

# ***MU11 Series***

## ***User's Manual***

***NO. G03-MU11-F***

***Revision: 3.0***

***Release date: December 13, 2022***

### **Trademark:**

- \* Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**

---

---

## Environmental Protection Announcement

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



---

---

# TABLE OF CONTENT

ENVIRONMENTAL SAFETY INSTRUCTION .....	iv
USER'S NOTICE .....	v
MANUAL REVISION INFORMATION .....	v
ITEM CHECKLIST .....	v
<b>CHAPTER 1 INTRODUCTION OF THE MOTHERBOARD</b>	
1-1 FEATURE OF MOTHERBOARD .....	1
1-2 SPECIFICATION .....	2
1-3 LAYOUT DIAGRAM .....	3
<b>CHAPTER 2 HARDWARE INSTALLATION</b>	
2-1 JUMPER SETTING.....	9
2-2 CONNECTORS, WAFERS AND HEADERS .....	12
2-2-1 CONNECTORS .....	12
2-2-2 WAFERS & HEADERS .....	16
<b>CHAPTER 3 INTRODUCING BIOS</b>	
3-1 ENTERING SETUP.....	19
3-2 BIOS MENU SCREEN .....	20
3-3 FUNCTION KEYS .....	21
3-4 GETTING HELP.....	21
3-5 MEMU BARS.....	22
3-6 MAIN MENU .....	22
3-7 ADVANCED MENU .....	23
3-8 CHIPSET MENU .....	36
3-9 SECURITY MENU .....	39
3-10 BOOT MENU .....	42
3-11 SAVE & EXIT MENU .....	43



## Environmental Safety Instruction

---

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 60 centigrade is the suitable temperature. (The figure comes from the request of the main chipset)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

---

---

## USER'S NOTICE

COPYRIGHT OF THIS MANUAL BELONGS TO THE MANUFACTURER. NO PART OF THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT MAY BE REPRODUCED, TRANSMITTED OR TRANSLATED INTO ANY LANGUAGE IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION OF THE MANUFACTURER.

THIS MANUAL CONTAINS ALL INFORMATION REQUIRED TO USE THIS MOTHER-BOARD SERIES AND WE DO ASSURE THIS MANUAL MEETS USER'S REQUIREMENT BUT WILL CHANGE, CORRECT ANY TIME WITHOUT NOTICE. MANUFACTURER PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, AND WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFIT, LOSS OF BUSINESS, LOSS OF USE OF DATA, INTERRUPTION OF BUSINESS AND THE LIKE).

PRODUCTS AND CORPORATE NAMES APPEARING IN THIS MANUAL MAY OR MAY NOT BE REGISTERED TRADEMARKS OR COPYRIGHTS OF THEIR RESPECTIVE COMPANIES, AND THEY ARE USED ONLY FOR IDENTIFICATION OR EXPLANATION AND TO THE OWNER'S BENEFIT, WITHOUT INTENT TO INFRINGE.

## Manual Revision Information

Reversion	Revision History	Date
3.0	Third Edition	December 13, 2022

## Item Checklist

- Motherboard
- Cable(s)

---

---

# Chapter 1

## Introduction of the Motherboard

### 1-1 Feature of Motherboard

- Onboard Intel® Gemini Lake-R Series SoC Processor, with low power consumption never denies high performance
- Support 1\* DDR4 2400 MHz SO-DIMM, up to 8GB
- Onboard 2\* RTL8119I 1.0GbE Ethernet RJ-45 LAN port
- 1\* M.2 E-key 2230 slot (PCIe/USB 2.0 interface) support CNVi
- 1\* M.2 M-key 2242 slot supports SATAIII interface
- Support 1\* SATAIII device
- Onboard 1\* 32GB eMMC (**Optional MU11-53/MU11-57**)
- 2\* HDMI ports & 1\* Displayport, supports Triple Independent Display
- 2\* COM Ports (COM1 support RS232/RS422/RS485)
- 3\* USB 3.1(Gen.1), 2\* USB 2.0, 1\* USB Type-C
- Support CPU Smart FAN
- Compliance with ErP standard
- Support Watchdog function
- Solution for Digital Signage / KIOSK / Intelligent Home / IoT Solution

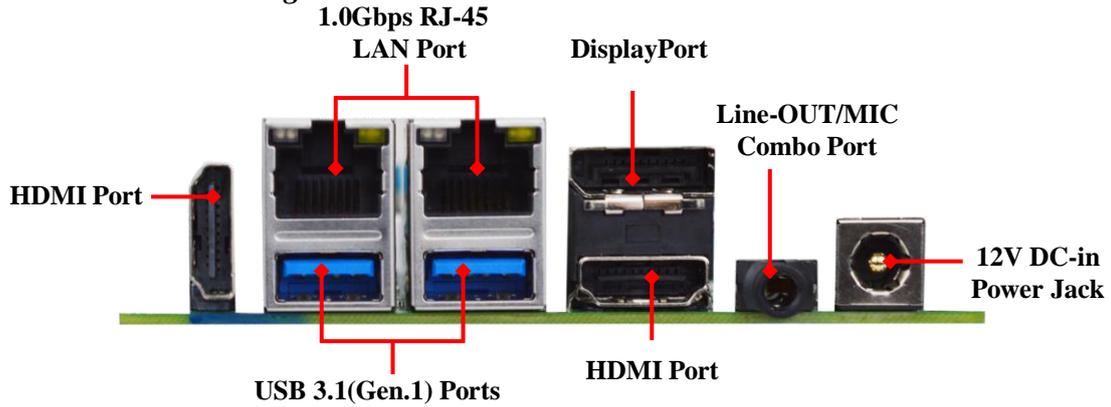
## 1-2 Specification

Spec	Description
Design	<ul style="list-style-type: none"> <li>● NUC form factor; PCB size: 10.1 cm x 10.1 cm</li> </ul>
Embedded CPU	<ul style="list-style-type: none"> <li>● Intel® Gemini Lake-R series SoC CPU</li> <li>● TDP:10W</li> </ul> <p><i>* Note CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.</i></p>
Memory Slot	<ul style="list-style-type: none"> <li>● 1* DDR4 SO-DIMM slot support 1* DDR4 2400MNZ SO-DIMM up to 8GB</li> </ul> <p><i>* Note: Memory clock supporting range is decided by specific CPU of the model. For more memory compatibility information please consults your local dealer.</i></p>
Expansion Slot	<ul style="list-style-type: none"> <li>● <b>M2E:</b>1* M.2 E-key 2230 slot (PCIe/USB 2.0 interface) support CNVi</li> </ul> <p><i>*Note:M2E slot maximum current limit is 2A while using 3.3V.</i></p>
Storage	<ul style="list-style-type: none"> <li>● 1* SATAIII 6Gb/s port</li> <li>● Onboard 32GB eMMC option (<b>Optional MU11-53/MU11-57</b>)</li> <li>● <b>M2M:</b>1* M.2 M-key 2242 slot supports SATAIII interface</li> </ul> <p><i>*Note:M2M slot maximum current limit is 2A while using 3.3V.</i></p>
LAN Chip	<ul style="list-style-type: none"> <li>● Integrated with 2* Realtek RTL8191 1.0GbE chip</li> <li>● Support Fast Ethernet LAN function of providing 10/100/1000M Ethernet data transfer rate</li> </ul>
Audio Chip	<ul style="list-style-type: none"> <li>● Realtek ALC888S HD audio chip</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>● AMI 128MB Flash ROM</li> </ul>
Rear I/O	<ul style="list-style-type: none"> <li>● 2* 1.0GbE RJ-45 LAN port</li> <li>● 2* USB 3.1(Gen.1) port</li> <li>● 2* HDMI port (Max Resolution:4096*2160@60Hz)</li> <li>● 1* DisplayPort (Max Resolution:4096*2160@60Hz)</li> <li>● 1* 12V DC-in system power Jack</li> </ul>
Front I/O	<ul style="list-style-type: none"> <li>● 1* USB Type-C port</li> <li>● 1* USB 3.1(Gen.1) port</li> <li>● 2* COM Ports (COM1 support RS232/RS422/RS485)</li> <li>● 1* Audio Line-Out &amp; MIC combo jack</li> </ul>
Internal I/O	<ul style="list-style-type: none"> <li>● 1* SATA Power connector</li> <li>● 1* JW_FP front panel wafer (<b>on the backside</b>)</li> <li>● 1* CPUFAN wafer (<b>on the backside</b>)</li> </ul>

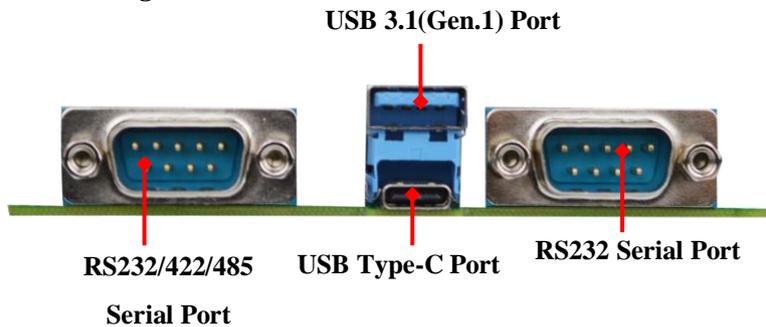
	<ul style="list-style-type: none"> <li>● 1* LAN_LED activity header</li> <li>● 1* 9-Pin USB 2.0 header</li> <li>● 1* SMBUS header</li> </ul>
--	--

