# *MU10 Series*

# *User's Manual*

***NO.: G03-MU10-F***

***Revision: 3.0***

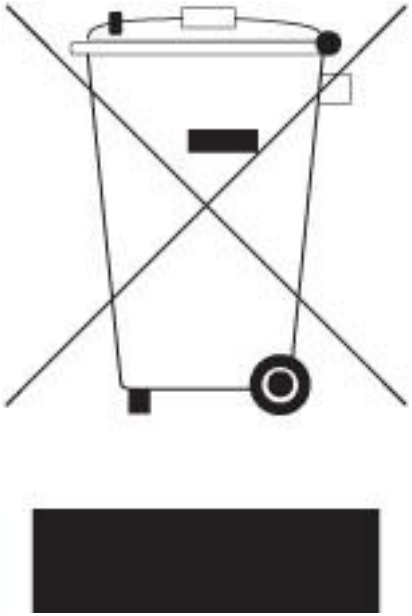
***Release date: December 13, 2022***

**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

- 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



## 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® Tiger Lake-UP3 series processor, lower power consumption but never denies high performance
- Support 2* DDR4 3200MHz SO-DIMM, maximum capacity up to 64GB
- Integrated with 1* Intel i219-LM 1.0GbE & 1* Intel i225V 2.5GbE LAN
- 2* HDMI2.0b & 2* DP1.4 (from Type-C USB 3.2 Gen.2 ports) to support up to four independent 4K HDR displays.
- Support 1 * SATAIII device
- 1* M.2 M-key 2242/2280 slot (PCIe4.0 x4/SATAIII interface) support NVMe
- 1* M.2 E-key 2230 slot (USB2.0/PCIe x1 interface) for WiFi supports CNVi
- 1* M.2 B-key 3042/3052 slot (USB3.1/USB2.0/PCIe 4.0×1 interface)
- Support 2* Type-A USB3.2 Gen.2 ports, 3* Type-C USB3.2 Gen.2 ports (2 from rear panel with DP1.4 output function; 1 from front panel with USB Power only), 2* USB2.0 ports (from internal header)
- Support 1* RS232 COM
- Support CPU Smart FAN
- Compliance with ErP standard
- Support Watchdog function
- Solution for Digital Signage / Industrial PCs / Edge Computing/AI Inference/Retail Solution/Factory Automation / IoT Solution

## 1-2 Specification

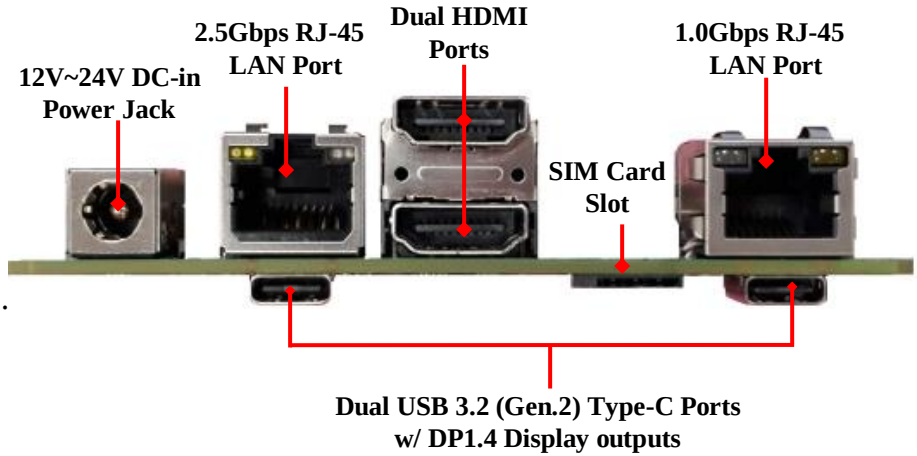
| Spec | Description |
|---|---|
| **Design** | ● NUC form factor; 10-Layers;<br>● PCB size: 101x 101mm |
| **Embedded CPU** | ● Integrated with Intel® Tiger Lake-UP3 series CPU<br>** **Note:** CPU model varies from different IPC options. Please consult your dealer for more information of onboard CPU.* |
| **Memory Slot** | ● 2*DDR4 SO-DIMM slot support 2* DDR4 3200MHz SO-DIMM up to 64GB<br>● Support dual channel function<br>** **Note:** Memory clock supporting range is decided by specific CPU of the model. For more memory compatibility information please consults your local dealer.* |
| **Expansion Slot** | ● **M2E1:**M.2 E-key 2230 (USB2.0/PCIex1 interface) for WiFi supports CNVi<br>● **M2B1:**M.2 B-key 3042/3052 (USB3.1/USB2.0/PCIex1 interface; co-function with **SIMCARDB1**)<br>● **SIMCARDB1:** SIM card slot **(Backside,** co-function with **M2B1** slot**)** |
| **Storage** | ● **SATA1:**1* SATAIII 6Gb/s port<br>● **M2M1:** M.2 M-key 2242/2280 (PCIe4.0 x4/SATAIII interface) support NVMe |
| **LAN Chip** | ● 1* Intel i219-LM LAN chip supports 10/100/1000Mbps data transfer rate<br>● 1* Intel i225-V LAN chip supports up to 2.5Gbps data transfer rate |
| **Audio Chip** | ● Realtek ALC888S-VD2 HD audio chip |
| **BIOS** | ● AMI Flash ROM |
| **Rear I/O** | ● 1* 12V~24V DC-in power jack (90W Power adapter is recommended for stable performance)<br>● 1* 2.5Gbps RJ-45 LAN port<br>● 1* 1.0Gbps RJ-45 LAN port<br>● 2* HDMI port<br>● 2* USB3.2 (Gen.2) type-C port supports DP1.4 display output **(Backside)** |

| | |
|---|---|
| | ● 1* SIM card slot **(Backside,** co-function with **M2B1** slot**)** |
| **Front I/O** | ● 2* USB 3.2 (Gen. 2) type-A port<br>● 1* USB 3.2 (Gen.2) type-C port supports USB only<br>● 1* Audio Line out/MIC combo jack |
| **Internal I/O** | ● 1* SATA Power-out connector<br>● 1* CPU FAN header**(Backside)**<br>● 1* Front panel header<br>● 1* 9-pin USB 2.0 header (Expansible to 2* USB 2.0 ports)<br>● 1* RS232 Serial port header<br>● 1* GPIO/80 port header ( default GPIO/selectable by J80PORT1 )<br>● 1* SMBUS header<br>● 1*1* Buzzer header (from **JCAS_BUZ** block) |

