MI23 Series

User's Manual

NO. G03-MI23-F

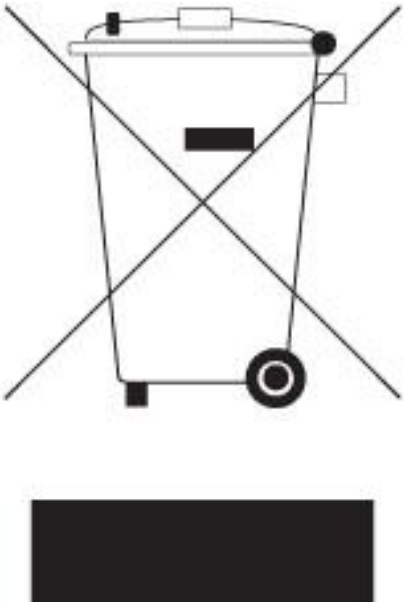
Revision: 3.0

Release date: March 27, 2024

Trademark:

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.



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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 40 centigrade is the suitable temperature. (The temperature comes from the request of the chassis and thermal solution)

- 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	March 27, 2024

Item Checklist

☑ Motherboard
☑ Cable(s)

Chapter 1
Introduction of the Motherboard

1-1 Feature of Motherboard

- Intel® LGA1700 Socket supports 12th /13th /14th Gen. Core Processor **(Max. 65W TDPs under 180A)**
- Support 2* DDR5 5600MHz/4800MHz SO-DIMM up to 64GB
- **MI23-Q670X/R680X series:** total support up to 8* 2.5GbE RJ-45 LAN ports
- **MI23-H610X series:** total support up to 6* 2.5GbE RJ-45 LAN ports
- **MI23-Q670X/R680X series:** total support up to 2* USB3.2 (Gen.2), 2* USB3.2 (Gen.1), 4* USB2.0 ports
- **MI23-H610X series:** total support up to 2* USB3.2 (Gen.2), 1* USB3.2 (Gen.1), 5* USB2.0 ports
- **MI23-Q670X/R680X series:** 4 * SATAIII (6Gb/s) ports with support for RAID 0, 1, 5, 10 mode & 2* M.2 (M-key) slots; 1* M.2 (E-key) & 1* M.2 (B-key) slot along with SIM card holder; 1* sideway PCIE Gen.4 x4 slot
- **MI23-H610X series:** 4 * SATAIII (6Gb/s) ports & 1* M.2 (M-key) slot; 1* M.2 (E-key) & 1* M.2 (B-key) slot along with SIM card holder
- 1 * internal HDMI port
- Support JetBIOS SW back up tool for BIOS recovering
- Support onboard TPM 2.0 **(*optional)**
- Support Smart FAN function
- Supports ACPI S3 Function
- Compliance with ErP Standard
- Support Watchdog Timer Technology

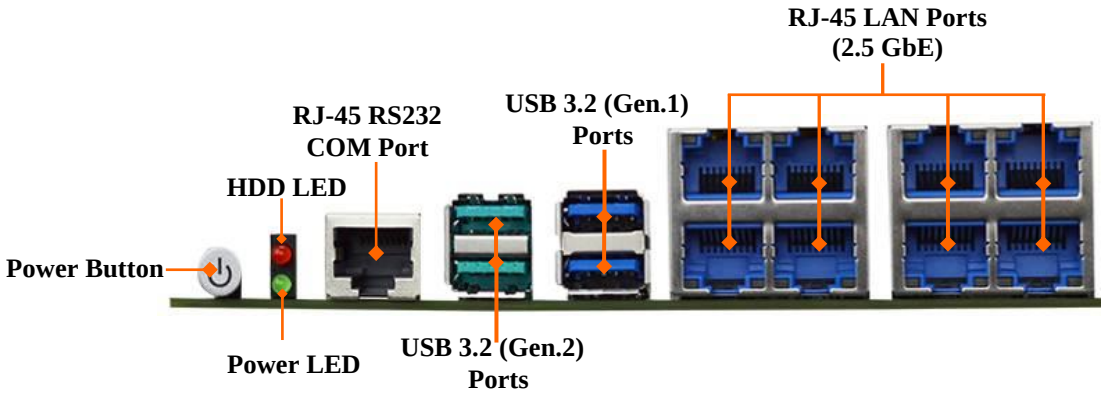
1-2 Specification

Spec	Description
Design	● Mini-ITX form factor; 10-layers; ● PCB size: 17.0x17.0cm
Chipset	● **MI23-H610X Series**: Intel H610E Chipset ● **MI23-Q670X Series**: Intel Q670E Chipset ● **MI23-R680X Series**: Intel R680E Chipset
CPU Socket	● Intel LGA 1700 Socket supports 12th /13th /14th Gen. Core™ i7 processors, Intel® Core™ i5 processors, Intel® Core™ i3 processors, Intel® Pentium™ processors, Intel® Celeron™ processors (Max.**65W** TDPs under **180A**) **Note:* for detailed CPU support information please visit our website.*
Memory Slot	● 2* DDR5 SO-DIMM slot ● Support 2* DDR5 5600MHz/4800MHz SO-DIMM up to 64GB ● Support dual channel function **Note:* ***MI23-R680X*** *series support* ***ECC.***
Expansion Slot	● ***PCIE2:***1* PCIE Gen.4 x4 slot by sideway **Note:* ***1.PCIE2*** *slot is only available to* ***MI23-Q670X/R680X*** *series;* ***2.PCIE2*** *can be expanded to support up to 4* PCIe signal 4 by1 slots* *(At present, this function only supported by* ***ETC4G adapter card****).* ● ***M2E1:***1* M.2 E-key,type-2230, USB2.0/PCIe x1 interface supports CNVi ● ***M2B1:***1* M.2 B-key, type-3042,USB3.2 Gen.1/USB2.0/PCIe x1 interface supports 4G Module ● ***SIMCARDB1:***Nano-SIM card slot;co-function with **M2B1 slot**
Storage	● ***SATA1/2/3/*4:*** 4*SATAIII 6Gb/s port ***(*SATA4 shares with M2M1)*** **Note:* ***MI23-Q670X/R680X*** *series support* RAID 0/1/5/10 mode. ● ***M2M1:*** 1* M.2 M-key,type-2280 slot *(for* ***MI23-Q670X/R680X series****: **PCIe Gen.4 x4** supports NVMe **w/SATA** interface; for **MI23-H610X series**: only **SATA** interface only).* ● ***M2M2:***1* M.2 M-Key,type-2242/2280 slot (PCIe Gen.4 x4 supports NVMe w/SATA interface) **Note:* ***M2M2*** *slot is only available to* ***MI23-Q670X/R680X*** *series.*
LAN Chips	● ***MI23-Q670X/R680X:*** 1* Intel i225-LM 2.5GbE + 7* Intel i225-V 2.5GbE ● ***MI23-H610X:*** 6* Intel i225-V 2.5GbE ***Note: 2500Mbps*** *high-speed transmission rate is* ***only*** *supported over CAT*

