Enabled | Enables or disables Quiet Boot option |
| Boot Option #1 | Set the system boot order. | |

3.6.6 Save and 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.

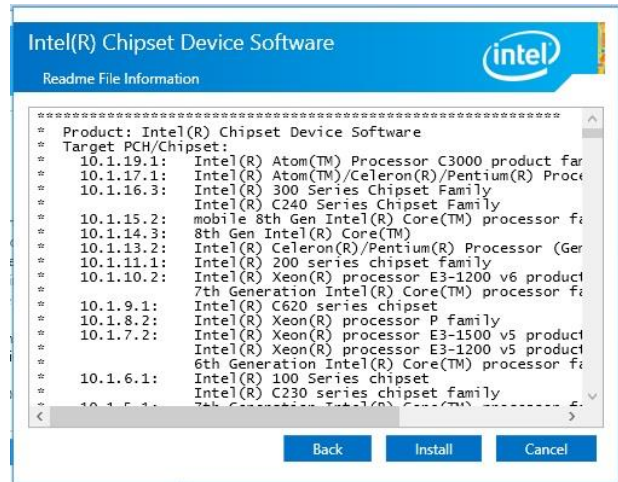
4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

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



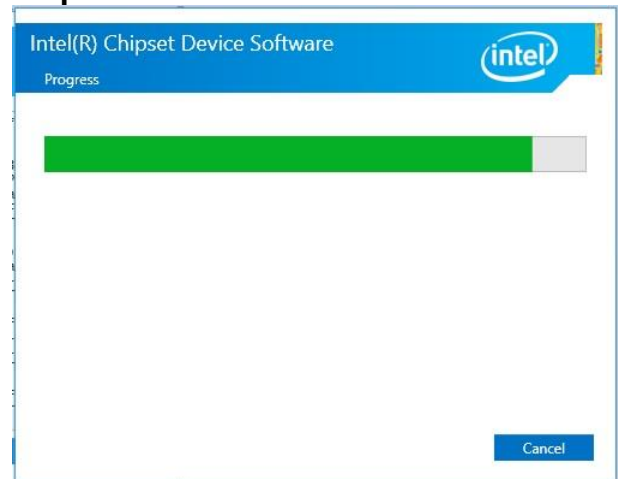
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



Step 3. Click Install.



Step 1. Click Next.



Step 4. Installing.



Step 2. Click Accept.



Step 5. Complete setup.

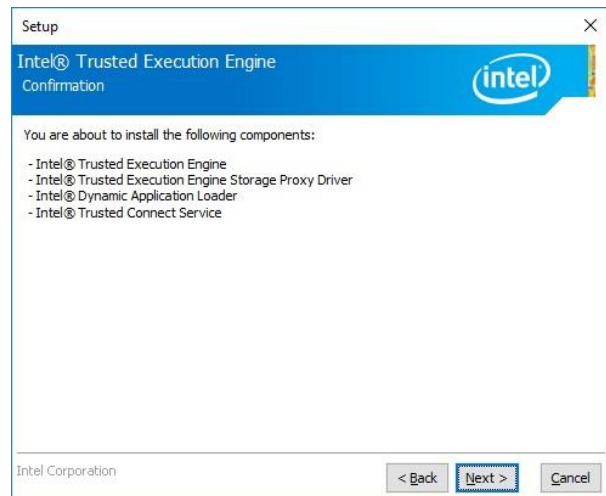
4.2 Install TXE Driver

All drivers can be found on the Avalue Official Website:

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



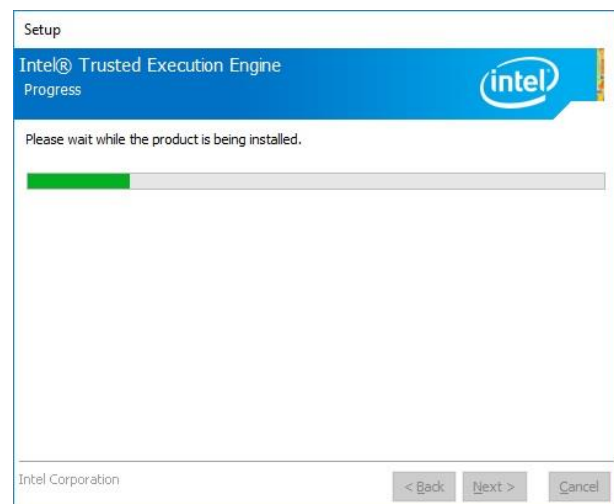
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