***Note:** For new models coming up, please refer to the website update for more specific specifications.*

## 1-3 Layout Diagram

***Rear IO Panel Diagram:***




***Front IO Panel Diagram:***

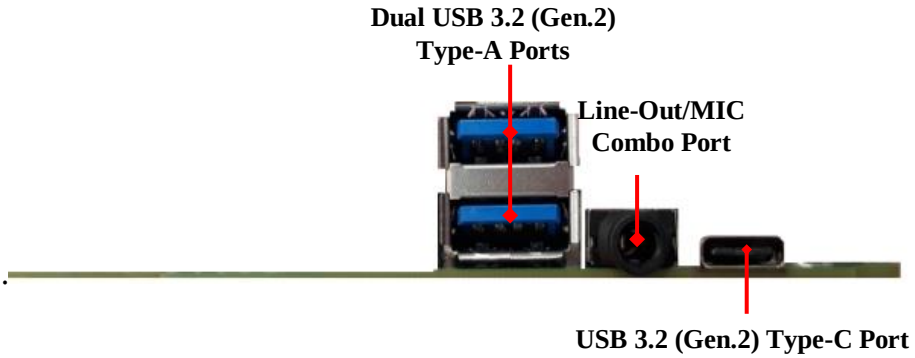
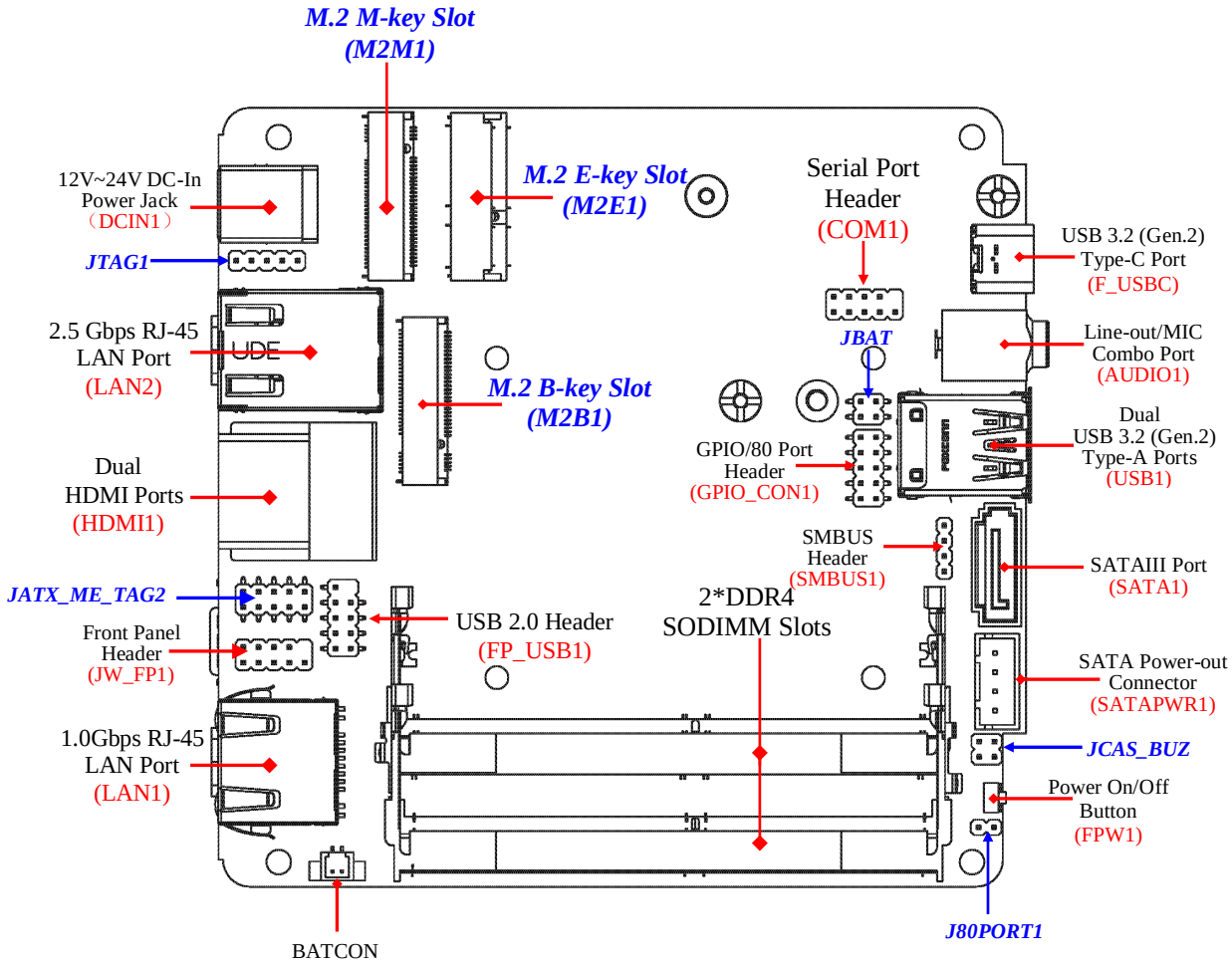
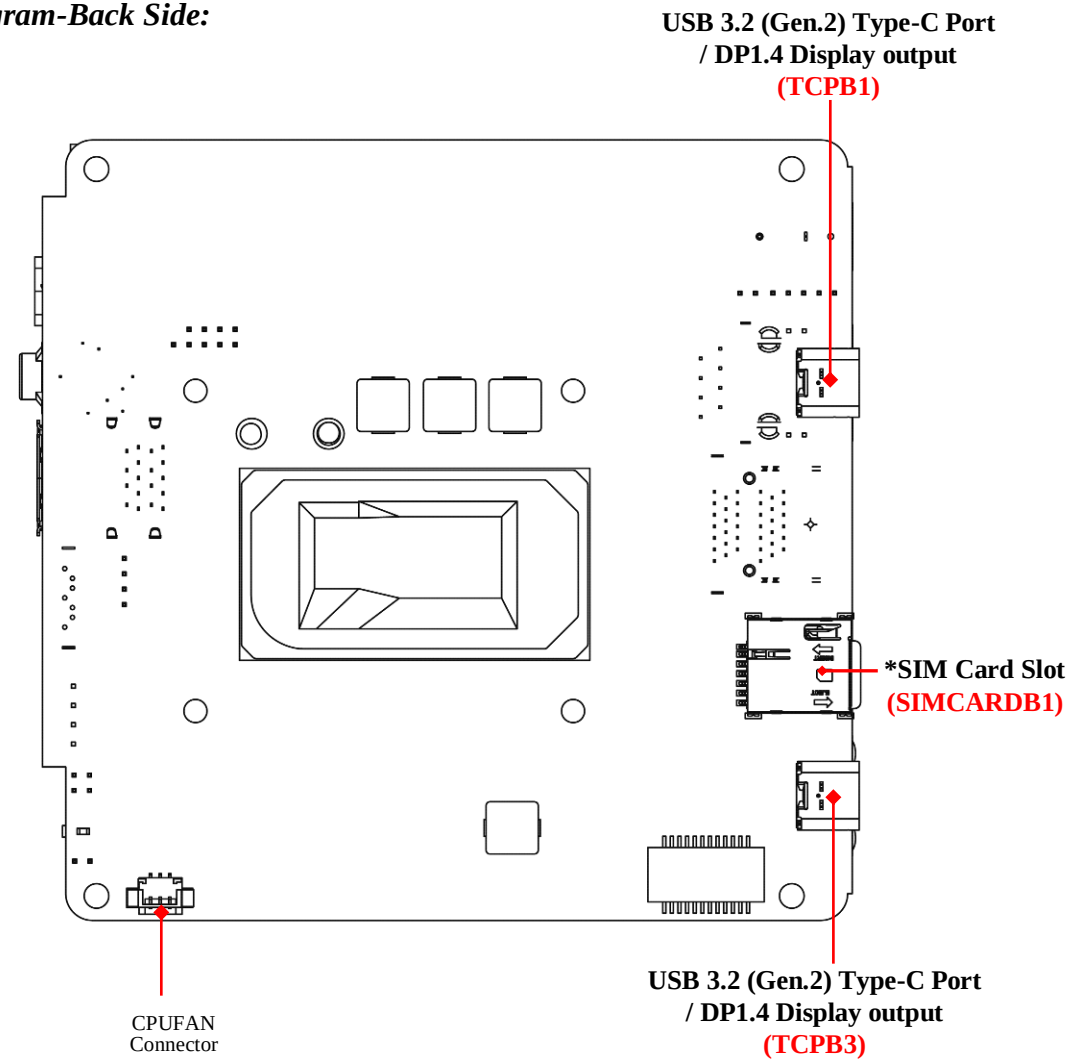