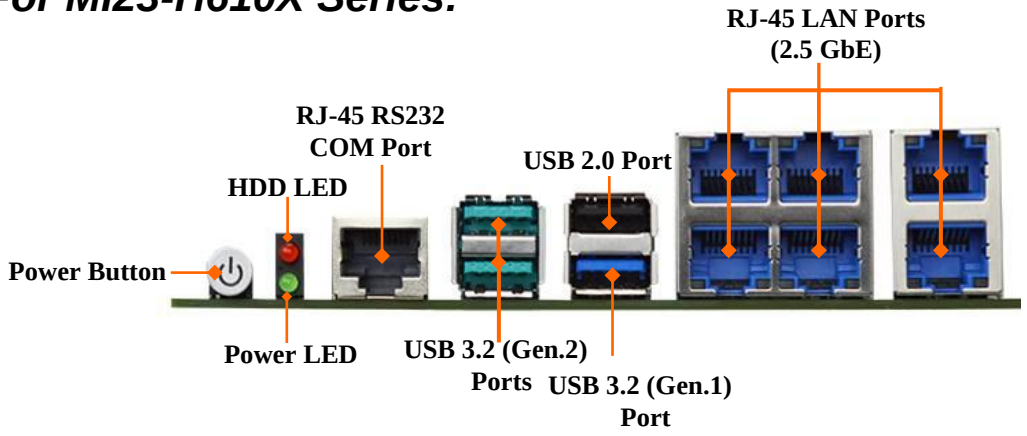
	5e UTP cable.
Graphics	● Intel UHD Graphics
BIOS	● AMI 256M Flash ROM
Multi I/O	***Rear Panel I/O:*** ● 1* Power on/off button ● 1* Power LED & 1* HDD LED ● 1* RJ-45 RS232 COM port ● ***MI23-Q670X/R680X:*** 2* USB 3.2 Gen.2 port & 2* USB 3.2 Gen.1 port ● ***MI23-H610X:*** 2* USB 3.2 Gen.2 port & 1* USB 3.2 Gen.1 port +1* USB 2.0 port ● ***MI23-Q670X/R680X:*** 8* 2.5GbE RJ-45 port ● ***MI23-H610X:*** 6* 2.5GbE RJ-45 port ***Internal I/O Connectors & Headers:*** ● 1 *24-pin main power connector ● 1 *4-pin 12V power connector ● 1* CPUFAN connector & 1* SYSFAN connector ● 1* CMOS battery connector ● 1* Front panel header ● 1* HDMI header ● 2* RS232 COM port header ● 2 * 9-Pin USB 2.0/1.1 header for 4* USB 2.0/1.1 port ● 2* LAN Status LED header ● 1* GPIO header ● 1* PS2 Keyboard & Mouse header ● 1* SMBUS header
TPM 2.0	● Optional for **MI23-R6802, MI23-Q6702** & **MA20-H6102** Series
OS Support	● *for detailed OS support information please visit our website for latest update*

1-3 Layout Diagram

Rear IO Diagram
For MI23-Q670X / MI23-R680X Series:

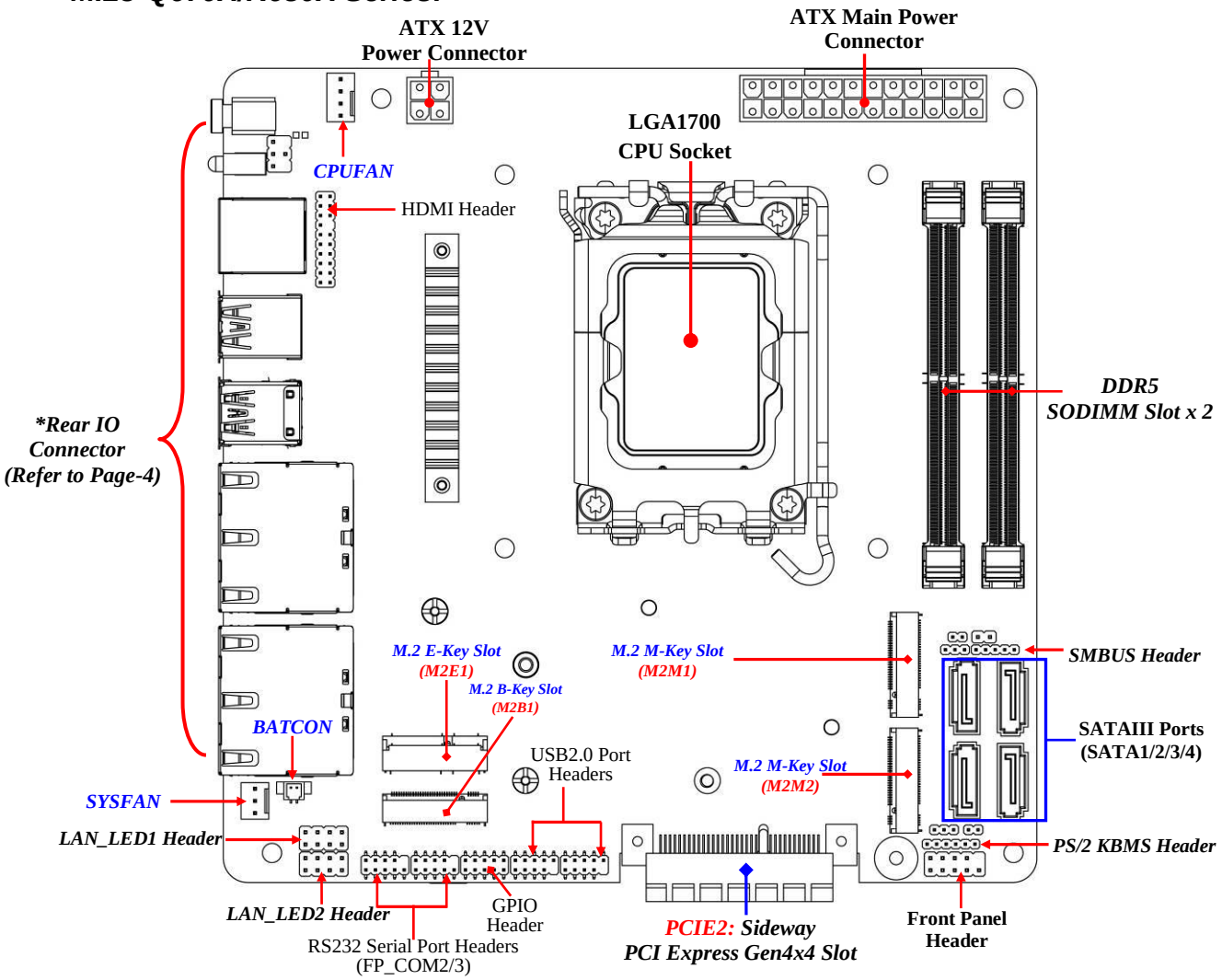


For MI23-H610X Series:



Motherboard Internal Diagram-Front

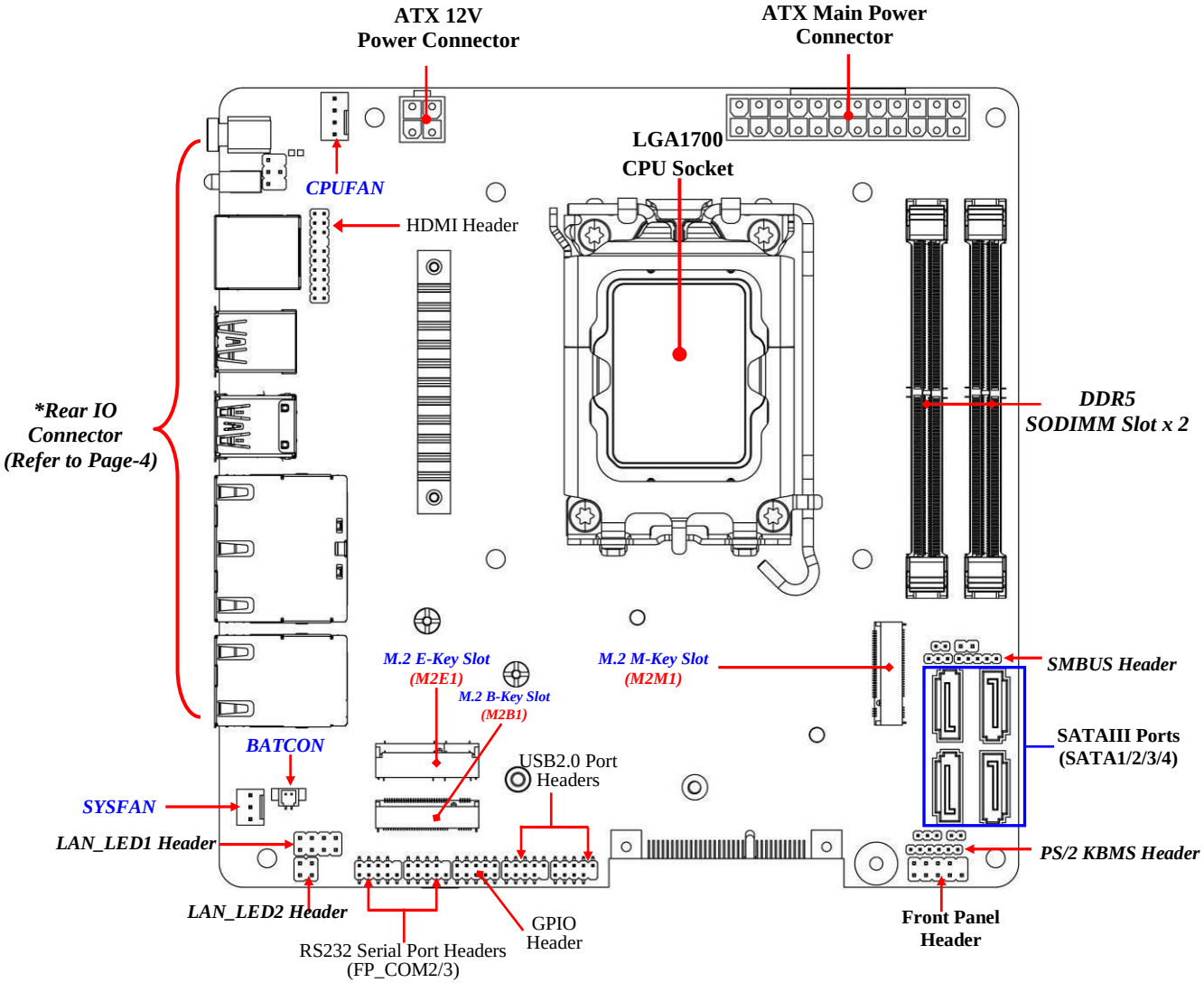
MI23-Q670X/R680X Series:



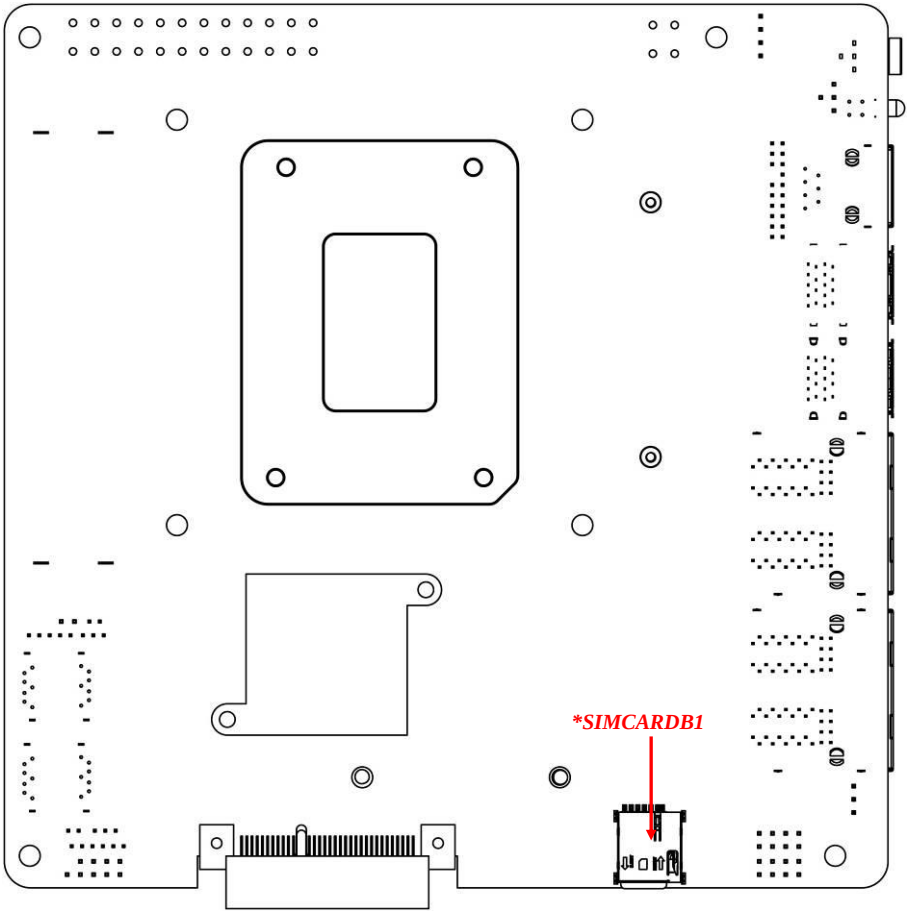
** Note:* ***PCIE2*** *can be expanded to support up to 4* PCIe signal 4 by1 slots (At present, this function only supported by* ***ETC4G adapter card*** *series).*