## 1-3 Layout Diagram

*Rear IO Panel Diagram:*



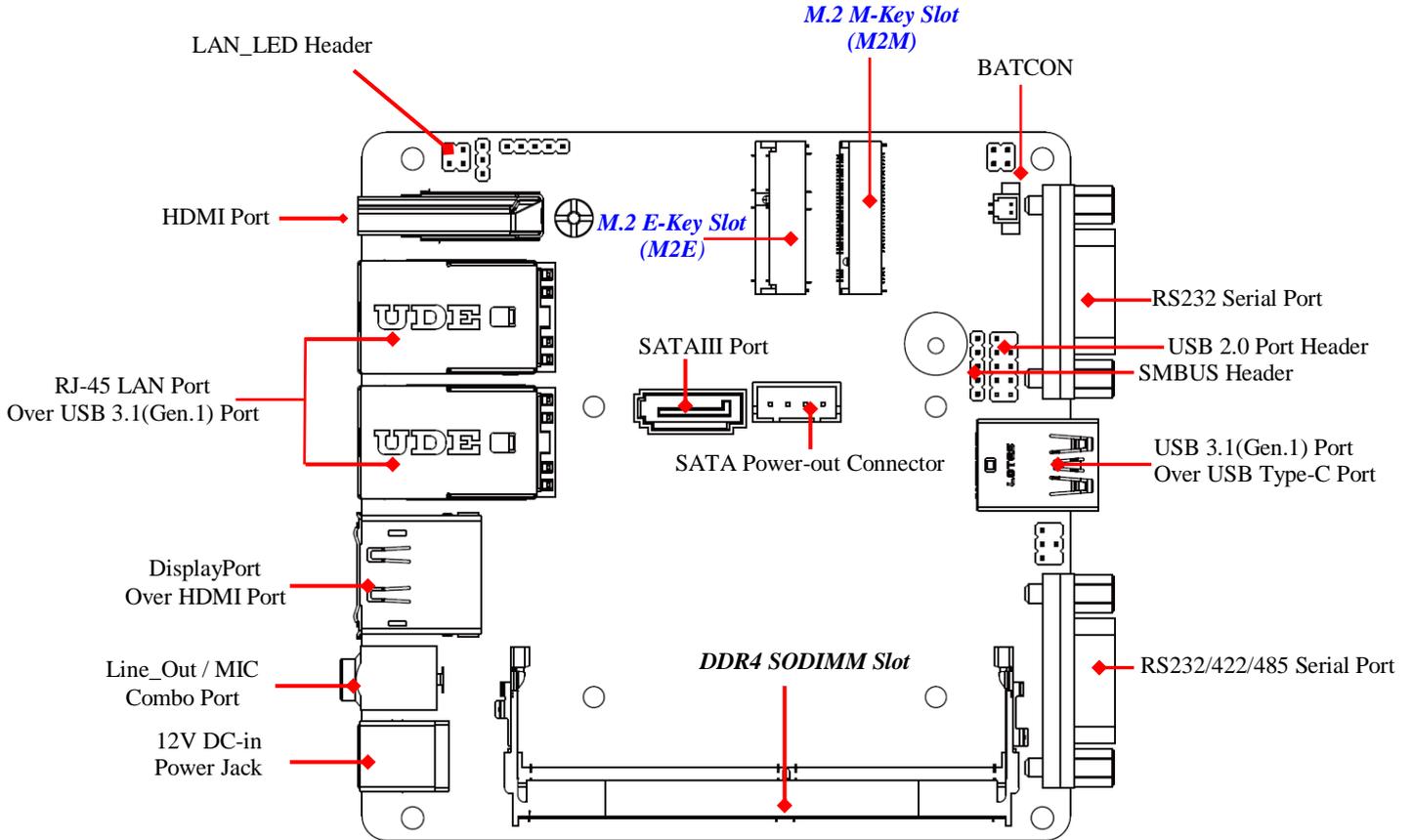
*Front IO Panel Diagram:*



---

---

**Internal Diagram-Front Side:**

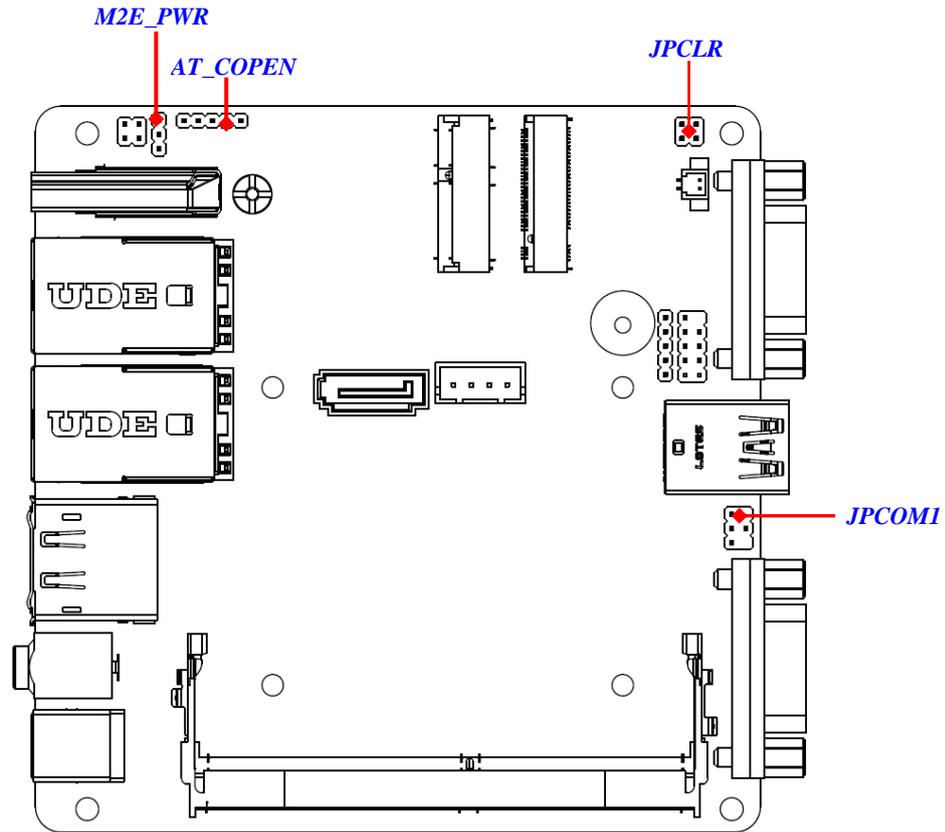


**\*Note:** SODIMM module should be 1.2V DDR4 SODIMM and **not exceeding 8GB total capacity.**

---

---

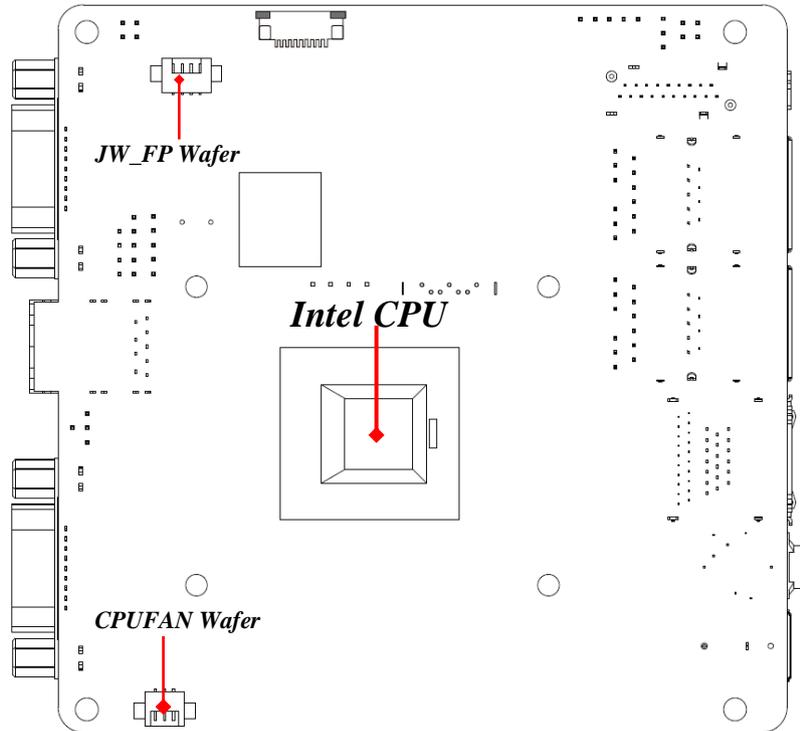
## *Jumper Positions*



---

---

*Internal Diagram-Back Side:*



---

---

## Jumper

P/N	Name	Description	Pitch
JPCLR	<b>Pin (1-2):</b> Clear CMOS <b>Pin (3-4):</b> TXE Override Setting	4-Pin Block	2.0mm
AT_COPEN	<b>Pin 1&amp;2&amp;3:</b> AT/ATX Mode Select <b>Pin 4&amp;5:</b> Case Open Message Display Function Select	3-pin Block	2.0mm
JPCOM1	COM1 Port Pin9 Function Select	4-Pin Block	2.0mm
M2E_PWR	M.2E KEY SLOT POWER	3-pin Block	2.0mm

## Connectors

P/N	Name
USB30	USB 3.1(Gen.1) Port Connector
USBC	USB 3.1(Gen.1) Type-C Connector
COM1	RS232/422/485 Serial Port Connector
COM2	RS232 Serial Port Connector
HDMI2	HDMI Connector
UL1/UL2	<b>Top:</b> RJ-45 LAN Port Connector <b>Bottom:</b> USB 3.1(Gen.1) Port Connector
DP_HDMI1	<b>Top:</b> DisplayPort Connector <b>Bottom:</b> HDMI Connector
AUDIO	Line-Out/MIC Combo Connector
DCIN	12V DC-in System Power Jack
SATA	SATAIII Port Connector
SATAPWR	SATA Power out Connector