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



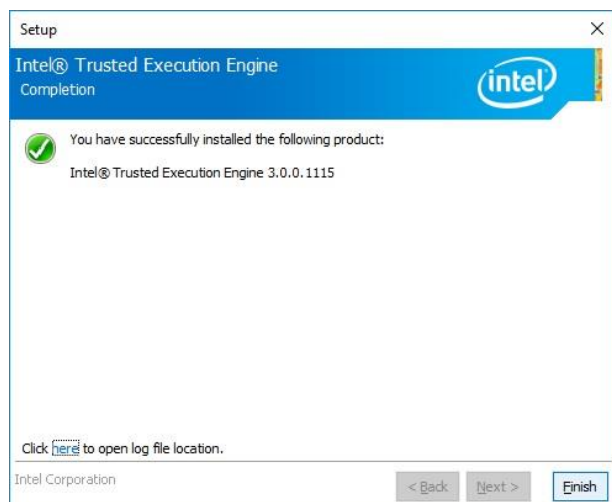
Step1. Click **Next** to start installation.



Step 4. Installing.



Step 2. Click **Next**.



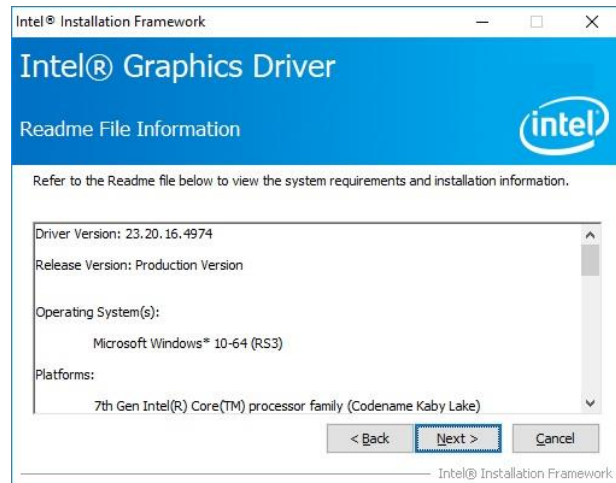
Step 5. Click **Finish** to complete setup.

4.3 Install VGA Driver

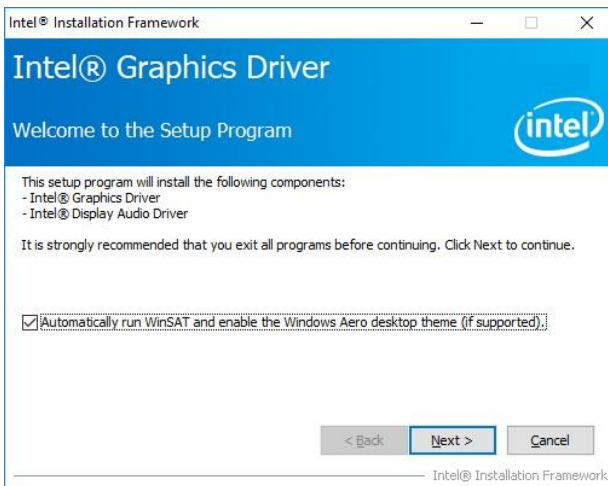
All drivers can be found on the Avalue Official Website:
<http://www.avalue.com.tw>.