Motherboard Internal Diagram-Front

MI23-H610X Series:

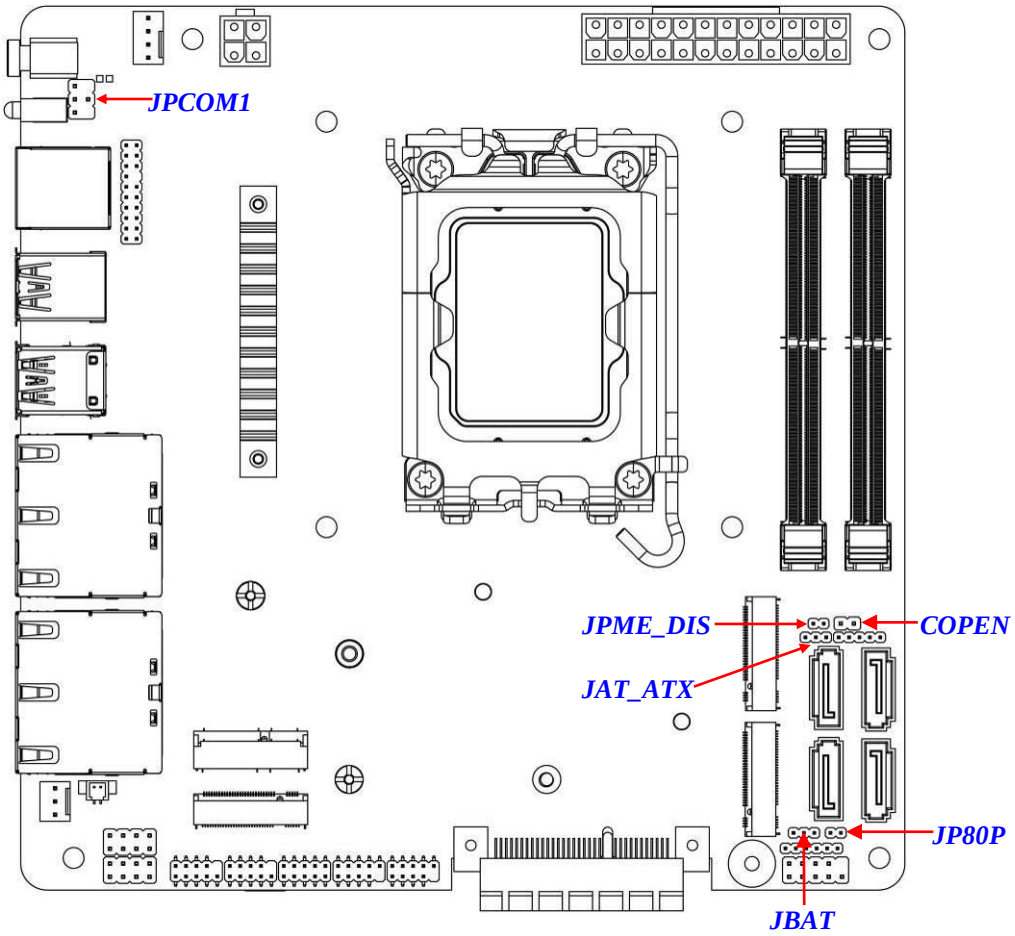


Motherboard Internal Diagram-Back



***Note:** **1.** SIM card slot (only workable along with M.2 B-key slot); **2. PCIE2** sideway **PCI Express Gen.4 x4** slot (only on **MI23-Q670X/R680X**) can be expanded to support up to 4* PCIe signal 4 by1 slots (At present, only supported by **ETC4G adapter card** series); **3. M2M2** Slot (only on **MI23-Q670X/R680X**).*

Motherboard Jumper Position



***Note**: The diagrams in the manual are mostly taken from **MI23-Q670X/R680X** series unless otherwise stated.*

Connectors

Connector	Name
RJ45_COM1	RJ-45 COM Port Connector for Console
USB31	USB 3.2 (Gen.2) Port X2
MI23-Q670X/R680X: USB32	USB 3.2 (Gen.1) Port X2
MI23-H610X: USB32	***Top:*** USB 2.0 Port ***Bottom:*** USB 3.2(Gen.1) Port
LAN1-4	2.5 GbE RJ-45 LAN Port X4
MI23-Q670X/R680X: LAN5-8	2.5 GbE RJ-45 LAN Port X4
MI23-H610X: LAN5-8	2.5 GbE RJ-45 LAN Port X2
ATXPWR1	Main Power Connector
ATX12V	Internal 12V Power Connector
SATA1/2/3/4	SATAIII Connector
CPUFAN	CPU Fan Connector
SYSFAN	System Fan Connector
BATCON	CMOS Battery Connector

Headers

Header	Name	Description	Pitch
JW_FP	Front Panel Header(PWR LED/ HD LED/Power Button /Reset)	9-pin Block	2.54mm
HDMI1	HDMI Port Header	19-pin Block	2.0mm
FP_COM2/3	RS232 Serial Port Header	9-pin Block	2.0mm
FP_USB21/22	USB2.0 Port Header X2	9-pin Block	2.0mm
LAN_LED1	LAN Status LED Header	8-pin Block	2.54mm
MI23-Q670X/R680X: LAN_LED2	*LAN Status LED Header*	*8-pin Block*	2.54mm
MI23-H610X: LAN_LED2	*LAN Status LED Header*	*4-pin Block*	2.54mm
GPIO	GPIO Port Header	10-pin Block	2.0mm
PS2KBMS	PS2 Keyboard & Mouse Header	6-pin Block	2.0mm
SMBUS	SMBUS Header	5-pin Block	2.0mm