---

---

## ***Headers & Wafers***

<b>P/N</b>	<b>Name</b>	<b>Description</b>	<b>Pitch</b>
JW_FP (backside)	Front Panel Wafer	4-pin Block	1.25mm
CPUFAN (backside)	CPUFAN Wafer	3-pin Block	1.25mm
LAN_LED	LAN Activity LED Header	4-pin Block	2.0mm
FP_USB1	USB 2.0 Port Header	9-pin Block	2.0mm
SMBUS	SM BUS Header	5-pin Block	2.0mm

---

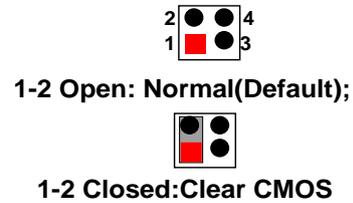
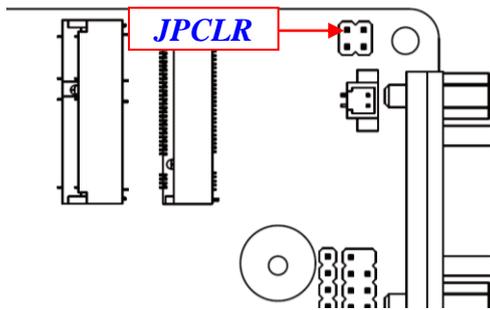
---

# Chapter 2

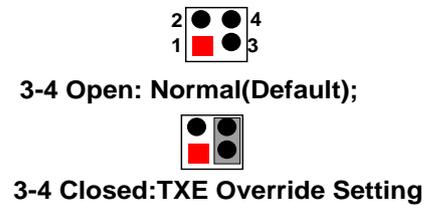
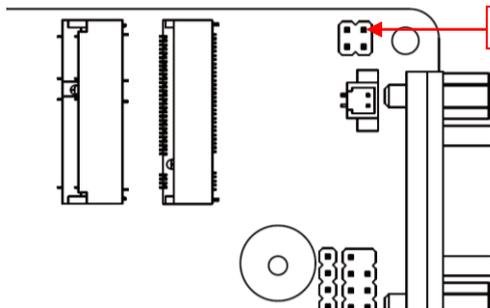
## Hardware Installation

### 2-1 Jumper Setting

**Pin (1-2) of JPCLR (4-pin): Clear CMOS (pitch 2.0mm)**



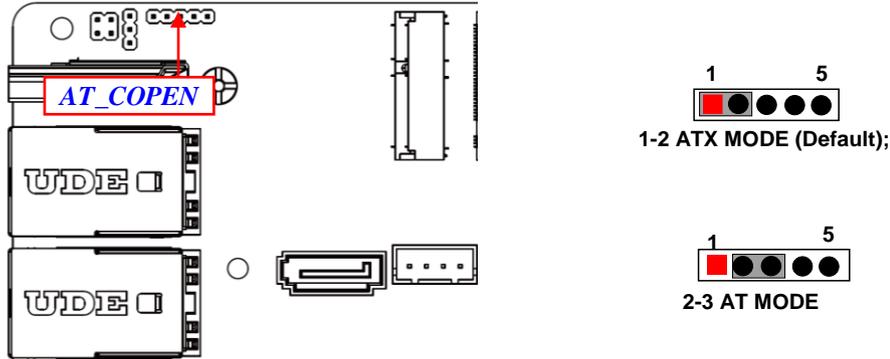
**Pin (3-4) of JPCLR (4-pin): TXE Override Setting (pitch 2.0mm)**



---

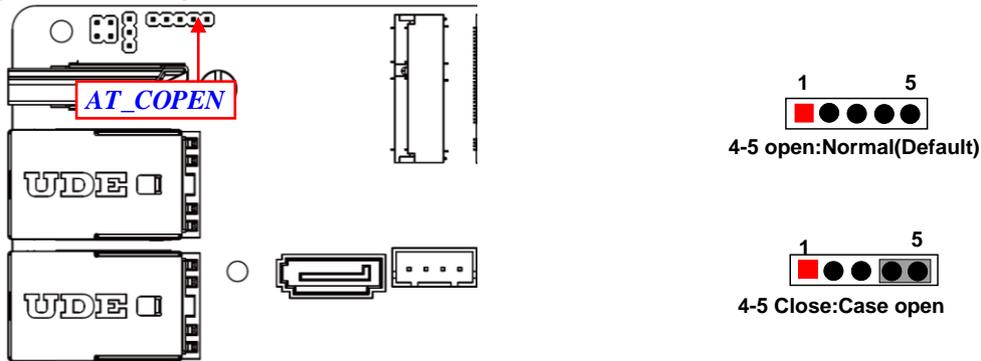
---

**Pin 1&2 &3 of AT\_COPEN (5-pin): AT/ATX Mode Select (pitch 2.0mm)**



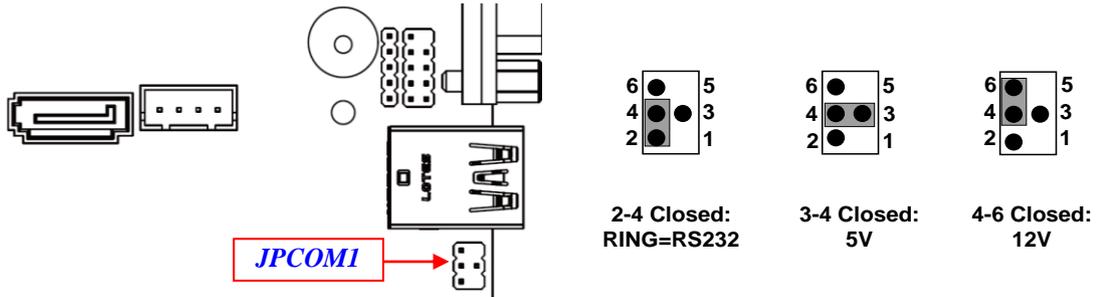
**\*ATX Mode Selected:** Press power button to power on after power input ready;  
**AT Mode Selected:** Directly power on as power input ready.

**Pin 4&5 of AT\_COPEN (5-pin): Case Open Message Display Function Select (pitch 2.0mm)**



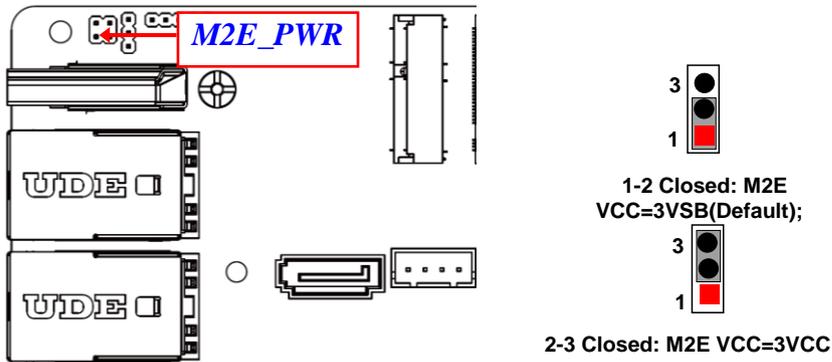
**Pin (4&5) Closed:** When Case open function pin short to GND, the Case open function was detected. When used, needs to enter BIOS and enable 'Case Open Detect' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.

**JPCOM1 (4-pin): COM1 Port Pin9 Function Select (pitch 2.0mm)**



*\*Note: Maximum current limit is 500mA while using 5V or 12V.*

**M2E\_PWR (3-pin): M.2E KEY SLOT POWER (pitch 2.0mm)**



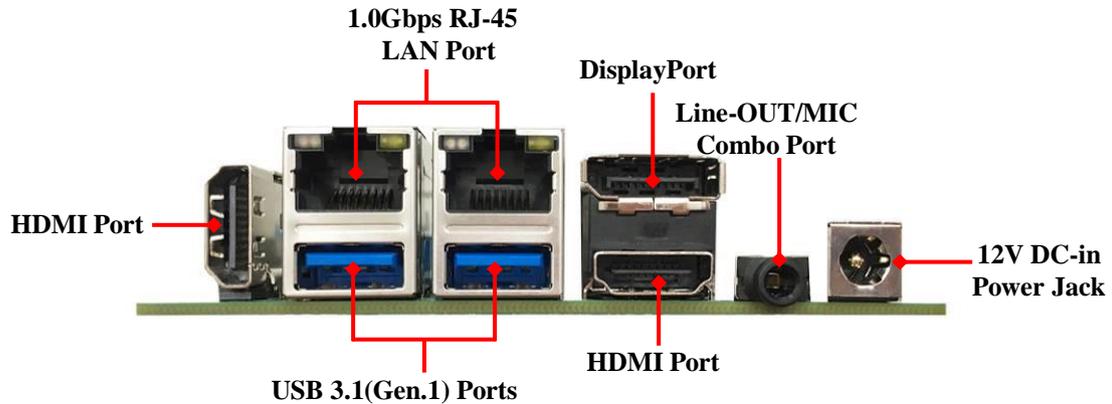
---

---

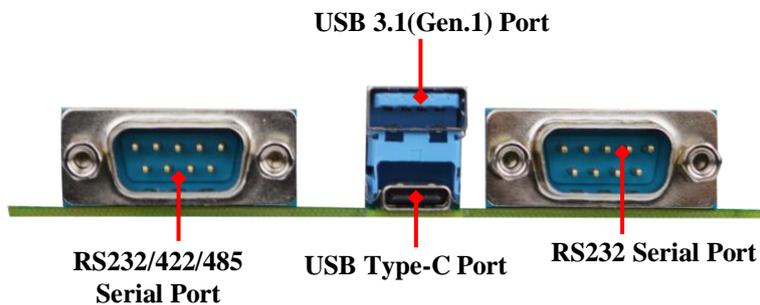
## 2-2 Connectors, Wafers and Headers

### 2-2-1 Connectors

*Rear IO Panel Diagram:*



*Front IO Panel Diagram:*



Icon	Name	Function
	<b>Power Connector</b>	12V DC-in system power connector For user to connect compatible power adapter to provide power supply for the system.
	<b>RJ-45 LAN Port</b>	This connector is standard RJ-45 LAN jack for Network connection.
	<b>USB 3.1(Gen.1) Port</b>	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.1(Gen.1) ports supports up to 5Gbps data transfer rate.
	<b>HDMI Port</b>	To connect display device that support HDMI specification.
	<b>DisplayPort</b>	To the system to corresponding display device with compatible display port cable.
	<b>Line-Out/MIC Combo Connector</b>	This connector can functions as audio Line-Out jack and MIC jack with compatible cables & devices.
	<b>USB Type-C Port</b>	To connect USB devices compatible with USB Type-C interface.
	<b>COM1/COM2 Serial Port</b>	Mainly for user to connect external MODEM or other devices that supports Serial Communications Interface.