***Diagram-Front Side:***



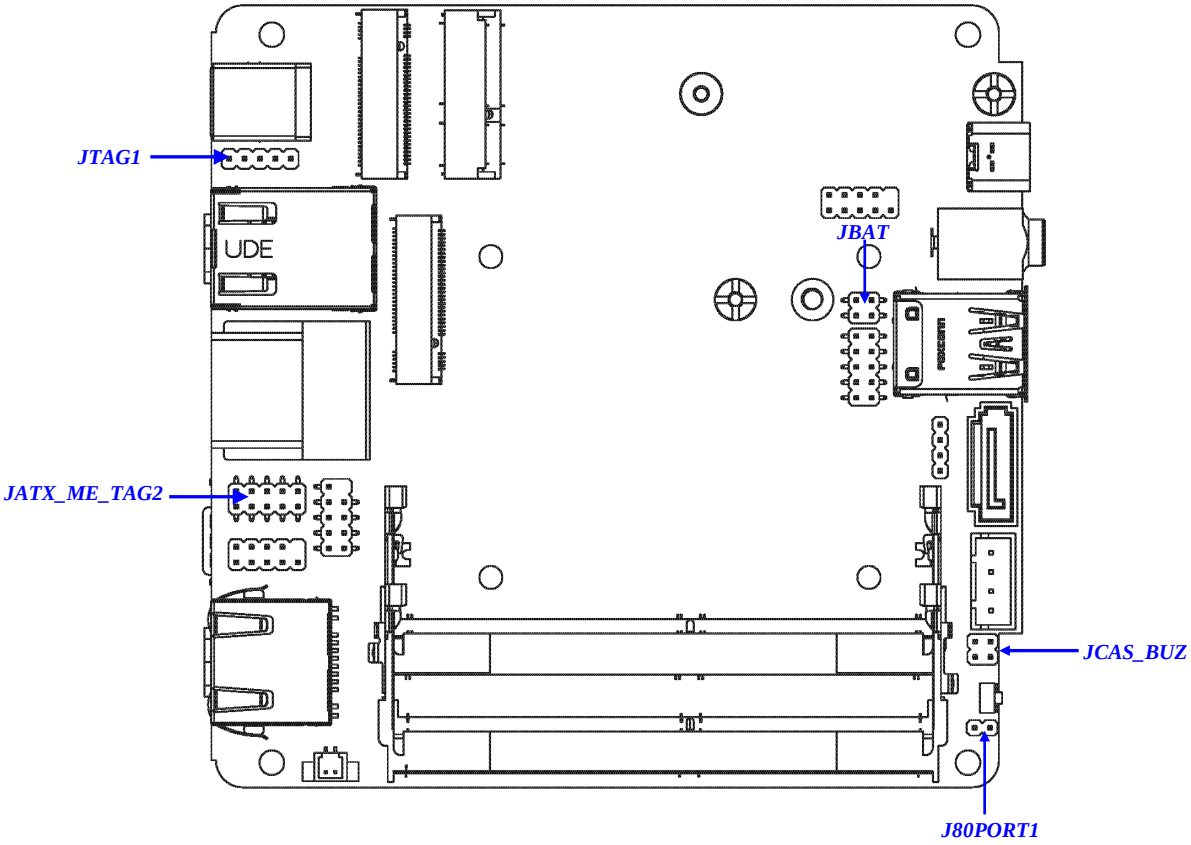

***Note:** **M2B1** slot co-functions with SIM card (backside); please install compatible 3G/4G/LTE card into rear panel SIM card holder as well for full function.*

***Diagram-Back Side:***




***Note:** SIM card slot co-functions with **M2B1** (backside); please install compatible 3G/4G/LTE card into SIM card holder & compatible type-3042/3052 card into **M2B1** as well for full function.*

***Jumper Positions:***



## *Jumpers*

| Jumper | Name | Description | Pitch |
|---|---|---|---|
| JBAT | ***Pin (1-2):*** Clear CMOS<br>***Pin (3-4):*** Clear ME Register | 4-Pin Block | 2.0mm |
| JCAS_BUZ | ***Pin (1-2):*** Case Open Display Select<br>***Pin (3-4):*** Buzzer header | 4-Pin Block | 2.0mm |
| J80PORT1 | *GPIO_CON1 GPIO/80 Port Select* | 2-Pin Block | 2.0mm |
| JTAG1 | ***for lab test only*** | 5-Pin Block | 2.0mm |
| JATX_ME_TAG2 | ***Pin (1/3/5):*** AT/ATX Mode Select<br>***Pin (7/9):*** ME_OVERRIDE<br>***Pin (2/4/6/8/10): for lab test only*** | 10-Pin Block | 2.0mm |

## *Connectors*

| Connector | Name |
|---|---|
| DCIN1 | 12V~24V DC–in Power Jack |
| LAN2 | 2.5Gbps RJ-45 LAN Port Connector |
| HDMI1 | HDMI Port Connector X2 |
| LAN1 | 1.0 Gbps RJ-45 LAN Port Connector |
| TCPB1/TCPB3 (**Backside**) | USB 3.2 (Gen.2) Type-C Port/ DP1.4 Display output |
| SIMCARDB1 (**Backside**) | SIM Card Slot |
| F_USBC | USB 3.2 (Gen.2) Type-C Port Connector |
| AUDIO1 | Audio Line Out/MIC Combo Connector |
| USB1 | USB 3.2 (Gen.2) Type-A Port Connector X2 |
| SATA1 | SATAIII Port Connector |
| SATAPW1 | SATA Power out Connector |
| FPW1 | Front Panel Power On/Off Button |

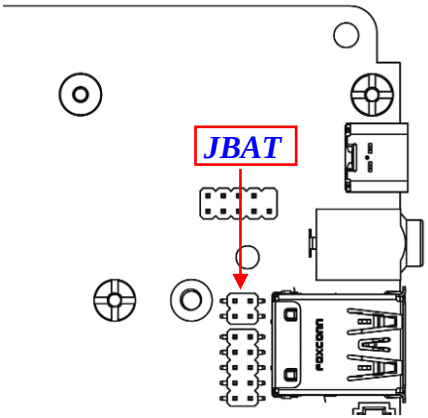
## *Headers & Wafers*

| Header | Name | Description | Pitch |
|---|---|---|---|
| JW_FP1 | Front Panel Header(PWR LED/ HDD LED/Power Button /Reset) | 9-pin Block | 2.0mm |
| FP_USB1 | USB 2.0 Header | 9-pin Block | 2.0mm |
| COM1 | Serial Port Header | 9-pin Block | 2.0mm |
| GPIO_CON1 | GPIO/80 Port Header | 10-pin Block | 2.0mm |
| SMBUS1 | SMBUS Header | 4-pin Block | 2.0mm |
| CPUFANB1 (**Backside**) | CPUFAN Wafer | 3-pin Block | 1.25mm |

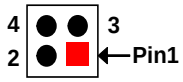
# Chapter 2
# Hardware Installation

## 2-1 Jumper Settings

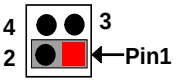
***Pin (1-2) of JBAT (4-pin): Clear CMOS Settings (pitch 2.0mm)***




***Pin 1&2 of JBAT→Clear CMOS***

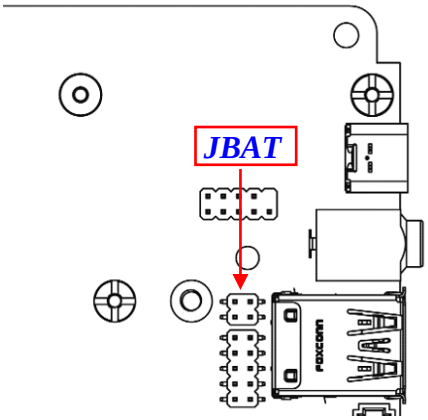



**1-2 Open: Normal(Default);**

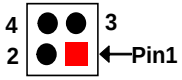



**1-2 Closed: Clear CMOS(One Touch).**

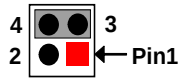
***Pin (3-4) of JBAT (4-pin): Clear ME Register (pitch 2.0mm)***




***Pin 3&4 of JBAT→Clear ME Register***

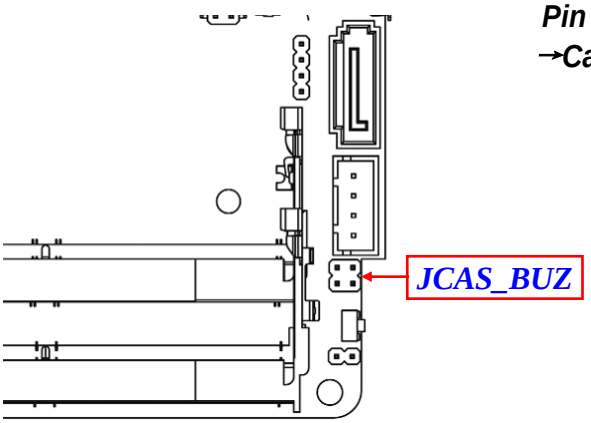



**3-4 Open: Normal(Default);**

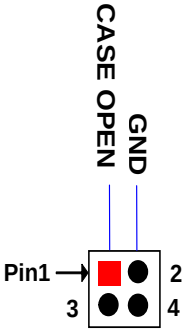



**3-4 Closed: Clear ME Register.**

***Pin (1-2) of JCAS_BUZ (4-pin): Case Open Message Display Function Select (pitch 2.0mm)***

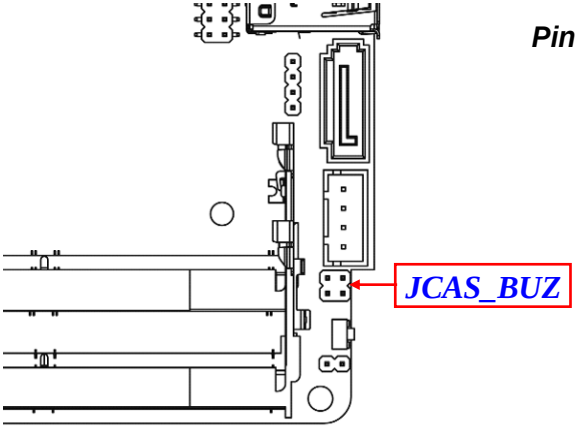



***Pin 1&2 of JCAS_BUZ***
***→Case Open Detection***

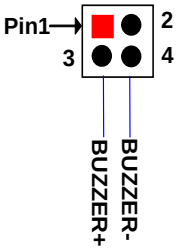



**Pin (1-2) Short**: *When Case open function pin short to GND, the Case open function was detected. When used, needs to enter BIOS and enable '**Case Open Detect**' function. In this case if your case is removed, next time when you restart your computer, a message will be displayed on screen to inform you of this.*