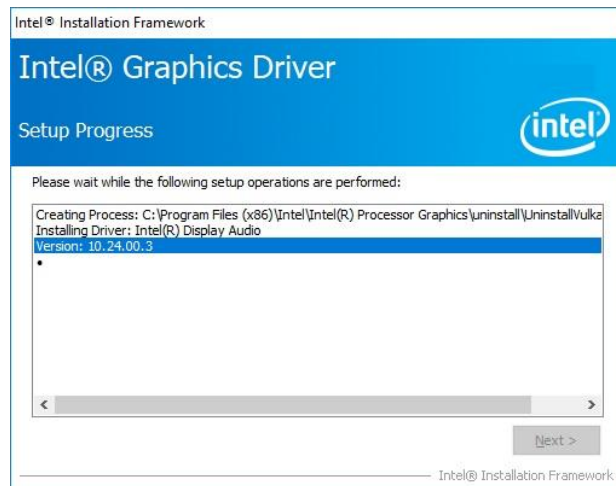
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



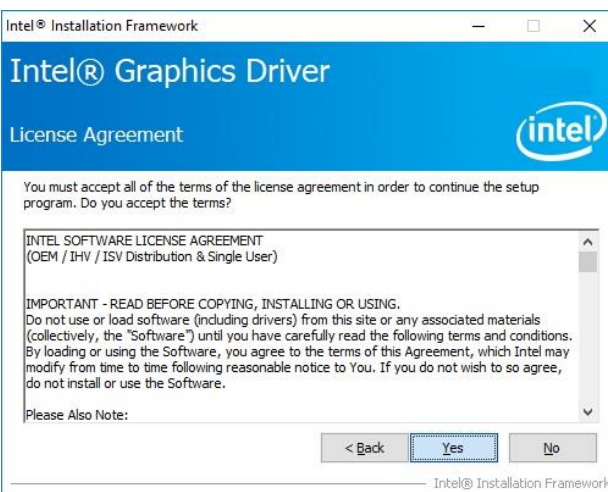
Step 3. Click Next.



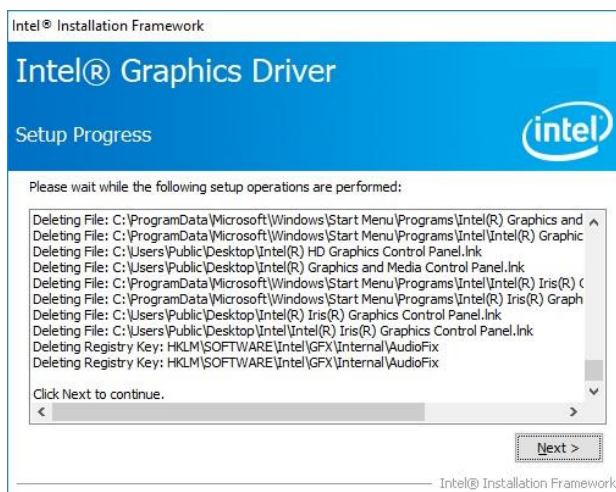
Step 1. Click Next.



Step 4. Click Next.

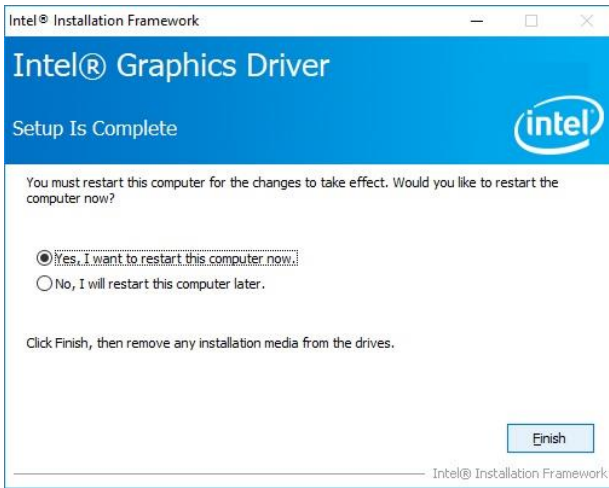


Step 2.
 Click **Yes** to accept license agreement.



Step 5. Click Next.