**\*Note:**

1. Maximum current limit for USB ports:

※**UL1+UL2 total is 3A.**

※**USB30+FP\_USB1 total is 3A.**

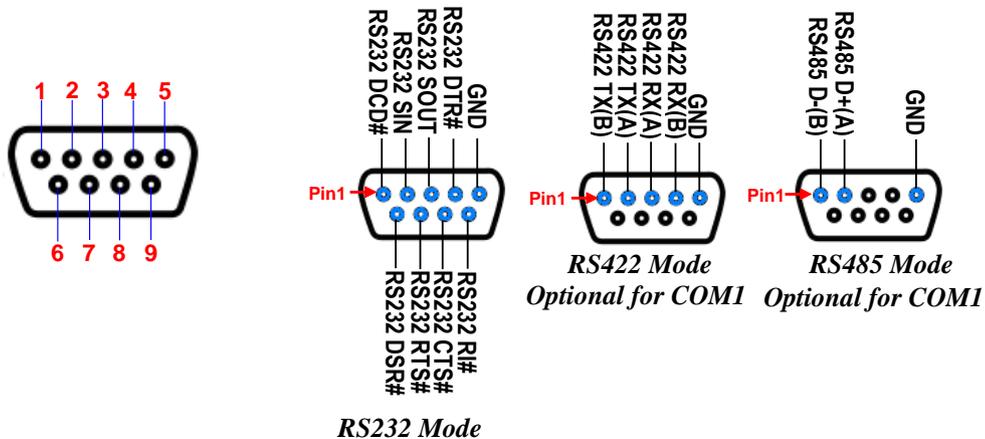
※**USBC(Type C) total is 3A.**

- 
- 
2. DP port is converted from eDP, only display function, not support audio output.
  3. The DP port does not support hot swapping. To use the DP port, you need to place the DP cable before booting. °

**(1) COM1 (9-pin Block): RS232/422/485 Serial Port**

**COM2 (9-pin Block): RS232 Serial Port**

COM1 port can function as RS232/422/485 port. In normal settings COM1 functions as RS232 port. With compatible COM1 cable they can function as RS422 or RS 485 port. User also needs to go to BIOS to set '**Transmission Mode Select**' for COM (refer to Page 25) at first, before using specialized cable to connect different pins of this port.

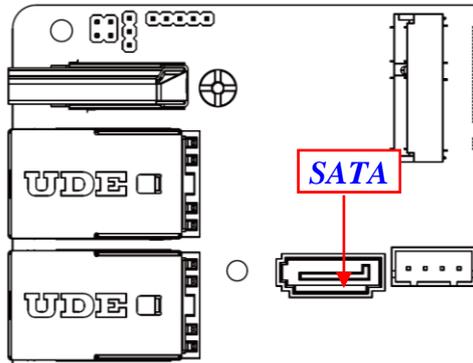


---

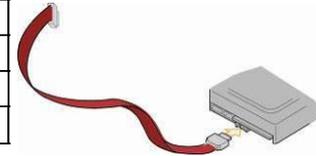
---

## (2) SATA (7-pin Block): SATAIII Port connector

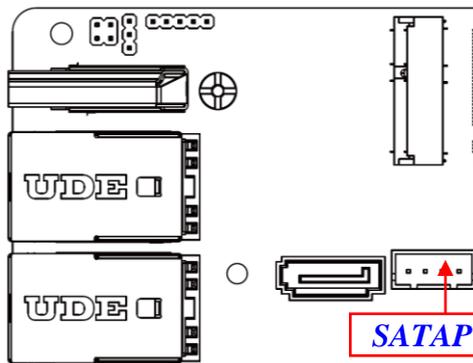
The board comes with a SATAIII port that supports 6GB/s transfer rate.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



## (3) SATAPWR (4-pin): SATA Power out Connector



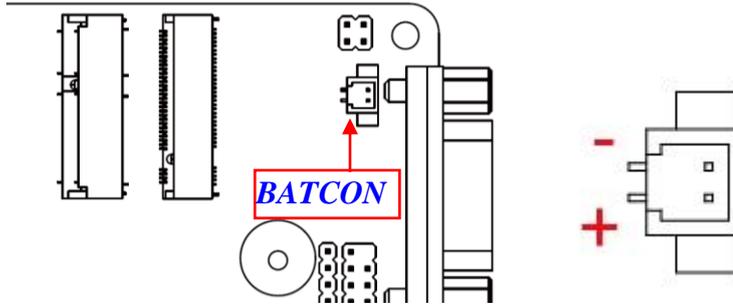
Pin No.	Definition
1	+5V
2	GND
3	GND
4	+12V

**\*Note:** Maximum current limit is 2A while using 5V or 12V working voltage.

---

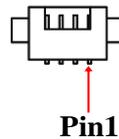
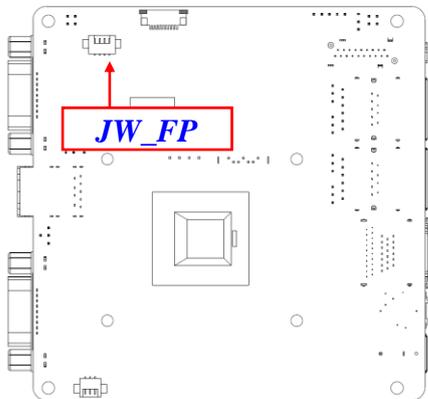
---

**(4) BATCON (2-pin): Battery Connector**



## 2-2-2 Wafers & Headers

**(1) JW\_FP (4-pin): Front Panel Wafer (backside) (pitch 1.25mm)**

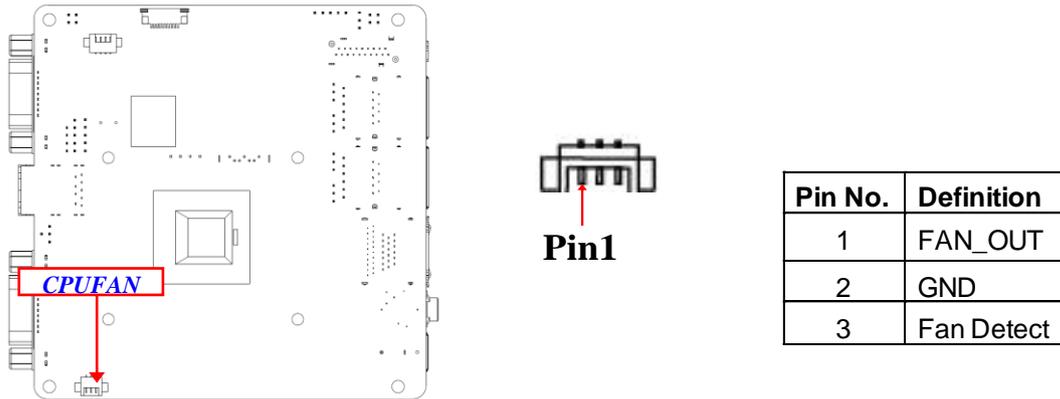


Pin No.	Definition
1	Power button
2	GND
3	PWRLED -
4	PWRLED+

---

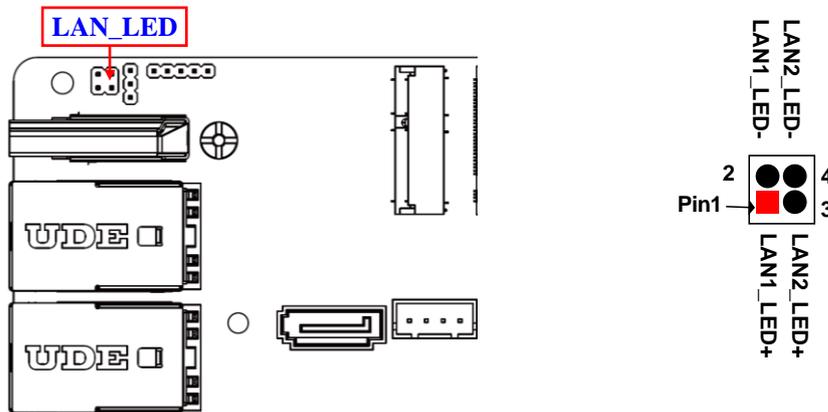
---

(2) CPUFAN (3-pin): CPUFAN Wafer (backside) (pitch 1.25mm)