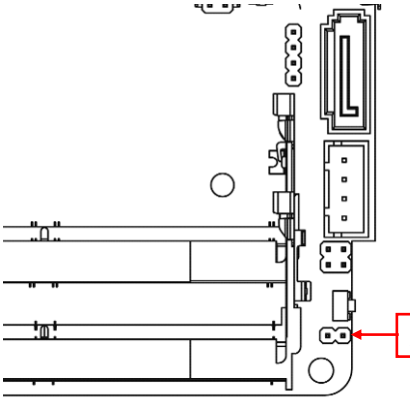
***Pin (3-4) of JCAS_BUZ (4-pin): Buzzer Header (pitch 2.0mm)***



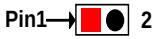

***Pin 3&4 of JCAS_BUZ →Buzzer Header***



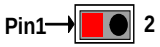
## *J80PORT1 (2-pin):GPIO_CON1 GPIO/80 Port Select (pitch 2.0mm)*




*J80PORT1→GPIO/80 Port Select*

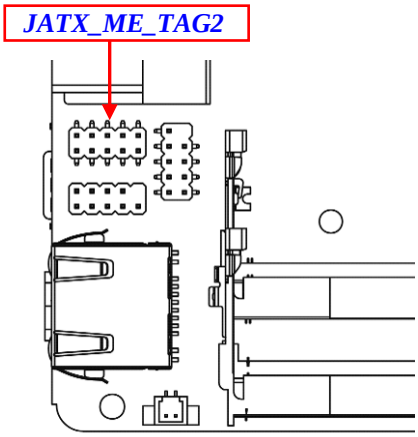



**1-2 Open: GPIO_CON1=GPIO Port(defult);**

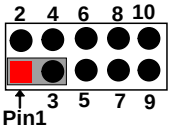



**1-2 Closed: GPIO_CON1=80 Port.**

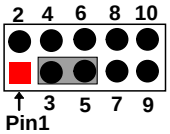
## *Pin 1/3/5 of JATX_ME_TAG2(10-pin):* ATX Mode/AT Mode Select *(pitch 2.0mm)*




*Pin 1/3/5 of JATX_ME_TAG2*
*→ ATX/AT Mode Select*



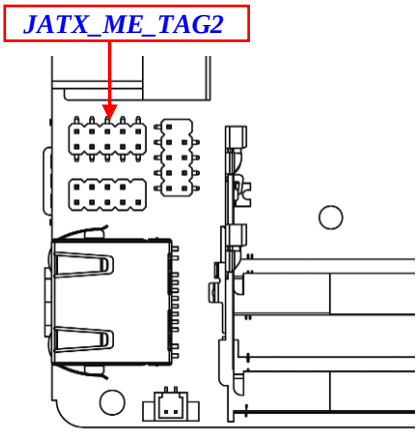

**1-3 Closed: ATX Mode Selected(Default);**



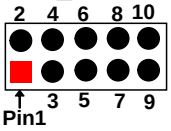

**3-5 Closed: AT Mode Selected.**

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

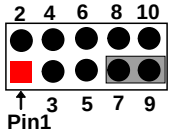
***Pin 7/9 of JATX_ME_TAG2(10-pin):*** **ME_OVERRIDE** ***(pitch 2.0mm)***




***Pin 1/3/5 of JATX_ME_TAG2***
***→ For ME_OVERRIDE***




**7-9 Open: Normal;**




**7-9 Closed: ME Overriden.**

****Note:*** ***JTAG1*** *and Pin (2/4/6/8/10) of* ***JATX_ME_TAG2*** *are for test only; user does not need to set up.*

# 2-2 Connectors and Headers

## 2-2-1 Connectors

### (1) External I/O Connectors

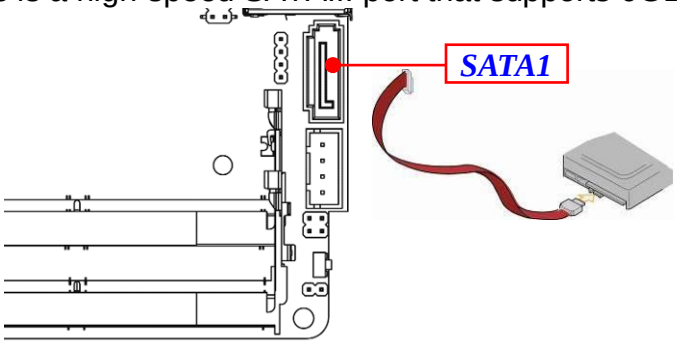
**** Refer to Page-3 Rear IO & Front IO Diagram.***

| *Icon* | *Name* | *Function* |
|---|---|---|
|  | **12V~24V DC-in Power Jack** | For user to connect compatible power adapter to provide power supply for the system. |
|  | **RJ-45 LAN Port** | This connector is standard RJ-45 LAN jack for Network connection.<br>***LAN2:*** *2.5Gbps RJ-45 LAN Port Connector*<br>***LAN1:*** *1.0 Gbps RJ-45 LAN Port Connector* |
|  | **Dual HDMI 2.0b Port** | HDMI port: to connect display device that support HDMI specification.<br>2* HDMI 2.0b (Max Resolution: 4096×2160@60Hz) |
|  | **SIM Card Slot (along with M2B1)** | Please install compatible 3G/4G/LTE card into SIM card holder & compatible M.2 B-key type-3042/3052 card into **M2B1** as well for full function. |
|  | **Type-C USB/DP Port** | 2* Rear **(Backside)**USB3.2 (Gen.2) Type-C support DP1.4 display output & USB function.<br>1* Front USB3.2 (Gen.2) Type-C supports USB function only. |
|  | **Audio Line Out/MIC Combo Connector** | This audio jack can function as audio Line-out & MIC-in combo connector with compatible cable connection. |

| | | |
|---|---|---|
|  | **Type-A USB 3.2 (Gen.2) Port** | To connect USB keyboard, mouse or other devices compatible with USB 3.2 (Gen.2) specification. Ports support up to 10Gbps data transfer rate. |

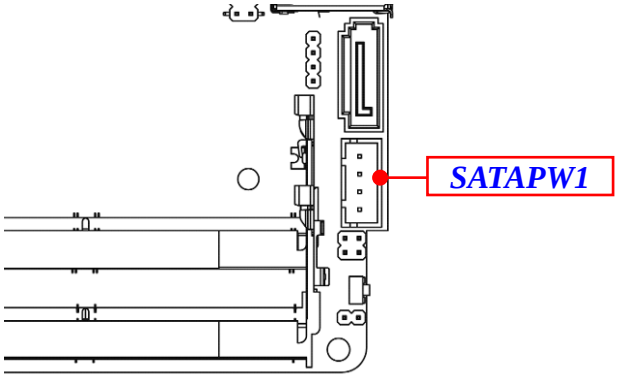
### *(2) SATA1(7-pin): SATAIII Port connector*

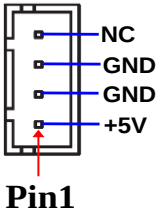
This is a high-speed SATAIII port that supports 6GB/s transfer rate.