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

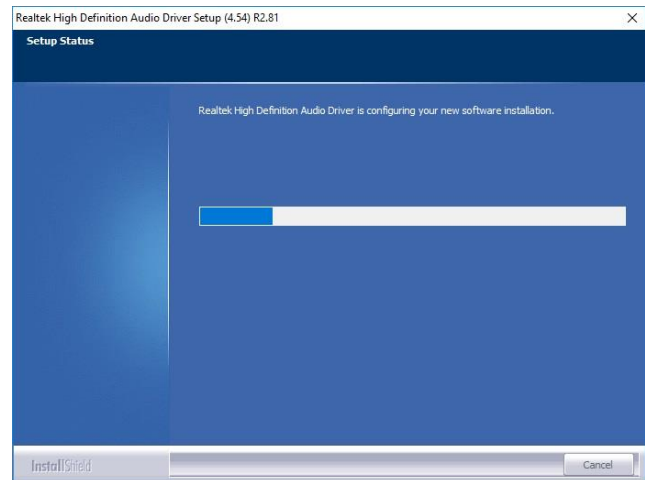
4.4 Install Audio Driver (For Realtek ALC888S)

All drivers can be found on the Avalue Official Website:

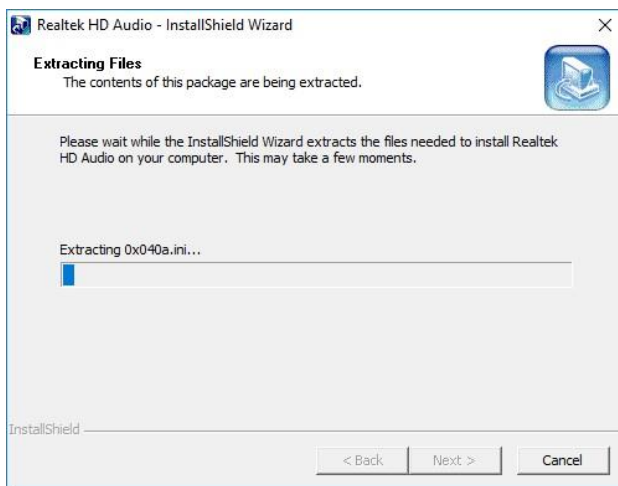
<http://www.avalue.com.tw>.



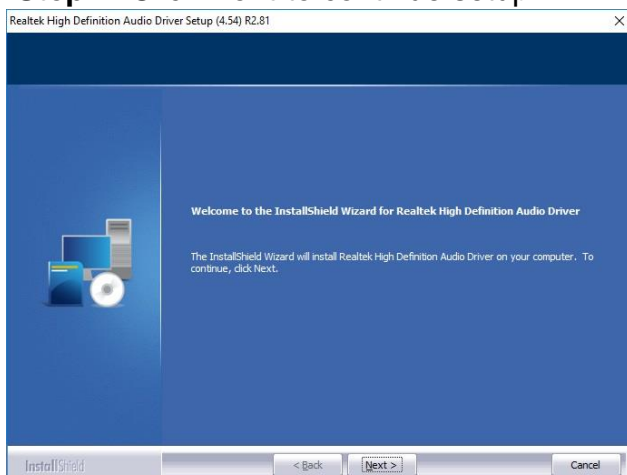
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



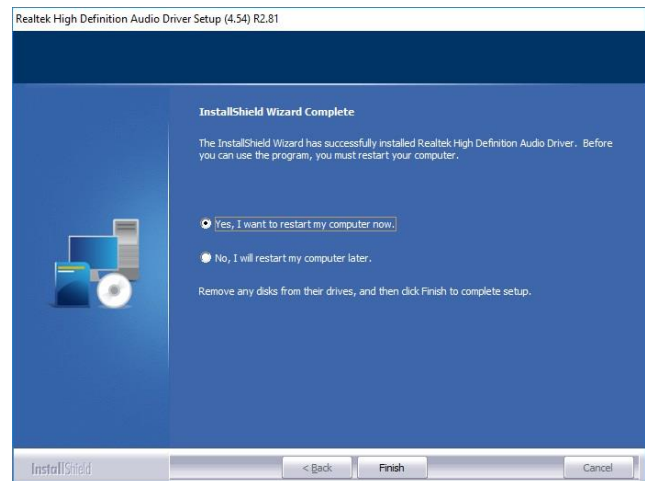
Step 3. Installing.