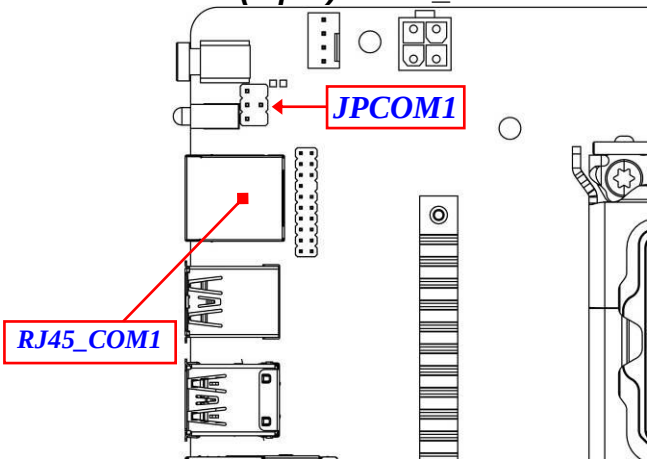
Jumper

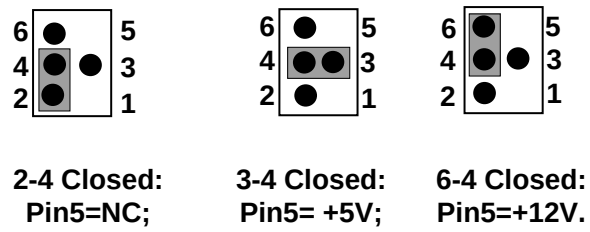
Jumper	Name	Description	Pitch
JPCOM1	RJ45_COM1 Port Pin-5 VCC Select	4-pin Block	2.0mm
JPME_DIS	ME Disabled	2-pin Block	2.0mm
COPEN	Case Open Message Display Function	2-pin Block	2.54mm
JAT_ATX	ATX Mode / AT Mode Select	3-pin Block	2.0mm
JBAT	Clear CMOS RAM Settings	3-pin Block	2.0mm
JP80P	GPIO Header Function Select	2-pin Block	2.0mm

Chapter 2
Hardware Installation

2-1 Jumper Setting

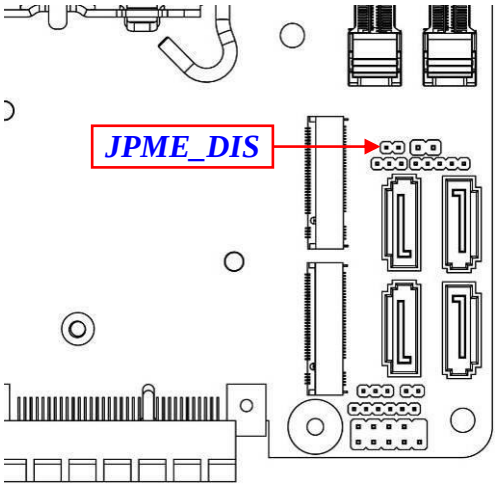
JPCOM1 (4-pin): RJ45_COM1 Port Pin5 VCC Select





***Note:** Please make sure you set Pin (2-4) of Jumper **JPCOM1** as closed from beginning or you will cause the short circuit with the general Console cable to **RJ45-COM1** port (refer to **page-14**).*

JPME_DIS(2-pin): ME Features Select



JPME_DIS→ ME Disable

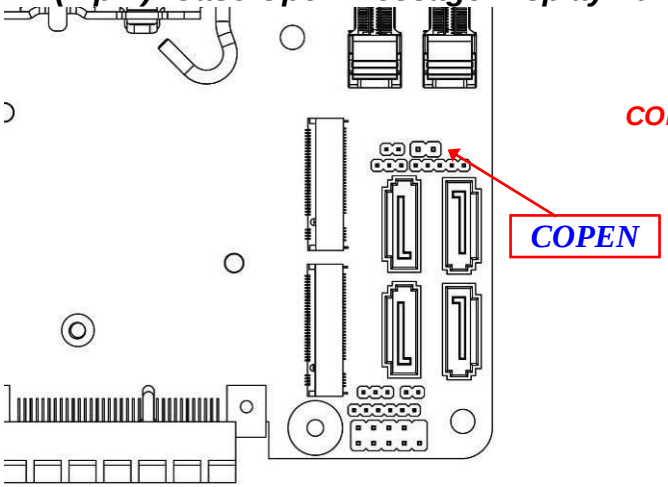
Pin1→

1-2 Open: Nornal;

Pin1→

1-2 Closed: Disable ME Features.

COPEN (2-pin): Case Open Message Display Function



COPEN→ Case Open Detection

Pin1→

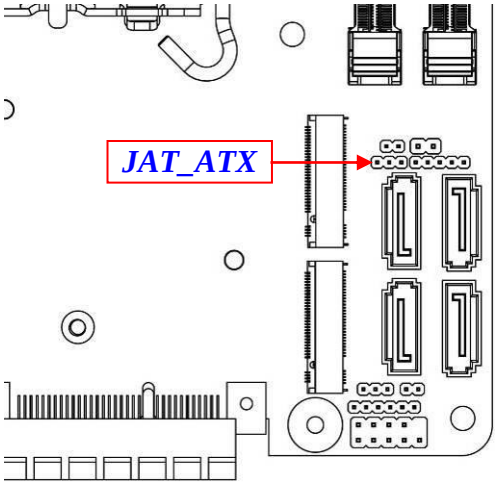
CASE OPEN

GND

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.