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

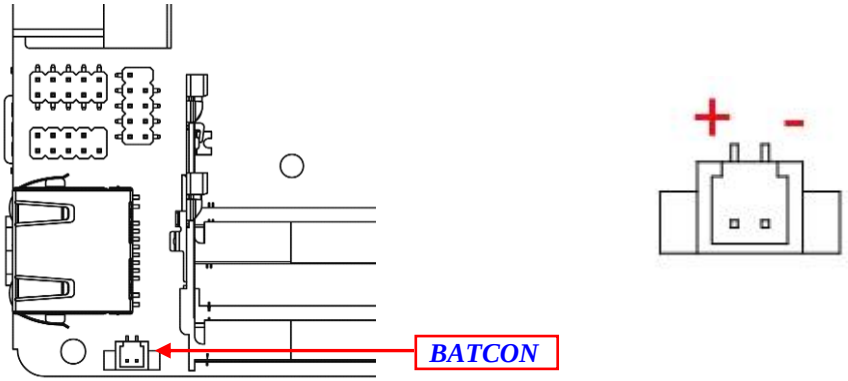
### *(3) SATAPW1 (4-pin): SATA HDD Power-Out Connector*



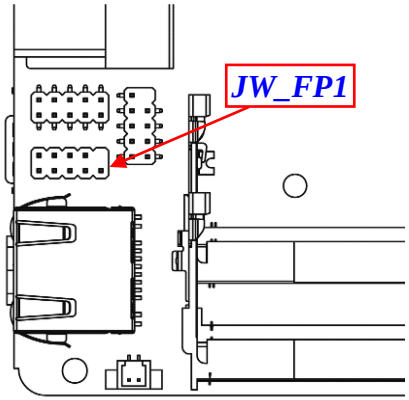
***Warning:*** *Make sure that Pin-1 of compatible SATA Power out connector is inserted into corresponding Pin-1 of* ***SATAPW1*** *connector to avoid possible damage to the board and hard disk driver!*

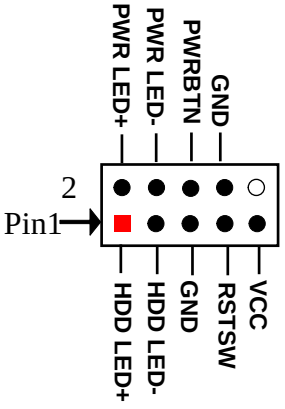
### *(4) BATCON (2-pin): Battery Connector*



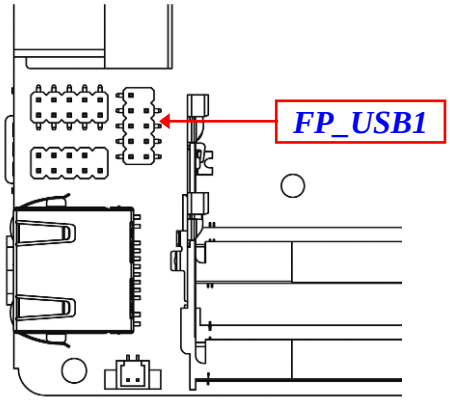
## 2-2-2 Headers & Wafers

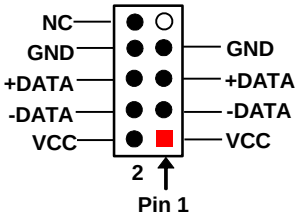
### JW_FP1 (9-pin): Front Panel Header *(pitch 2.0mm)*



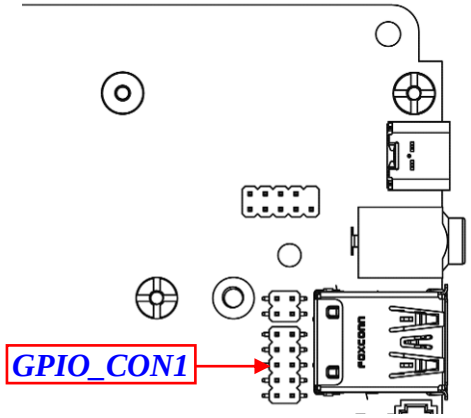



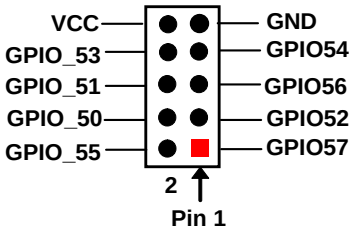

### FP_USB1 (9-pin): USB 2.0 Port Header *(pitch 2.0mm)*



**GPIO_CON1 (10-pin): GPIO/80 Port Header *(pitch 2.0mm)***

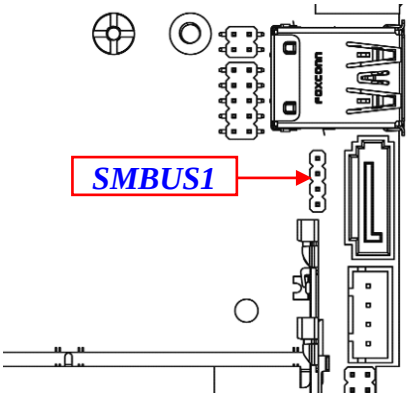


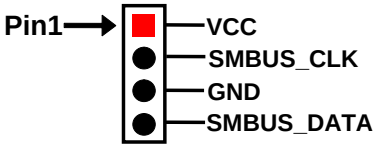




***J80PORT1 Open: For Normal 8-bit GPIO Function;***
***J80PORT1 Closed: For 80Port Function.***

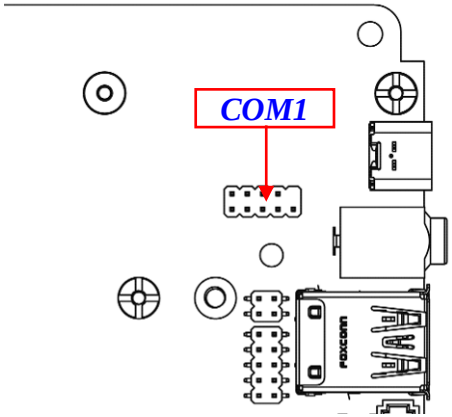
***Note:** Please refer to **Page-12 J80PORT1** jumper setting for GPIO_CON1 header **GPIO Port** or **80 Port** function select.*

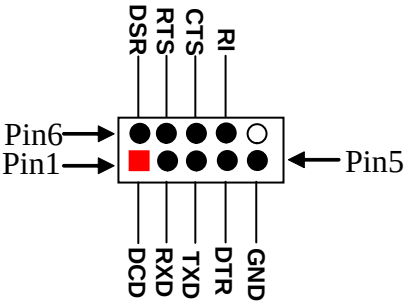
**SMBUS1 (4-pin): SMBUS Header *(pitch 2.0mm)***



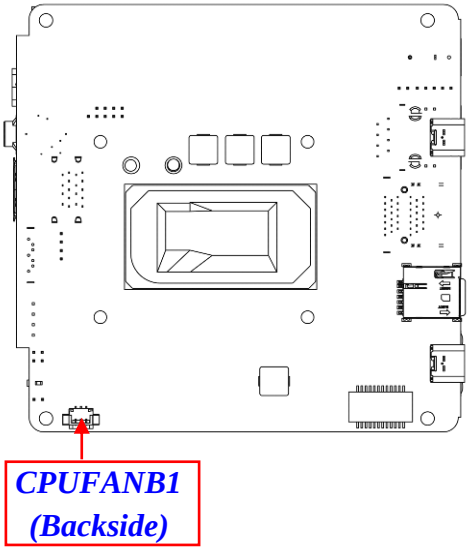



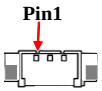
## COM1 (9-pin): RS232 Serial Port Headers *(pitch 2.0mm)*




## CPUFANB1 (3-pin): CPU FAN Wafer *(pitch 1.25mm)*




| Pin No. | Definition |
|---|---|
| 1 | VCC |
| 2 | GND |
| 3 | Fan Detect |

## 2-2-3 Maximum Voltage & Current Limit

Below is a list of maximum voltage & Current Limit specification for motherboard interface (including but not limited to slots, connectors, wafers and headers) for setup reference:

| Part No. | | Working Voltage | Current Support |
|---|---|---|---|
| ***USB Ports from*** | ***Rear Backside:TCPB1*** *(Type-C ALT)* | 5V | 3A |
| | ***Rear Backside:TCPB3*** *(Type-C ALT)* | 5V | 3A |
| | ***Front: F_USBC*** *(Type-C USB)* | 5V | 3A |
| | ***Front: USB1*** *(USB 3.2X2)* | 5V | 1.5A |
| | ***Internal: FP_USB1*** *(USB 2.0X2)* | 5V | 0.5A |
| **CPUFANB1** | | 5V | 0.5A |
| **SATAPW1** | | 5V | 1A |
| **JW_FP1** | | 5V | 1A |
| ***GPIO_CON1*** | | 5V | 1A |
| **SMBUS1** | | 5V | 0.3A |
| **M2M1** | | 3.3V | 2A |
| **M2E1** | | 3.3V | 2A |
| **M2B1** | | 3.3V | 2A |

# 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 form our official website.

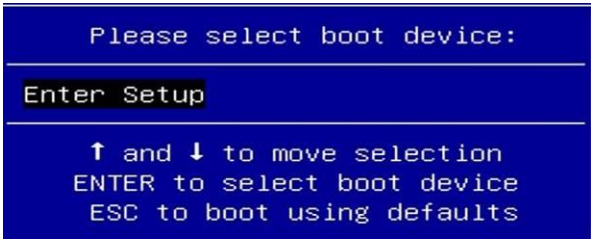
The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary 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