Step 1. Click Next to continue setup.



Step 2. Click Next.



Step 4. Click Finish to complete the setup.

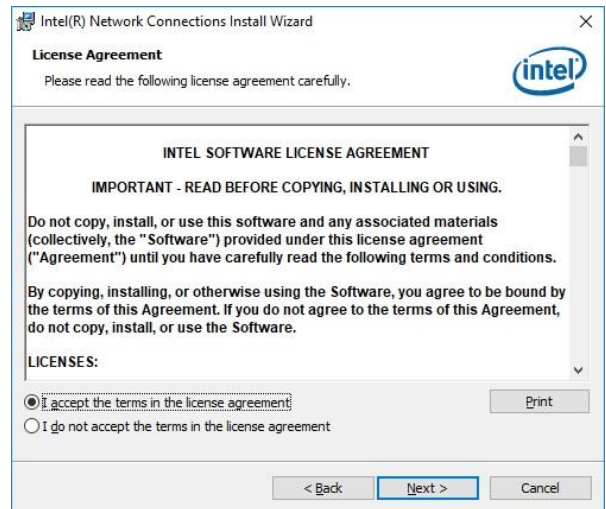
4.5 Install Ethernet Driver

All drivers can be found on the Avalue Official Website:

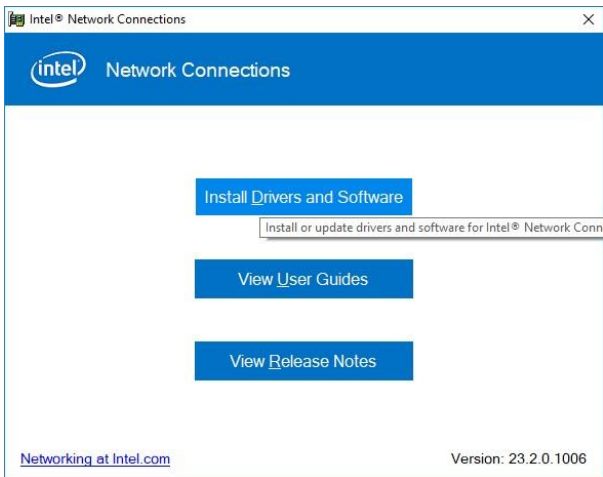
<http://www.avalue.com.tw>.



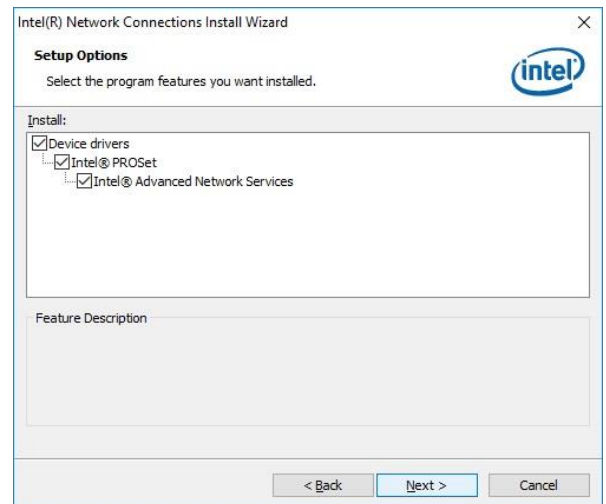
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