JAT_ATX (3-pin): AT Mode /ATX Mode Select



JAT_ATX→ATX/AT Mode Select

1 3

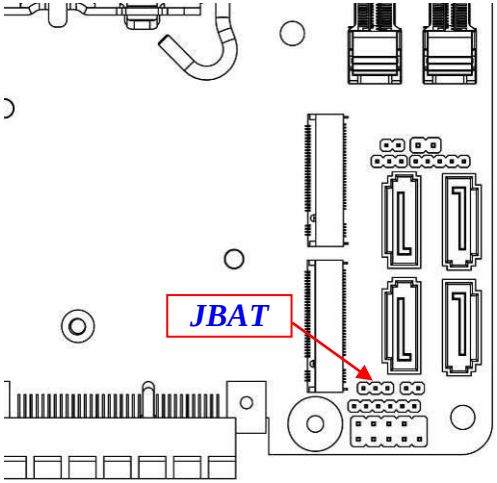
1-2 Closed: ATX Mode Selected;

1 3

2-3 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.*

JBAT (3-pin): Clear CMOS RAM Settings



JBAT→Clear CMOS RAM Settings

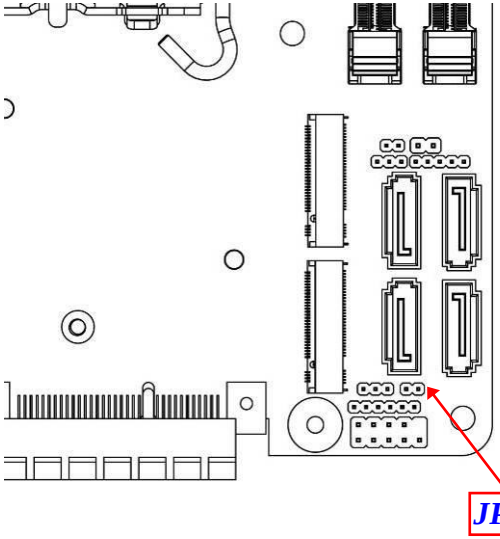
1 3

1-2 Closed: Normal;

1 3

2-3 Closed: Clear CMOS.

JP80P(2-pin): GPIO Header Function Select



JP80P →GPIO Function Select

Pin1→

1-2 Open: Function as 80Port;

Pin1→

1-2 Closed: Function as GPIO Port.

2-2 Connectors and Headers

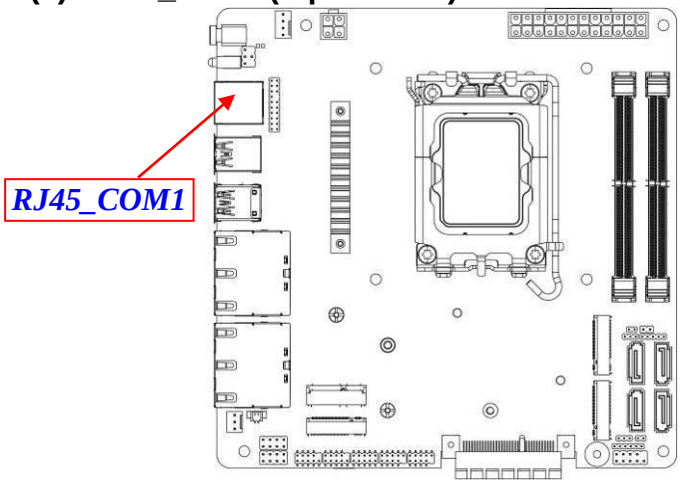
2-2-1 Connectors

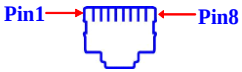
Rear I/O Back Panel Connectors

Icon	*Name*	*Function*
	**Power Button**	For user to power on/off the system.
	**RJ-45 RSS232 COM Port**	This connector is a RJ-45 COM port for console function.
	**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.

	**USB 2.0 Port**	To connect USB keyboard, mouse or other devices compatible with USB 2.0 specification.
	**USB 3.2 (Gen.1) Port**	To connect USB keyboard, mouse or other devices compatible with USB 3.2 (Gen.1) specification. Ports support up to 5Gbps data transfer rate.
	**2.5Gbps RJ-45 LAN Port**	This connector is standard RJ-45 LAN jack for Network connection which supports10/100/1000/2500 Mbps Ethernet data transfer rate. ***(*Note: 2.5Gbps** is **only** supported with **CAT 5e UTP cable).***

(1) RJ45_COM1(8-pin block): RJ-45 COM Port Connector for Console

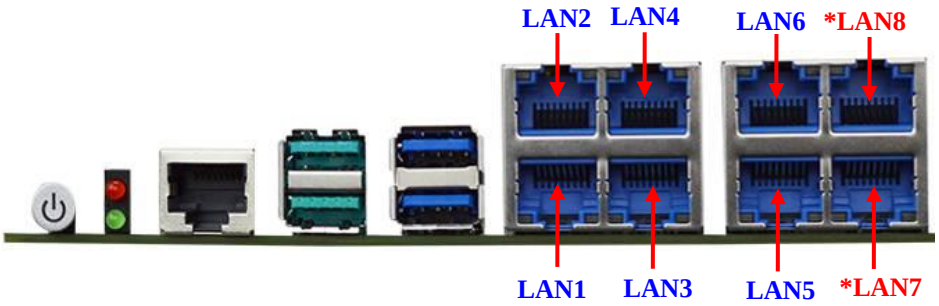




RJ45_COM1

Pin No.	Definition
1	RTS
2	DTR
3	TXD
4	GND
5	GND/+5V/+12V
6	RXD
7	DSR
8	CTS

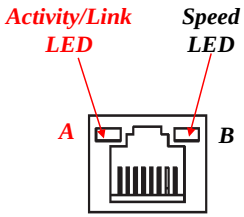
(2) 2.5 Gbps RJ-45 Ethernet LAN Port Connector



LAN1/LAN2/ LAN3/LAN4/ LAN5/ LAN6/* LAN7/* LAN8

2.5Gbps RJ-45 LAN port LED Signals:

*** There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.*



A: Activity/Link LED

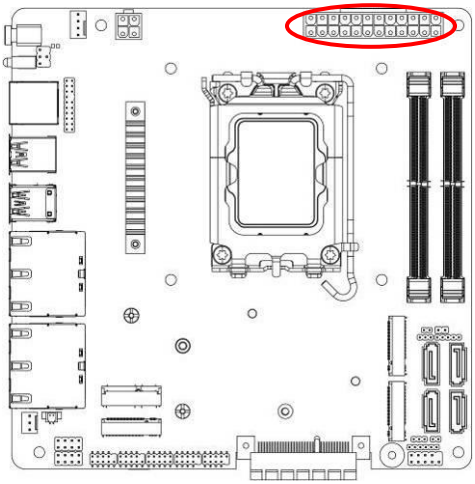
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

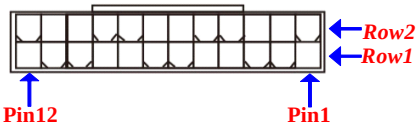
B: Speed LED

Status	Description
Off	10/100Mbps connection
Orange	1Gbps connection
Green	2.5Gbps connection