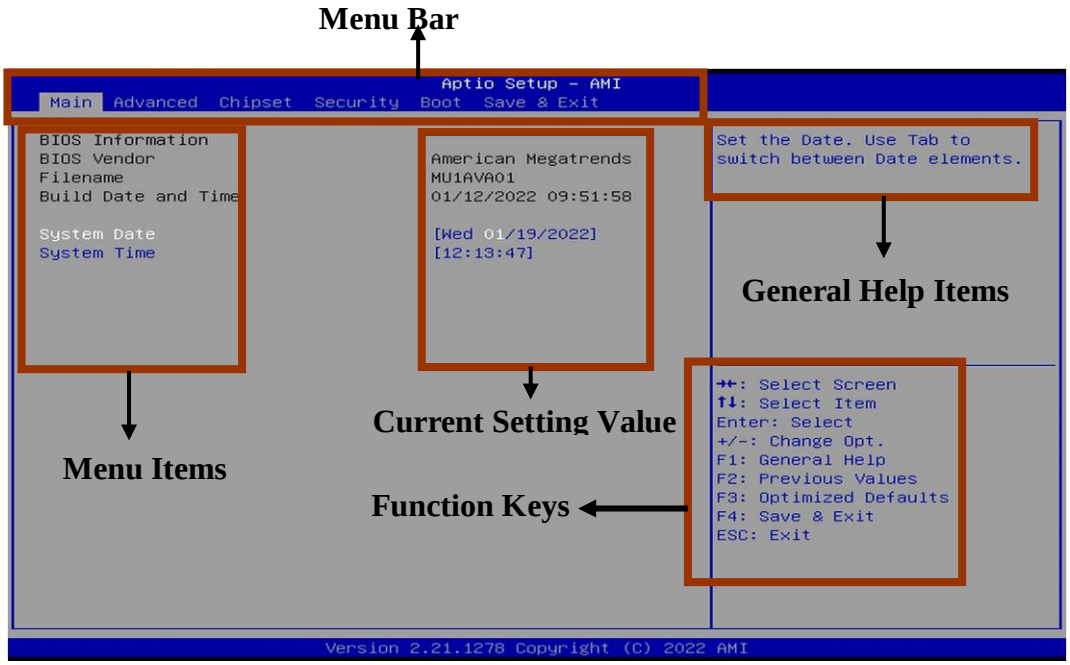
Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.




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

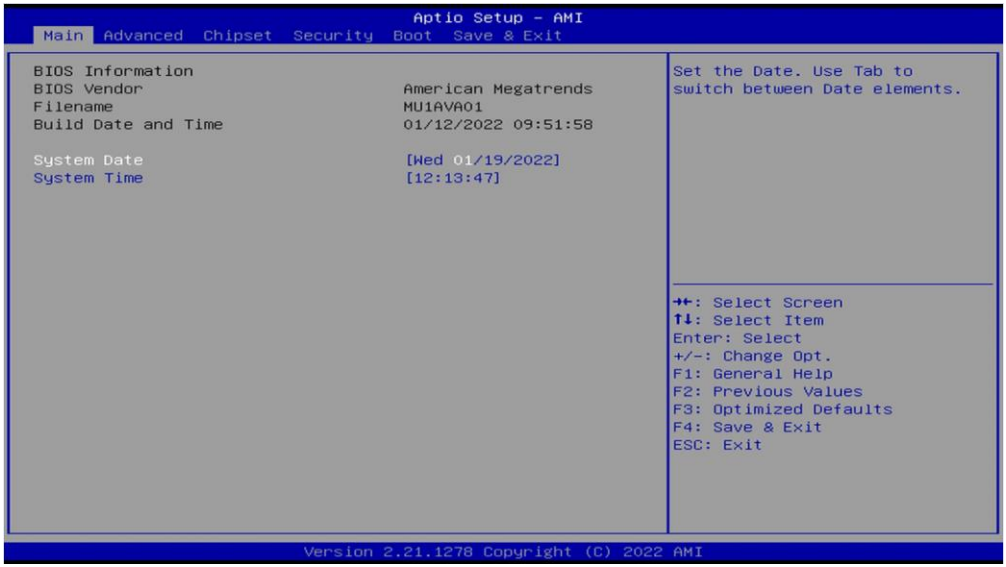
**There are six menu bars on top of BIOS screen:**

| | |
|---|---|
| **Main** | To change system basic configuration |
| **Advanced** | To change system advanced configuration |
| **Chipset** | To change chipset configuration |
| **Security** | Password settings |
| **Boot** | To change boot settings |
| **Save & Exit** | 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.

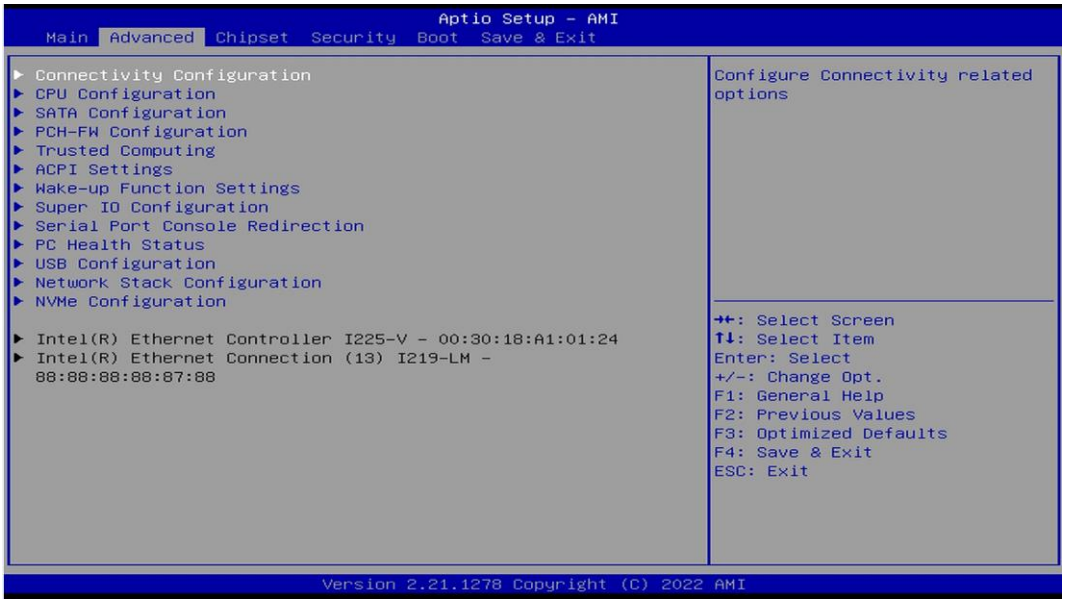
## 3-6 Main Menu

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




- **Connectivity Configuration**
  Use this item to configure Connectivity related options.
  Press [Enter] to make settings for the following sub-items:
  ***CNVi present***
  ***CNVi Configuration***
  **CNVi Mode**
  This option configures Connectivity.
  The optional settings: [Disabled Integrated]; [Auto Detection].
  **[Auto Detection]** means that if Discrete solution is discovered it will be enabled

by default. Otherwise Integrated solution (CNVi) will be enabled;
**[Disabled Integrated]** disables Integrated Solution.

- **CPU Configuration**

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

  **Hyper-Threading**

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

  **Intel (VMX) Virtualization Technology**

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

  When set as **[Enabled]**, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

  **Intel(R) SpeedStep(tm)**

  This item allows more than two frequency ranges to be supported.

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

  **Turbo Mode**

  Use this item to enable or disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).

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

  ***Note:** **'Turbo Mode'** is only available to optional models (refer to Page-3 for model differences).*

  **C states**

  Use this item to enable or disable CPU Power Management. When set as [Enabled], it allows CPU to go to C states when it's not 100% utilized.

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

  **Hardware Prefetcher**

  Use this item to turn on/off the MLC streamer prefetcher.

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

  **Adjacent Cache Line Prefetch**

  Use this item to turn on/off prefetching of adjacent cache lines.