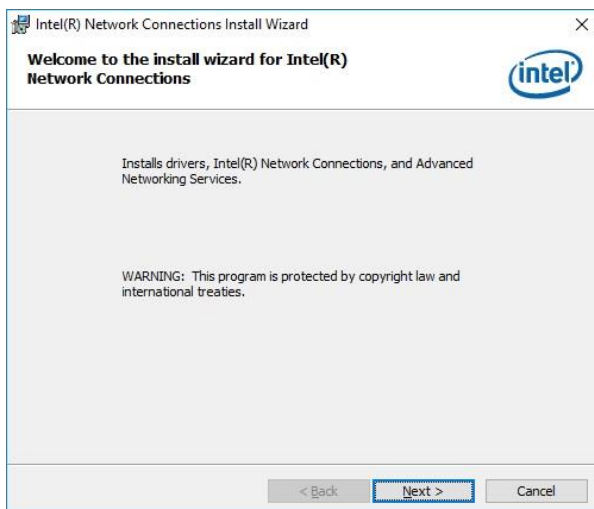
Step 3. Click Next.



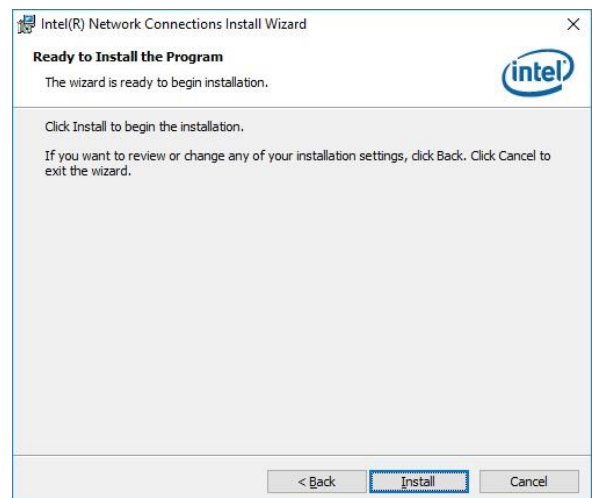
Step 1. Click Install Drivers and Software.



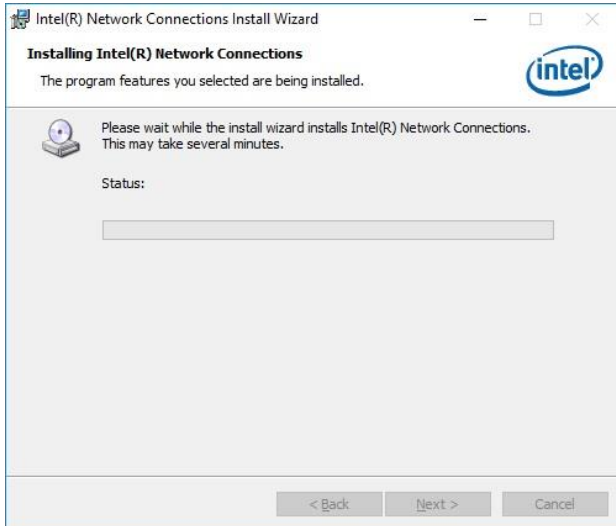
Step 4. Click Next.



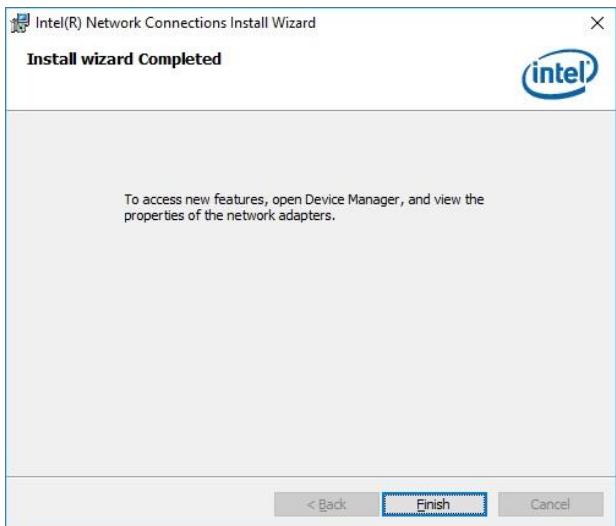
Step 2. Click Next to proceed.



Step 5. Click Install.



Step 6. Click Next.