**\*Note:** This is a 5V DC FAN and deliver up to 0.6A output current.

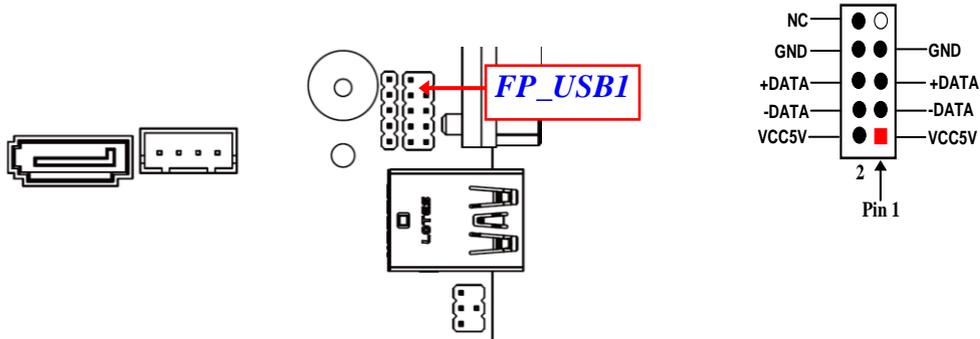
(3) LAN\_LED (4-pin): LAN Status LED Header (pitch 2.0mm)



---

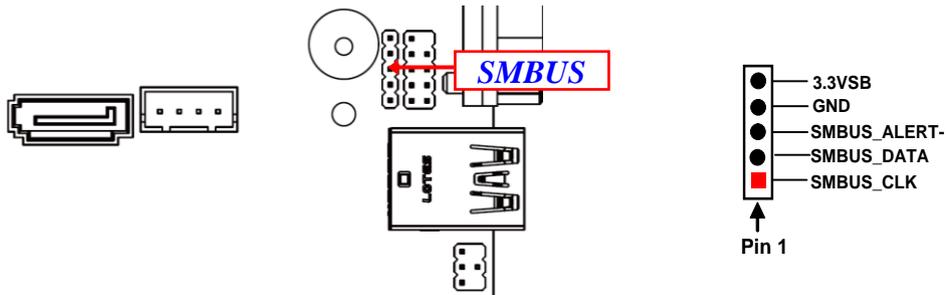
---

(4) FP\_USB1 (9-pin): USB 2.0 Port Header (*pitch 2.0mm*)



**\*Note:** USB30 port + FP\_USB1 port maximum current limit is 3A in total while using 5V.

(5) SMBUS (5-Pin): SM BUS Header (*pitch 2.0mm*)



**\*Note:** Maximum current limit is 500A while using 3.3V working voltage.

---

---

# Chapter 3

## Introducing BIOS

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

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

### **3-1 Entering Setup**

Power on the computer and by pressing <Del> immediately allows you to enter Setup.

If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time

and the system does not boot, an error message will be displayed and you will again be asked to

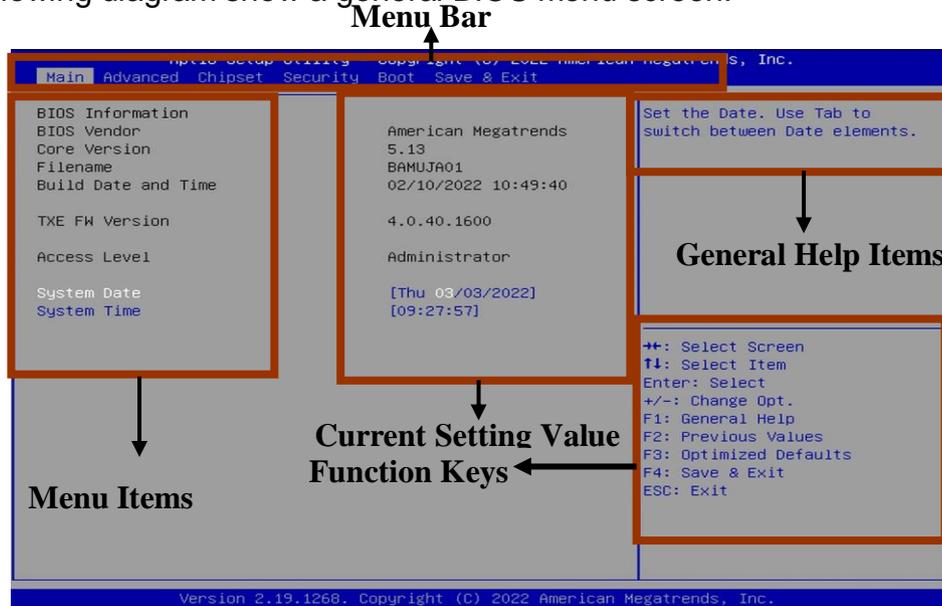
Press **<Del>** to enter Setup; press **< F7>** to enter pop-up Boot menu.



BIOS Boot Menu Screen (boot device options please refer to actual configuration)

### 3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



---

---

## 3-3 Function Keys

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

- Press ←→ (left, right) to select screen.
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<-> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.

## 3-4 Getting Help

### Main Menu

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

### Status Page Setup Menu/Option Page Setup Menu

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>**.

---

---

## 3-5 Menu Bars

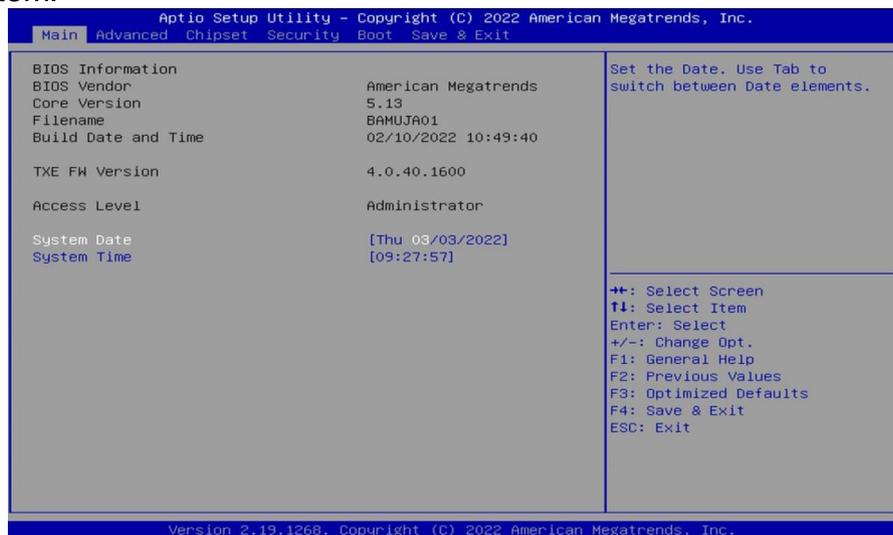
There are six menu bars on top of BIOS screen:

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

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

## 3-6 Main Menu

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



---

---

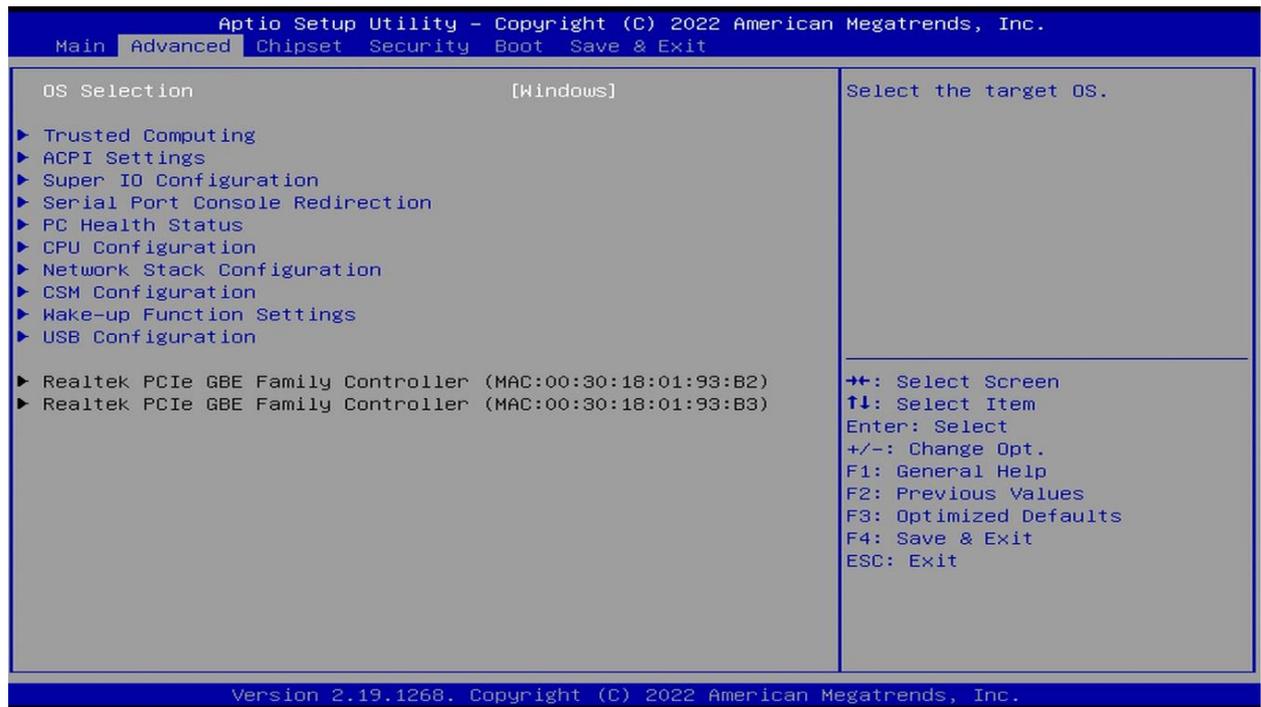
## System Date

Set the date. Please use [Tab] to switch between date elements.