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

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

  **SATA Controller(s)**
  Use this item to enable or disable SATA Device.
  The optional settings: [Enabled]; [Disabled].
  When set as **[Enabled]**, the following items shall appear:
  ***M.2***
  **Port**
  Use this item to enable or disable SATA Port.
  The optional settings: [Disabled]; [Enabled].
  ***SATA***
  **Port**
  Use this item to enable or disable SATA Port.
  The optional settings: [Disabled]; [Enabled].
  **Hot Plug**
  Use this item to designate this port as Hot Pluggable.
  The optional settings: [Disabled]; [Enabled].
- **PCH-FW Configuration**
  Press [Enter] to view Management Engine Technology Parameters and make settings in the following sub-item:
  ***ME Firmware Version***
  ***ME Firmware Mode***
  **TPM Device Selection**
  Use this item to select TPM Device.
  The optional settings: [dTPM]; [PTT].
  **[PTT]**: Enable PTT in SkuMgr; **[dTPM]**: Disable PTT in SkuMgr.
  ***Warning!*** *PTT/dTPM will be disabled and all data saved on it will be lost.*
- **Firmware Update Configuration**
  Press [Enter] to make settings for '**Me FW Image Re-Flash**'.

**Me FW Image Re-Flash**
Use this item to enable or disable Me FW Image Re-Flash function.
The optional settings: [Disabled]; [Enabled].

** **Note**: In the case that user needs to update Me firmware, user should set **'Me FW Image Re-Flash**' as [**Enabled**], save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as [**Disabled**], but user can still re-flash to update firmware next time.*

- **Trusted Computing**

Press [Enter] to view current status information, or make further settings in the following sub-items:

***Configuration***

**Security Device Support**
Use this item to enable or disable BIOS support for security device. O.S. will not show 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 items:

**Pending Operation**
Use this item to schedule an operation for the Security Device.
***Notice!*** *Your Computer will reboot during restart in order to change State of Security Device.*
The optional settings are: [None]; [TPM Clear].

**TPM 2.0 UEFI Spec Version**
Use this item to select the TCG2 spec version support
The optional settings are: [TCG_1_2]; [TCG_2].
**[TCG_1_2]:** The Compatible mode for Win8/Win10
**[TCG_2]:** Support new TCG2 protocol and event format for Win10 or later version.
****Note: 'Trusted Computing'** is only available to optional models (refer to **Page-3** for model differences).*

- **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: [Suspend Disabled]; [S3 (Suspend to RAM)].
- **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).
  **Wake-up Minute Increase**
  Use this item to select 1-60
  **USB S3/S4 Wake-up**
  Use this item to enable or disable USB S3/S4 wake-up.
  The optional settings: [Disabled]; [Enabled].

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

**USB S5 Power**

Use this item to enable or disable USB Power after System Shutdown.

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

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

- **Super IO Configuration**

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

***Super IO Configuration***

**ERP Support**

Use this item to select Energy-Related Products function. This item should be set as [Disabled] if you wish to have all active wake-up functions.

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

- **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 Port (COM).

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

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

***Device Settings***

**Change Settings**

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

The optional settings: [IO=3F8h; IRQ=4;]; [IO=3F8h; IRQ=3,4,5,7,10,11;]; [IO=2F8h; IRQ=3,4,5,7,10,11;]; [IO=3E8h; IRQ=3,4,5,7,10,11;]; [IO=2E8h; IRQ=3,4,5,7,10,11;].

**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 [4] to [255] seconds when 'WatchDog Reset Timer Unit' set as [Sec]; or in the range of [4] to [255] minutes when 'WatchDog Reset Timer Unit' set as [Min].

**WatchDog Reset Timer Unit**

The optional settings: [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 **JATX_AT_TAG2** jumper setting pin 1-3 for ATX Mode & pin 3-5 AT Mode Select).*

**Case Open Detect**

Use this item to detect case have ever been opened, 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 **JCAS_BUZ** jumper setting for Case Open Detection*); if Pin 1&2 of ***JCAS_BUZ*** are short, system will show Case Open Message during POST.

- **Serial Port Console Redirection**

***COM1***

**Console Redirection**

Use this item to enable or disable COM1 Console Redirection.

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

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

- **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 sub-items.

***COM1***

***Console Redirection Settings***

**Terminal Type**

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

**Putty KeyPad**

Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

***Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS)***

**Console Redirection EMS**

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***

**Terminal Type EMS**

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 them [VT100]. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

**Bits per second EMS**

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 EMS**

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 EMS***

The default setting is: [8].

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

***Parity EMS***

The default setting is: [None].

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

***Stop Bits EMS***

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**’ and set value in ‘**Shutdown Temperature**’.

**SmartFAN Configuration**

Press [Enter] to make settings for ‘**SmartFan Configuration**’:

***SmartFAN Configuration***

**CPUFAN Smart Mode**

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

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

**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.

- **USB Configuration**

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

***USB Configuration***

**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: [Enabled]; [Disabled].

**USB Mass Storage Driver Support**

Use this item to enable or disable USB mass storage driver support.

The optional settings: [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: [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: [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. ‘Auto’ uses default value: for a root port it is 100 ms, for

a hub port the delay is taken from hub descriptor.
The optional settings: [Auto]; [Manual].
Select **[Manual]** you can set value for the following sub-item: '**Device power-up delay in seconds**', the delay range in from 1 to 40 seconds, in one second increments.

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

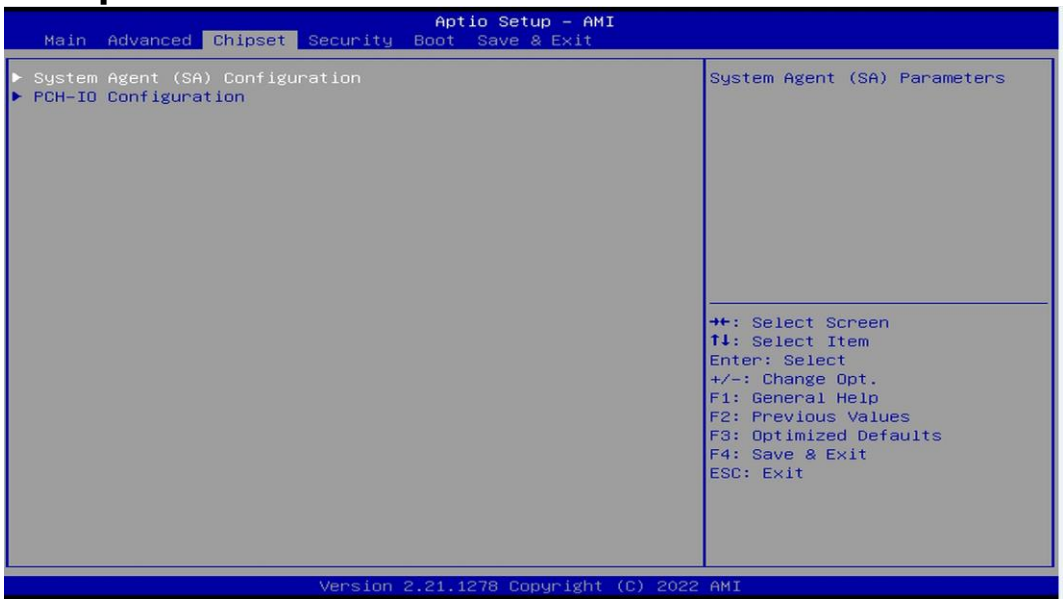
  **Network Stack**
  Use this item to enable or disable UEFI Network Stack.
  The optional settings: [Disabled]; [Enabled].
  When set as **[Enabled]**, the following sub-items shall appear:
  **IPv4 PXE Support**
  Use this item to enable IPv4 PXE boot support. When set as [Disabled], IPv4 boot support will not be available.
  The optional settings: [Disabled]; [Enabled].
  **IPv6 PXE Support**
  Use this item to enable IPv6 PXE boot support. When set as [Disabled], IPv6 boot support will not be available.
  The optional settings: [Disabled]; [Enabled].
  **PXE boot wait time**
  Use this item to set wait time to press [ESC] key to abort the PXE boot.
  Use either [+] / [-] or numeric keys to set the value.
  **Media detect count**
  Use this item to set number of times presence of media will be checked.
  Use either [+] / [-] or numeric keys to set the value.

- **NVMe Configuration**
  Press [Enter] to view current NVMe Configuration.
  **Note*: options only when NVME device is available.*

- **Intel(R) Ethernet Connection I225-V - XX:XX:XX:XX:XX:XX**
  This item shows current network brief information.

- **Intel(R) Ethernet Connection (13) I219-LM - XX:XX:XX:XX:XX:XX**
  This item shows current network brief information.

## 3-8 Chipset Menu




- **System Agent (SA) Configuration**
  Press [Enter] to make settings for the following sub-items:
  ***System Agent (SA) Configuration***
  ***VT-d***
- **Memory Configuration**
  Press [Enter] to view brief information for the working memory module.
- **Graphics Configuration**
  Press [Enter] to make further settings for Graphics Configuration.
  ***Graphics Configuration***
  **Aperture Size**
  Use this item to select the Aperture Size.