Step 7. Click Finish to complete the setup.

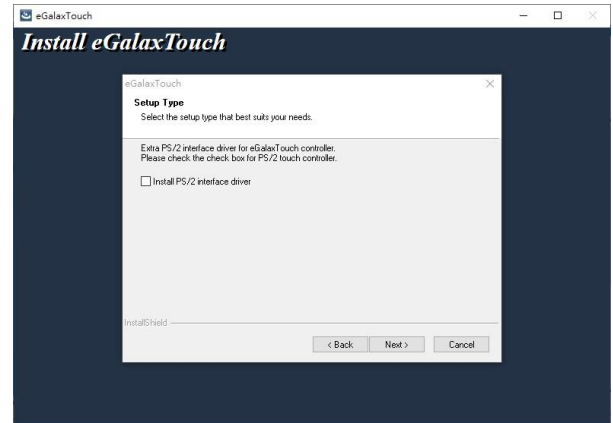
4.6 Install Touch Driver

All drivers can be found on the Avalue Official Website:

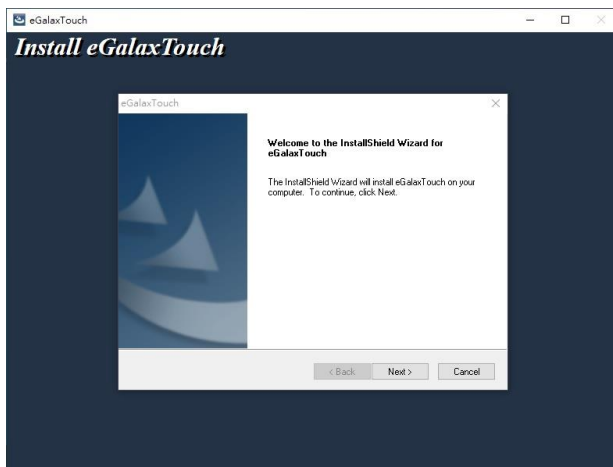
<http://www.avalue.com.tw>.



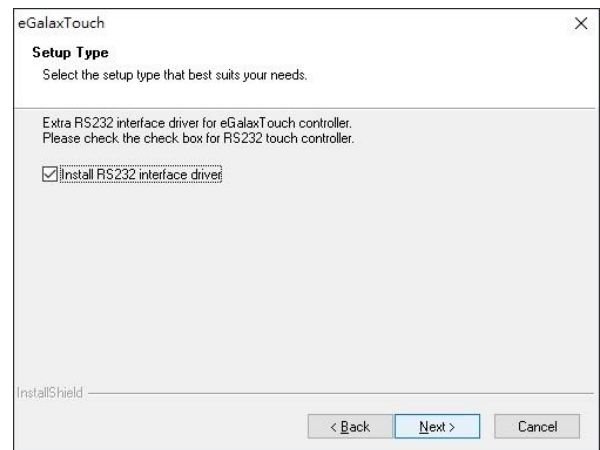
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



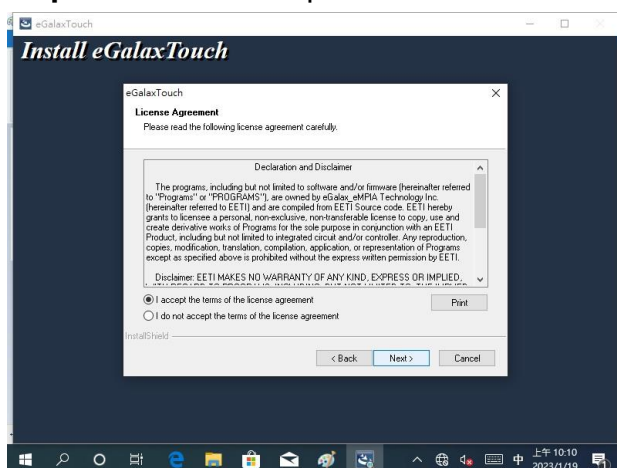
Step 3. Click Next.



Step 1. Click Next to proceed.