* ***Note:***.***2.5Gbps*** *high-speed transmission rate is* ***only*** *supported over* ***CAT 5e UTP cable****;*
MI23-Q670X/R680X Series: *total support 8* 2.5GbE RJ-45 port;*
MI23-H610X Series: *total support 6* 2.5GbE RJ-45 port(without* ***LAN7/LAN8****).*

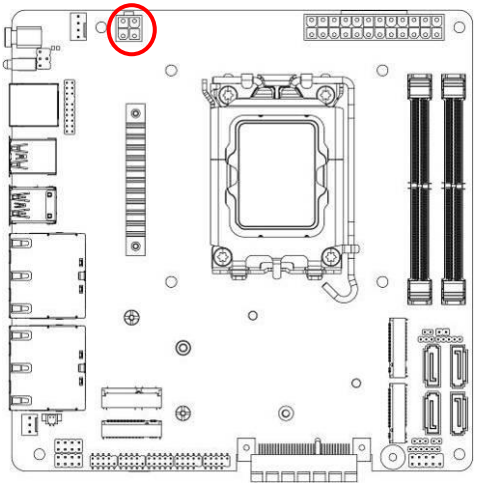
(3) ATXPWR(24-pin block): Main Power Connector

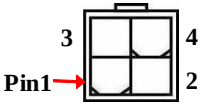




PIN	ROW1	ROW2
1	+3.3V	+3.3V
2	+3.3V	-12V
3	GND	GND
4	+5V	Soft Power on
5	GND	GND
6	+5V	GND
7	GND	GND
8	Power OK	-5V
9	+5V Stand by	+5V
10	+12V	+5V
11	+12V	+5V
12	+3.3V	GND

(4) ATX12V (4-pin block): 12V Internal Power Connector

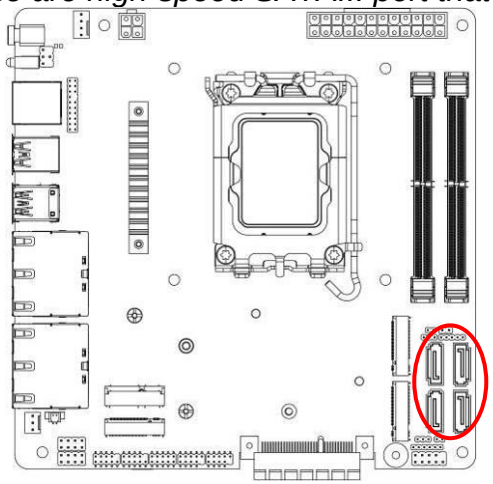




Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

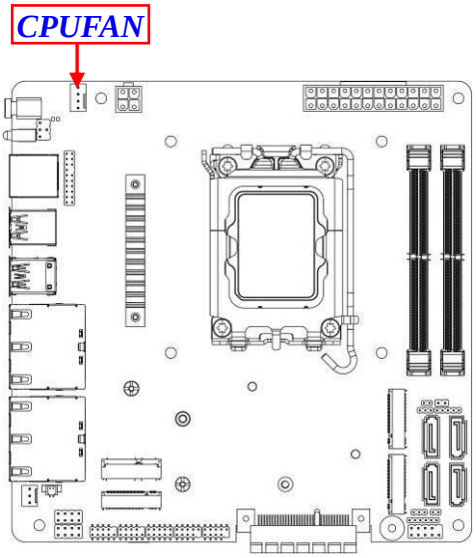
(5) SATA1/2/3/4 (7-pin): SATA III Port connector

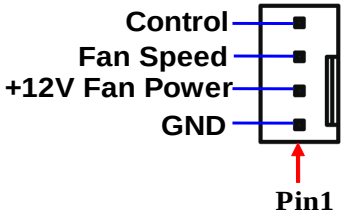
These are high-speed SATAIII port that supports 6 GB/s transfer rate.



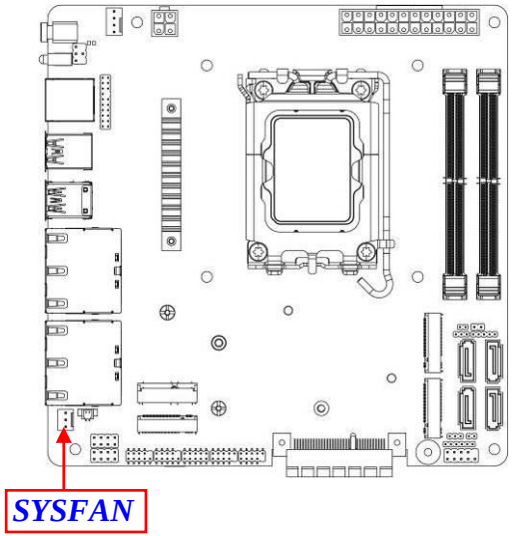
Pin No.	Defnition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

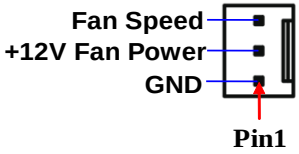
(6) CPUFAN (4-pin): CPU FAN Connector



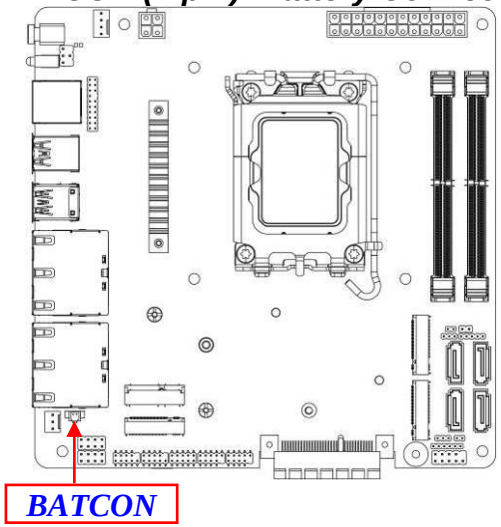


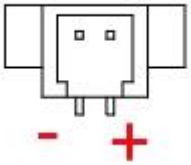
(7) SYSFAN (3-pin): System FAN Connector