## System Time

Set the time. Please use [Tab] to switch between time elements.

## 3-7 Advanced Menu



### OS Selection

The optional settings: [Windows]; [Intel Linux].

**\*Note:** User need to go to this item to select the OS mode before installing corresponding OS driver, otherwise problems will occur when installing the driver.

---

---

▶ **Trusted Computing**

Press [Enter] to enable or disable 'Security Device Support.

**TPM20 Device Found**

**Security Device Support**

Use this item to enable or disable BIOS support for security device. TCG EFI protocol and INT1A interface will not be available.

The optional settings: [Disabled]; [Enabled].

*When set as [Enabled], user can make further settings in the following item:*

**SHA-1 PCR Bank**

Use this item to enable or disable SHA-1 PCR Bank.

The optional settings: [Disabled]; [Enabled].

**SHA256 PCR Bank**

Use this item to enable or disable SHA256 PCR Bank.

The optional settings: [Disabled]; [Enabled].

**Pending Operation**

Use this item to set an Operation for the Security Device..

The optional settings: [None]; [TPM Clear].

*\*Note: Your Computer will reboot during restart in order to change state of security device.*

▶ **.ACPI Settings**

Press [Enter] to make settings for the following sub-items:

**ACPI Settings**

**ACPI Sleep State**

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

▶ **Super I/O Configuration**

Press [Enter] to make settings for the following sub-items:

**Super IO Configuration**

---

---

► **Serial Port 1 Configuration**

Press [Enter] to make settings for the following items:

**Serial Port 1 Configuration**

**Serial Port**

Use this item to enable or disable serial port1 (COMA).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

**Change Settings**

Use this item to select an optimal setting for super IO device.

The optional settings are: [Auto]; [IO=3F8h; IRQ=4];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12]. ; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12]

**Transmission Mode Select**

The optional settings are: [RS422]; [RS232]; [RS485].

**Mode Speed Select**

The optional settings are: [RS232/RS422/RS485=250kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

► **Serial Port 2 Configuration**

Press [Enter] to make settings for the following items:

**Serial Port 2 Configuration**

**Serial Port**

Use this item to enable or disable serial port 2 (COMB).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

**Change Settings**

Use this item to select an optimal setting for Super IO Device.

The optional settings are: [Auto]; [IO=2F8h; IRQ=3];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12]. ; [IO=2E8h; IRQ= 3,4,5,6,7,9,10,11,12].

---

---

## ERP Support

Use this item to enable or disable Energy-Related Products function.

The optional settings: [Disabled]; [Enabled].

This item should be set as [**Disabled**] if you wish to have all active wake-up functions.

## Case Open Detect

Use this item to detect case has already open or not, show message in POST.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], system will detect if COPEN has been short or not (*refer to **AT\_COPEN** jumper setting for Case Open Detection*); if Pin 4&5 of **AT\_COPEN** are short, system will show Case Open Message during POST.

## WatchDog Reset Timer

Use this item to enable or disable WDT reset function.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], the following sub-items shall appear:

### WatchDog Reset Timer Value

User can select a value in the range of [10] to [255] seconds when '**WatchDog Reset Timer Unit**' set as [Sec]; or in the range of [1] to [255] minutes when '**WatchDog Reset Timer Unit**' set as [Min].

### WatchDog Reset Timer Unit

The optional settings are: [Sec.]; [Min.].

### WatchDog Wake-up Timer

This item support WDT wake-up.

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

### WatchDog Wake-up Timer Value

User can select a value in the range of [10] to [4095] seconds when '**WatchDog Wake-up Timer Unit**' set as [Sec]; or in the range of [1] to [4095] minutes when '**WatchDog Wake-up Timer Unit**' set as [Min].

---

---

### **WatchDog Wake-up Timer Unit691**

The optional settings are: [Sec.]; [Min.].

### **ATX Power Emulate AT Power**

This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (refer to AT\_COPEN jumper setting Pin 1&2 of for ATX Mode & Pin 2&3 of AT Mode Select).

### ▶ **Serial Port Console Redirection**

#### **COM1**

#### **Console Redirection**

Use this item to enable or disable Console Redirection.

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, the following sub-items shall appear:

### ▶ **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following items:

#### **Terminal Type**

The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

Emulation: [ANSI]: Extended ASCII char set; [VT100]: ASCII char set; [VT100+]: Extends VT100 to support color, function keys, etc.; [VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

#### **Bits per second**

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].

#### **Data Bits**

The optional settings: [7]; [8].

---

---

## **Parity**

A parity bit can be sent with the data bits to detect some transmission errors.

The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].

[Even]: parity bit is 0 if the num of 1's in the data bits is even; [Odd]: parity bit is 0 if num of 1's in the data bits is odd; [Mark]: parity bit is always 1; [Space]: Parity bit is always 0; [Mark] and [Space] Parity do not allow for error detection.

## **Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

The optional settings: [1]; [2].

## **Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

The optional settings: [None]; [Hardware RTS/CTS].

## **VT-UTF8 Combo Key Support**

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

The optional settings: [Disabled]; [Enabled].

## **Recorder Mode**

With this mode enable only text will be sent. This is to capture Terminal data.

The optional settings: [Disabled]; [Enabled].

## **Resolution 100x31**

Use this item to enable or disable extended terminal resolution.

The optional settings: [Disabled]; [Enabled].

## **Legacy OS Redirection Resolution**

On Legacy OS, the Number of Rows and Columns supported redirection.

The optional settings: [80x24]; [80x25].

---

---

## **Putty KeyPad**

Use this item to select FunctionKey and KeyPad on Putty.

The optional settings: [VT100]; [Intel Linux]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

### **Legacy Console Redirection**

#### **▶ Legacy Console Redirection Settings**

### **Legacy Console Redirection Settings**

#### **Legacy Serial Redirect Port**

Use this item to select a com port to display redirection of Legacy OS and Legacy OPRM Messages

The optional settings: [COM1]

#### **Legacy OS Redirection Resolution**

On Legacy OS, the Number of Rows and Columns supported redirection

The optional settings: [80\*24]; [80\*25]

#### **Redirection After BIOS POST**

The optional settings are: [Always Enable]; [BootLoader].

Whet [Bootloader] is selected, then Lagacy Console Redirection is disabled before booting to legacy OS. When [Always Enable] is selected, then Legacy Console is enabled for legacy OS. Default setting for this option is set to [Always Enable].

#### **Console Redirection**

Use this item to enable or disable Console Redirection.

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, the following sub-items shall appear:

#### **▶ Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

---

---

Press [Enter] to make settings for the following items:

**Out-of-Band Mgmt Port**

The default setting is: [COM1].

**Terminal Type**

The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is [VT100+] and then [VT100]. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

**Bits per second**

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [57600]; [115200].

**Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

**Data Bits**

The default setting is: [8].

*\*This item may or may not show up, depending on different configuration.*

**Parity**

The default setting is: [None].

*\*This item may or may not show up, depending on different configuration.*

**Stop Bits**

The default setting is: [1].

*\*This item may or may not show up, depending on different configuration.*

► **PC Health Status**

Press [Enter] to view current hardware health status, make further settings in ‘**SmartFAN Configuration**’.

---

---

▶ **SmartFAN Configuration**

Press [Enter] to make settings for SmartFan Configuration:

**SmartFAN Configuration**

**CPUFAN Smart Mode**

The optional settings are: [Disabled]; [Enabled].

*\*When set as **[Enabled]**, user can make further settings in the following sub-items:*

**CPUFAN Full-Speed Temperature**

Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above this pre-set temperature.

**CPUFAN Full-Speed Duty**

Use this item to set CPUFAN full-speed duty. Fan will run at full speed when above this pre-set duty.

**CPUFAN Idle-Speed Temperature**

Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below this pre-set temperature.

**CPUFAN Idle-Speed Duty**

Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below this pre-set duty.

▶ **CPU Configuration**

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

**VT-d**

Use this item to enable or disable CPU VT-d.  
The optional settings: [Enabled]; [Disabled].

---

---

## **EIST**

Use this item to enable or disable Intel SpeedStep.

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, the following sub-items shall appear:

### **Turbo Mode**

Use this item to enable or disable Turbo Mode.

The optional settings: [Disabled]; [Enabled].

### **C-States**

Use this item to enable or disable C-State.

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, users can make more settings in the following sub-items:

#### **Enhanced C-states**

Use this item to enable or disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-state.

The optional settings: [Disabled]; [Enabled].

#### **Max Package C State**

Use this item to control the Max Package C State that the processor will support.

The optional settings: [SOix default]; [PC1]; [C0].

#### **Max Core C State**

This option controls the Max Core C State that cores will Support

The optional settings: [Fused Value]; [Core C10]; [Core C9]; [Core C8]; [Core C7]; [Core C6]; [Core C1]; [Unlimited]

### ▶ **Network Stack Configuration**

Press [Enter] to go to '**Network Stack**' screen to make further settings.

#### **Network Stack**

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

#### **Ipv4 PXE Support**

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv4 PXE Boot Support. When set as [Disabled], Ipv4 boot

---

---

option will not be created.

### **Ipv6 PXE Support**

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv6 PXE Boot Support. When set as [Disabled], Ipv6 boot option will not be created.

### **PXE Boot Wait Time**

Use this item to set wait time to press [ESC] key to abort the PXE boot.

### **Media Detect Count**

Use this item to set number of times presence of media will be checked.

The optional settings range is from [1] to [50].

## ▶ **CSM Configuration**

Press [Enter] to make settings for the following sub-items:

### **Compatibility Support Module Configuraton**

#### **Boot option filter**

This item controls Legacy/UEFI ROMs priority.

The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].