Step 4. Click Next.

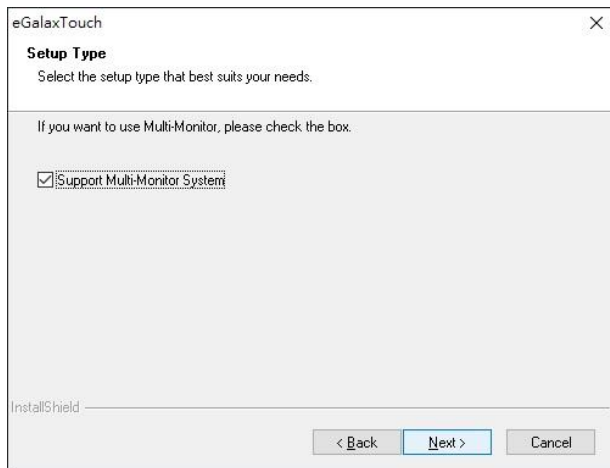


Step 2. Click Next.

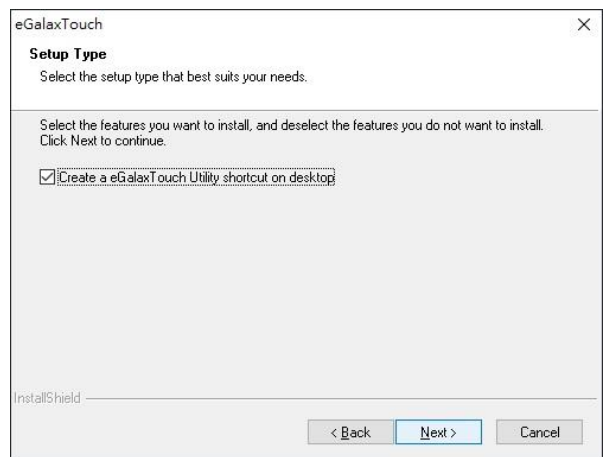


Step 5. Click OK.

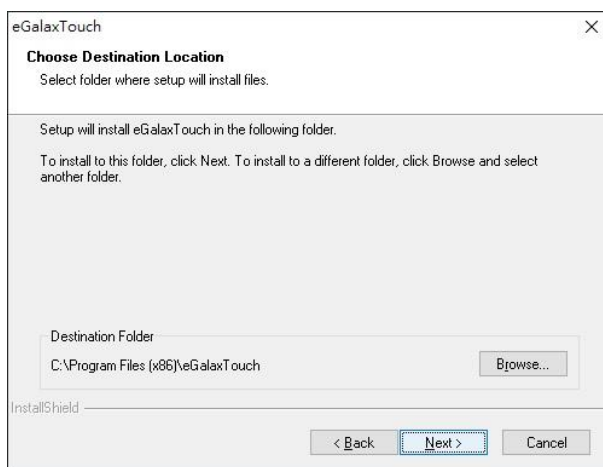
Quick Reference Guide



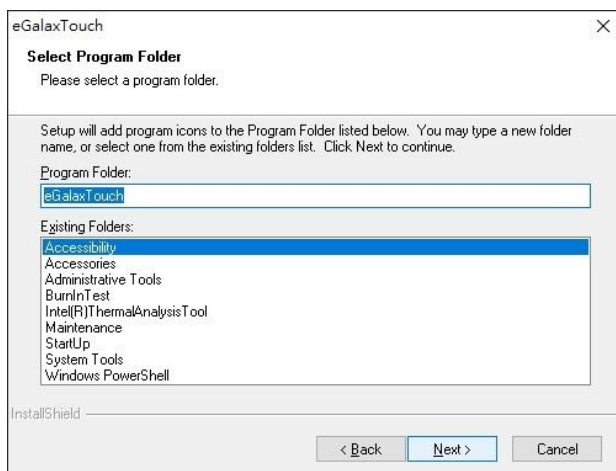
Step 6. Click Next.



Step 9. Click Next to complete the setup.



Step 7. Click Next.



Step 8. Click Next.