The optional settings: [128M]; [256M]; [512M]; [1024M].
***Note:** Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.*

**DVMT Pre-Allocated**

Use this item to select DVMT5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
The optional settings: [0M]; [32M]; [64M]; [96M]; [128M]; [160M].

**DVMT Total Gfx Mem**

Use this item to select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
The optional settings: [128M]; [256M]; [MAX].

► **VMD setup menu**

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

**Enable VMD controller**

Use this item to enable or disable to VMD controller.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:

**Map this Root Port under VMD**

Use this item to map/unmap this root port to VMD.
The optional settings: [Disabled]; [Enabled].
***Root Port BDF details***

► **PCH-IO Configuration**

Press [Enter] to make settings for the following sub-items:
***PCH-IO Configuration***

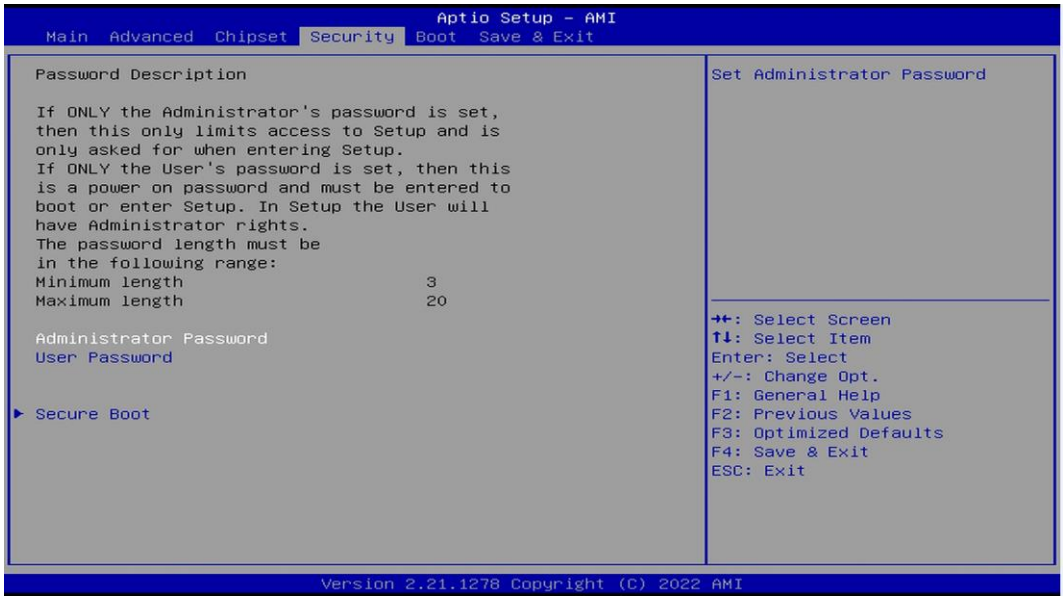
**USB Controller**

Use this item to enable or disable USB Physical Connector (physical port). Once **[Disabled]** any USB devices plug into the connector will not be detected by BIOS or OS.

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

**HD Audio**
Use this item to control Detection of the HD-Audio device.
The optional settings: [Disabled]; [Enabled].
[**Disabled**]: HDA will be unconditionally disabled.
[**Enabled**]: HAD will be unconditionally enabled.
**System State After Power Failure**
Use this item to specify what state to go to when power is re-applied after a power failure (G3 state).
The optional settings: [Always On]; [Always Off]; [Former State].
**Note:* The option [Always On] and [Former State] are affected by '**ERP Support**' function. Please disable ERP to support [Always On] and [Former State] function.*
**Onboard Lan1 Controller**
Use this item to control the PCI Express Root Port.
The optional settings: [Disabled]; [Enabled].
When set as **[Enabled]**, the following sub-items shall appear:
**Wake on LAN Enable**
Use this item to enable or disable integrated LAN to wake the system.
The optional settings: [Enabled]; [Disabled].
**Onboard Lan2 Controller**
Use this item to enable or disable onboard NIC.
The optional settings: [Enabled]; [Disabled].

# 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 user 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 user 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.

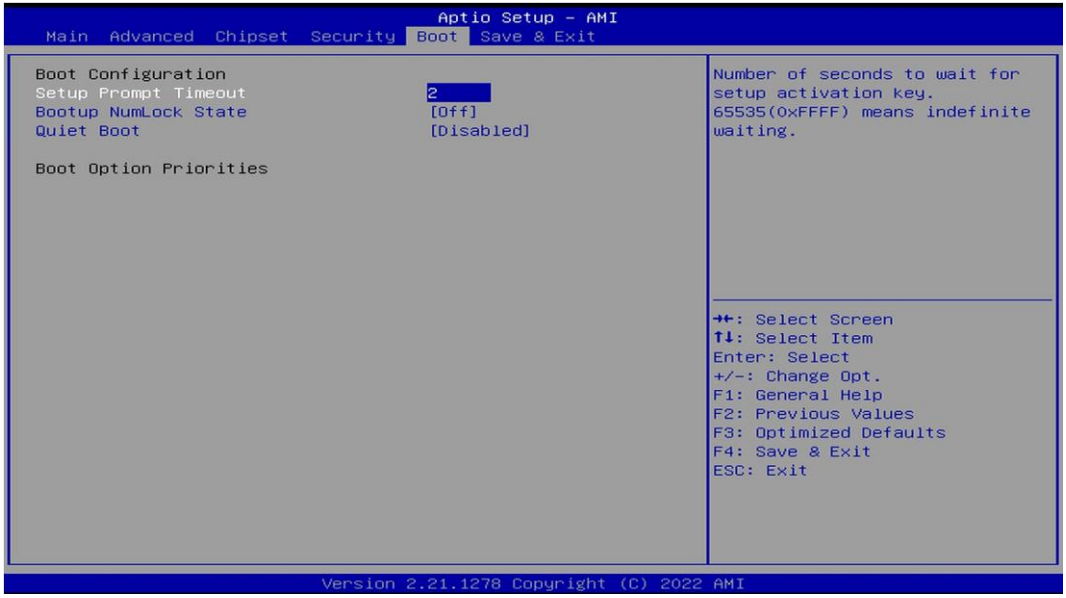
***Secure Boot variable/Size/Keys/Key Source***

- **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




***Boot Configuration***

**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.

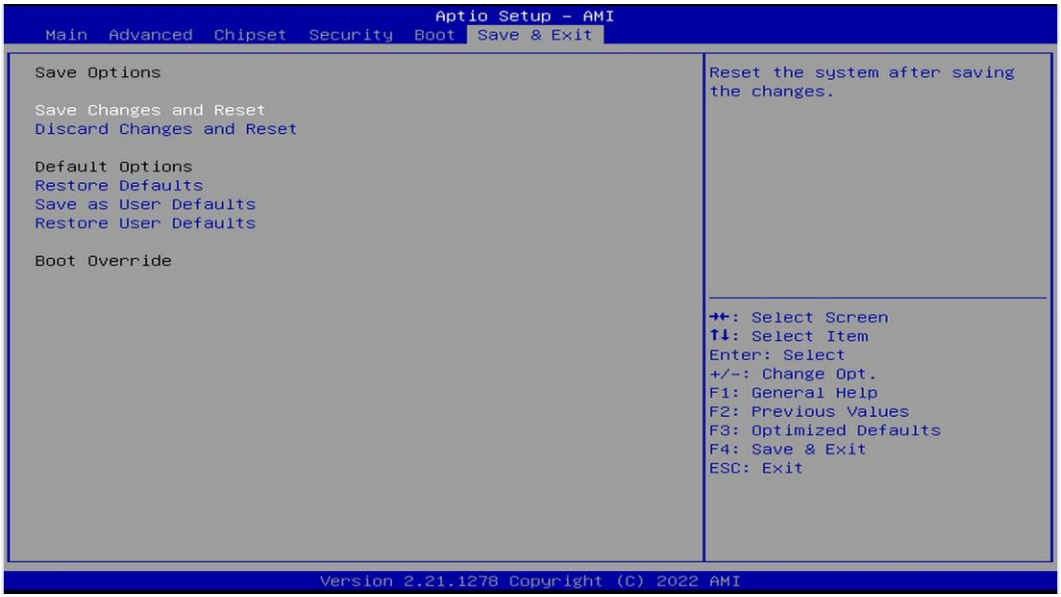
The optional settings: [On]; [Off].

**Quiet Boot**

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

***Boot Option Priorities***

## 3-11 Save & Exit Menu




***Save Options***

**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.

***Default Options***

**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***