#### **Network**

This item controls the execution of UEFI and Legacy PXE OpROM.

The optional settings are: [Do not launch]; [UEFI]; [Legacy].

#### **Storage**

This item controls the execution of UEFI and Legacy Storage OpROM.

The optional settings are: [Do not launch]; [UEFI]; [Legacy].

#### **Video**

This item controls the execution of UEFI and Legacy Video OpROM.

The optional settings are: [UEFI]; [Legacy].

#### **Other PCI devices**

This item determines OpROM execution policy for devices other than Network, storage or video.

The optional settings are: [Do not launch]; [UEFI]; [Legacy].

---

---

▶ **Wake-up Function Settings**

Press [Enter] to make settings for the following sub-items:

**Wake-up System With Fixed Time**

Use this item to enable or disable System wake on alarm event.

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, the following items shall appear:

**Wake-up Hour**

Use this item to select 0-23. For example enter 3 for 3am and 15 for 3pm.

**Wake-up Minute**

Use this item to select 0-59.

**Wake-up Second**

Use this item to select 0-59.

**Wake-up System with Dynamic Time**

Use this item to enable or disable System wake on alarm event.

System will wake on the current time + Increase minute(s).

The optional settings: [Disabled]; [Enabled].

When set as **[Enabled]**, system will wake on the current time + increased minute(s).

**R\_USB Power Gating in S4-S5**

Use this item to enable or disable USB/PS2 wake-up from S4-S5.

USB Wake-up is affected by ERP function in S4. Please disable ERP before activating this function in S4.

The optional settings: [Disabled]; [Enabled].

**\*Note:** *This function is supported when 'ERP Support' is set as [Disabled].*

▶ **USB Configuration**

Press [Enter] to make settings for the following sub-items:

**USB Configuration**

**Legacy USB Support**

Use this item to enable or disable Legacy USB support.

The optional settings are: [Enabled]; [Disabled]; [Auto].

**[Enabled]:** To enable legacy USB support.

---

---

**[Disabled]:** To keep USB devices available only for EFI specification,

**[Auto]:** To disable legacy support if no USB devices are connected.

#### **XHCI Hand-off**

This is a workaround for OSEs without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: [Enabled]; [Disabled].

#### **USB Mass Storage Driver Support**

Use this item to enable or disable USB Mass Storage Driver Support.

The optional settings are: [Disabled]; [Enabled].

#### **USB Hardware Delays and Time-outs:**

##### **USB Transfer Time-out**

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

##### **Device Reset Time-out**

Use this item to set USB mass storage device start unit command time-out.

The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

##### **Device Power-up Delay**

Use this item to set maximum time the device will take before it properly reports itself to the host controller.

The optional settings: [Auto]; [Manual].

'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

Select **[Manual]** you can set value for the following sub-item: '**Device Power-up Delay in Seconds**'.

##### **Device Power-up Delay in Seconds**

The delay range is from [1] to [40] seconds, in one second increments.

▶ **Realtek PCIe GBE Family Controller(MAC:XX:XX:XX:XX:XX:XX)**

▶ **Realtek PCIe GBE Family Controller(MAC:XX:XX:XX:XX:XX:XX)**

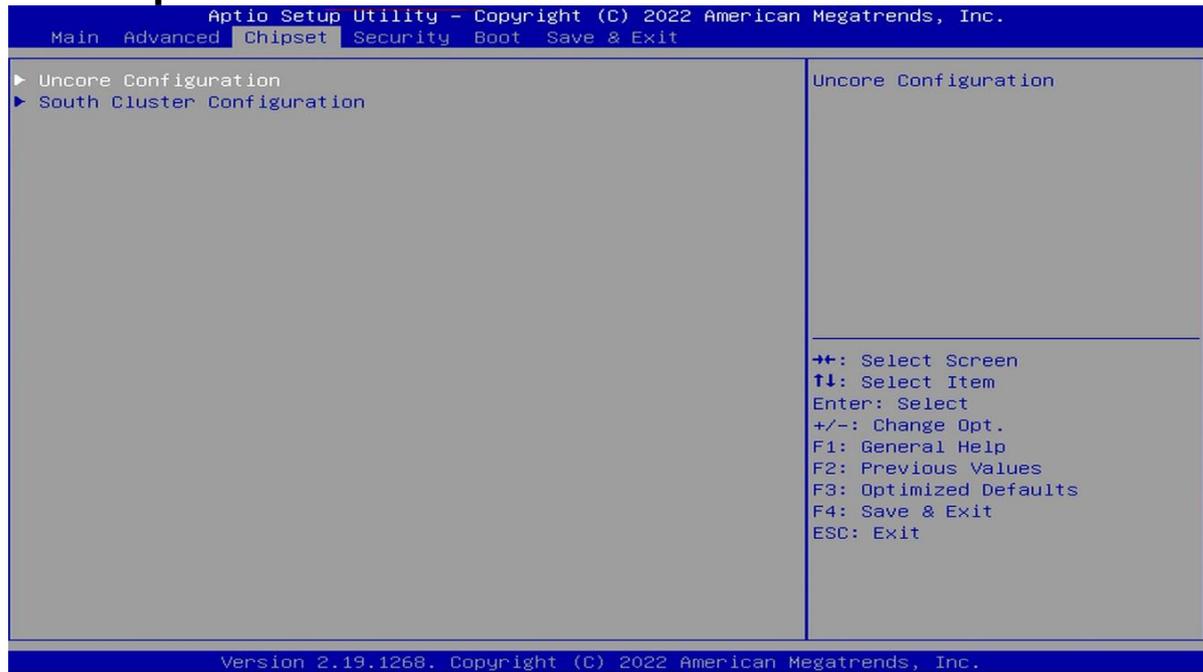
These items show current network brief information.

**\*Note:** *The secondary Realtek PCIe GBE Family Controller shows up based on actual configuration of the actual product.*

---

---

## 3-8 Chipset Menu



► **Uncore Configuration**

Press [Enter] to make settings for the following sub-items:

**GTT Size**

The optional settings are: [2MB]; [4MB]; [8MB].

**DVMT Pre-Allocated**

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M].

**DVMT Total Gfx Memory**

Use this item to select DVMT 5.0 total graphics memory size used by the internal

---

---

graphics device.

The optional settings are: [128M]; [256M]; [MAX].

### **Primary IGFX Boot Display**

Use this item to select the Video Device which will be activated during POST.

The optional settings are: [Auto]; [DISPLAY PORT]; [HDMI1] ; [HDMI2].

### **Secondary IGFX Boot Display**

Use this item to select Secondary Display Device.

The optional settings are: [Disabled]; [HDMI1]; [HDMI2].

### **Memory Information**

The working memory information will be on display.

## ▶ **South Cluster Configuration**

### ▶ **PCI Express Configuration**

Press [Enter] to make settings for the following sub-items:

#### **PCI Express Configuration**

##### **Peer Memory Write Enable**

The optional settings: [Disabled]; [Enabled].

##### **Compliance Mode**

The optional settings: [Disabled]; [Enabled].

### ▶ **SATA Configuration**

Press [Enter] to make settings for the following sub-items:

#### **SATA Controller**

Use this item to enable or disable the Chipset SATA Controller. The Chipset SATA controller supports the 2 blank internal SATA ports (up to 3Gb/s supported per port).

The optional settings are: [Enabled]; [Disabled].

When set as **[Enabled]**, user can make further settings in the following sub-items:

#### **SATA Mode Selection**

Use this item to determine how SATA controller(s) operate.

The default setting is: [AHCI].

---

---

### **SATA Port**

#### **SATA Port**

Use this item to enable or disable SATA port.

The optional settings: [Disabled]; [Enabled].

### **M.2**

#### **M.2**

Use this item to enable or disable SATA port.

The optional settings: [Disabled]; [Enabled].

#### **HD-Audio Support**

Use this item to enable or disable HD-Audio Support.

The optional settings are: [Disabled]; [Enabled].

#### **SCC eMMC Support (D28:F0)**

Use this item to enable or disable SCC eMMC Support.

The optional settings are: [Disabled]; [Enabled].

#### **eMMC Max Speed**

Use this item to select the eMMC max Speed allowed.

The optional settings are: [HS400]; [HS200]; [DDR50].

#### **CNVi Mode**

Selects CNVi Mode

The optional settings are: [Disabled]; [Auto]

#### **System State after Power Failure**

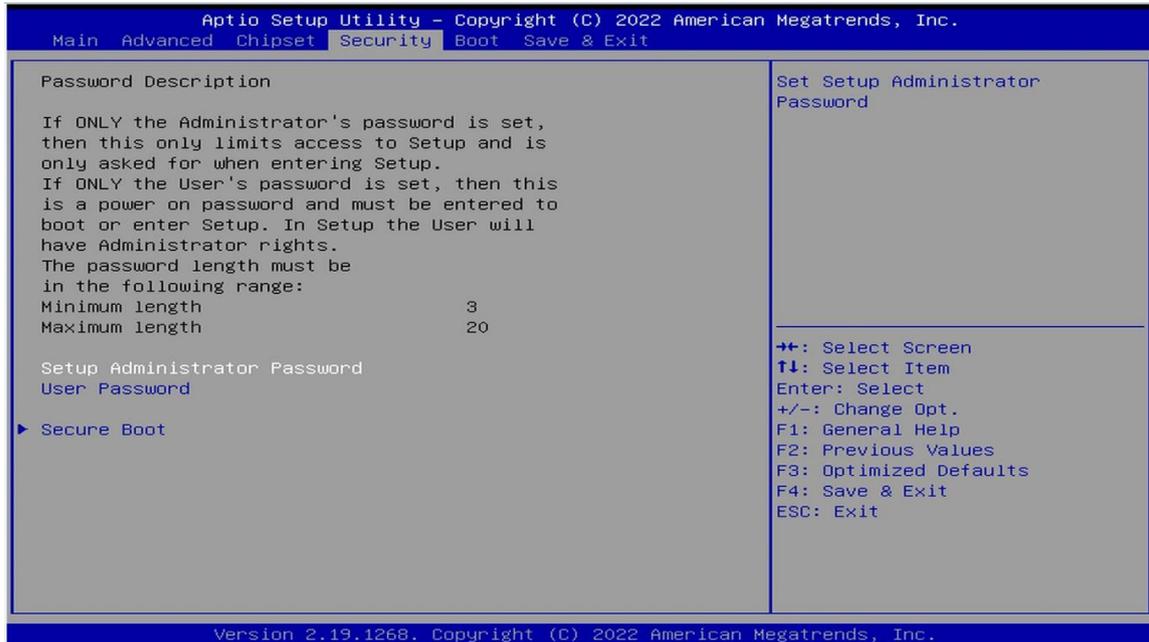
Use this item to specify what state to go to when power re-applied after a power failure (G3 state).

The optional settings are: [Always On]; [Always Off]; [Former State].

---

---

## 3-9 Security Menu



Security menu allow users to change administrator password and user password settings.

### **Administrator Password**

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

### **User Password**

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

---

---

▶ **Secure Boot**

Press [Enter] to make customized secure settings:

**System Mode**

**Secure Boot**

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.

The optional settings: [Disabled]; [Enabled].

**Secure Boot Mode**

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

The optional settings: [Standard]; [Custom].

When set as [**Custom**], user can make further settings in the following items that show up:

▶ **Restore Factory Keys**

Use this item to force system to User Mode, to install factory default Secure Boot key databases.

▶ **Reset To Setup Mode**

▶ **Key Management**

This item enables expert users to modify Secure Boot Policy variables without full authentication, which includes the following items:

**Vendor Keys**

**Factory Key Provision**

This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

The optional settings: [Disabled]; [Enabled].

▶ **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot key databases.

- 
- 
- ▶ **Reset To Setup Mode**
  - ▶ **Export Secure Boot variables**
  - ▶ **Enroll Efi Image**

This item allows the image to run in Secure Boot mode.

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

**Device Guard Ready**

- ▶ **Remove 'UEFI CA' from DB**
- ▶ **Restore DB defaults**

Use this item to restore DB variable to factory defaults.

**Secure Boot variable/Size/Keys/Key Source**

▶ **Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures**

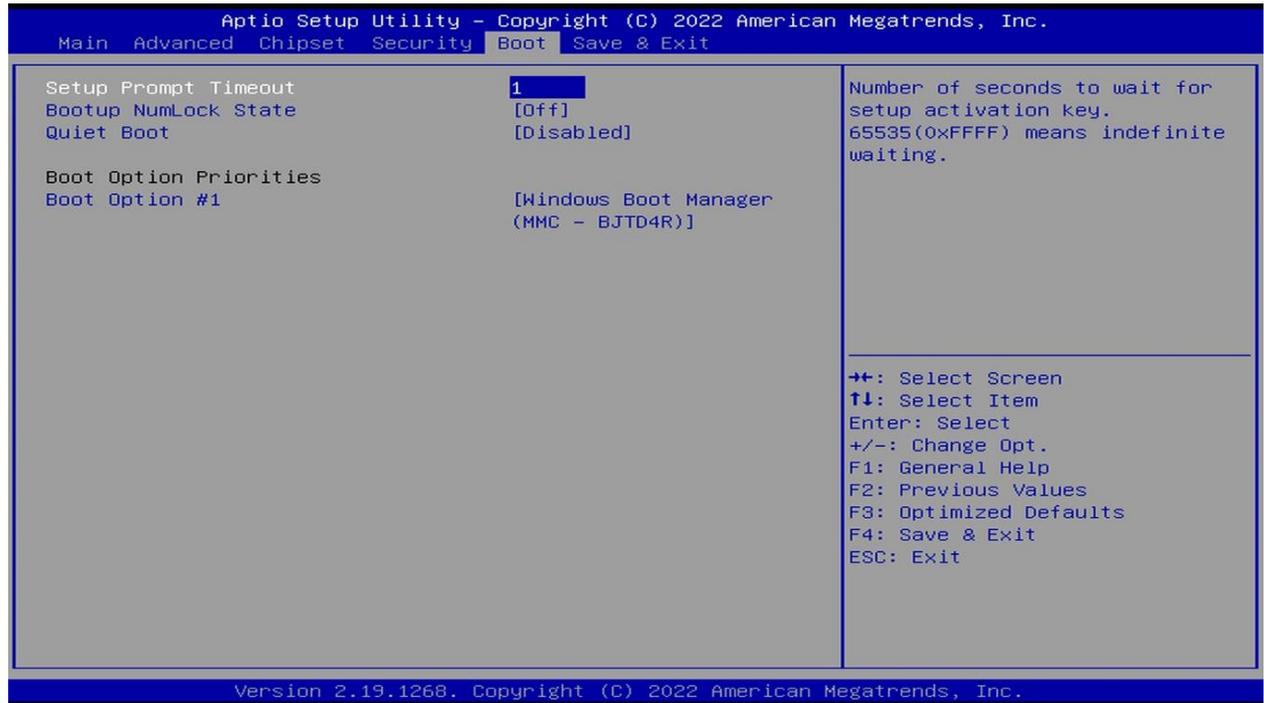
Use this item to enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:
    - a) EFI\_SIGNATURE\_LIST
    - b) EFI\_CERT\_X509 (DER)
    - c) EFI\_CERT\_RSA2048 (bin)
    - d) EFI\_CERT\_SHAXXX
  2. Authenticated UEFI Variable
  3. EFI PE/COFF Image (SHA256)
- Key Source: Factory, External, Mixed.

---

---

## 3-10 Boot Menu



### Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

### Bootup NumLock State

Use this item to select keyboard NumLock state.

The optional settings: [On]; [Off].

### Quiet Boot

The optional settings: [Disabled]; [Enabled].

---

---

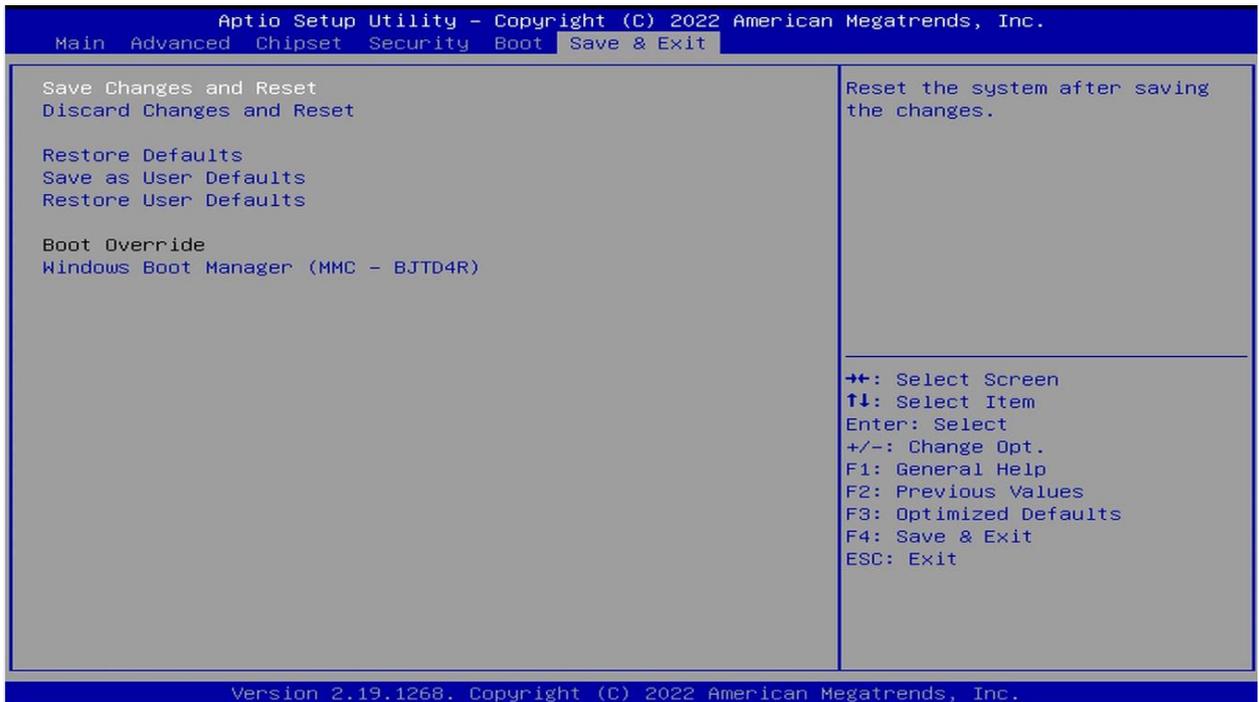
## **Boot Option Priorities**

### **Boot Option #1**

Use this item to Sets the system boot order

The optional settings: [Windows Boot Manager(MMC-BJD4R)]; [Enabled].

## **3-11 Save & Exit Menu**



### **Save Changes and Reset**

This item allows user to reset the system after saving the changes.

### **Discard Changes and Reset**

This item allows user to reset the system without saving any changes.

### **Restore Defaults**

Use this item to restore /load default values for all the setup options.

---

---

**Save as User Defaults**

Use this item to save the changes done so far as user defaults.

**Restore User Defaults**

Use this item to restore the user defaults to all the setup options.

**Boot Override****Windows Boot Manager (MMC-BJTD4R)**

This item allows user to enter the main screen