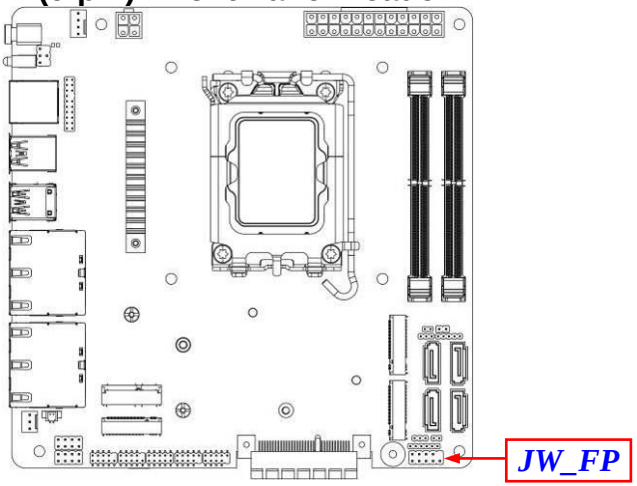
(8) BATCON (2-pin): Battery Connector

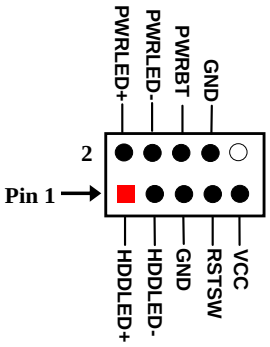




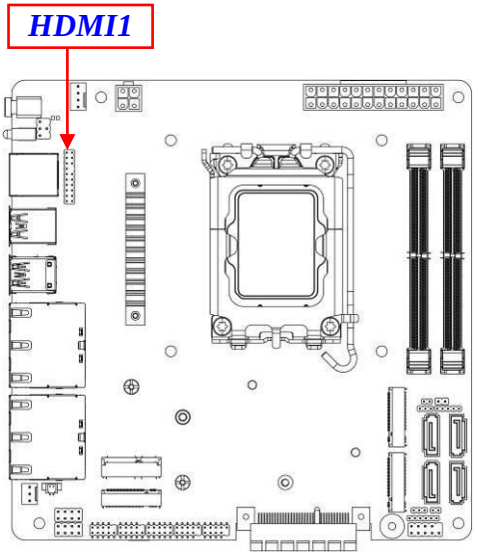
2-2-2 Headers

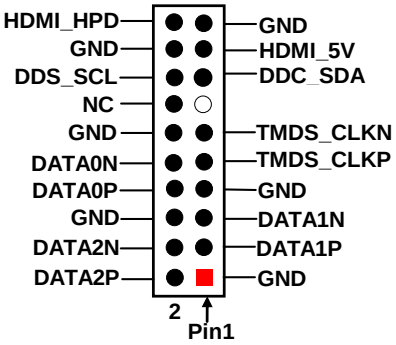
JW_FP (9-pin): Front Panel Header



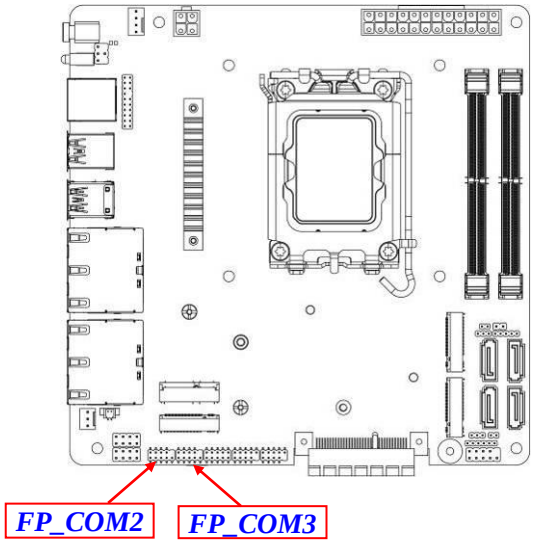


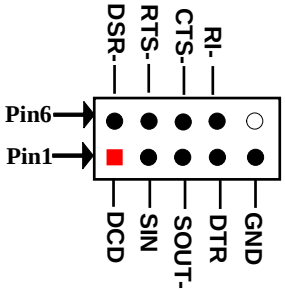
HDMI1 (19-pin): HDMI Port Header



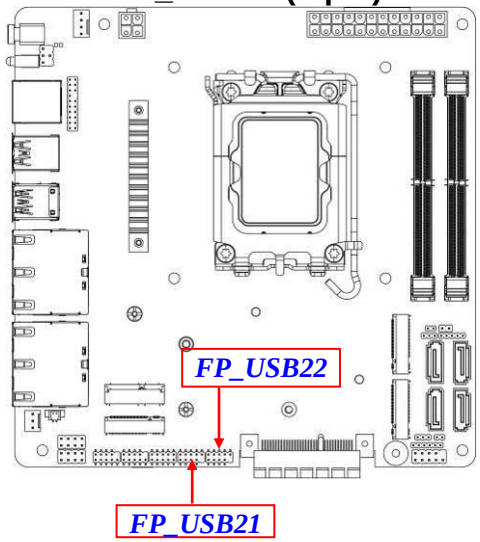


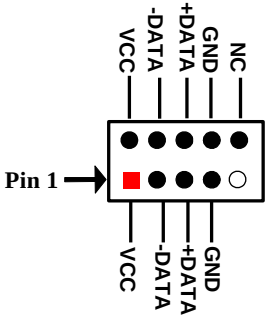
FP_COM2/ FP_COM 3 (9-pin): RS232 Serial Port Header



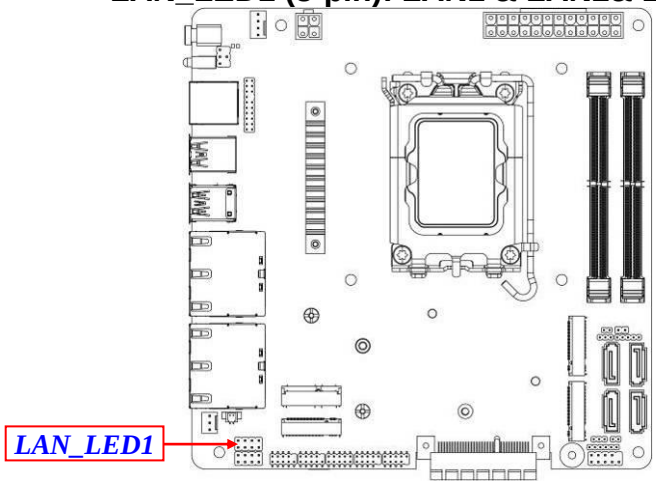


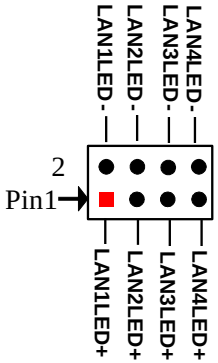
FP_USB21/ FP_USB22 (9-pin): USB 2.0 Port Headers





LAN_LED1 (8-pin): LAN1 & LAN2& LAN3 & LAN4 Activity LED Header



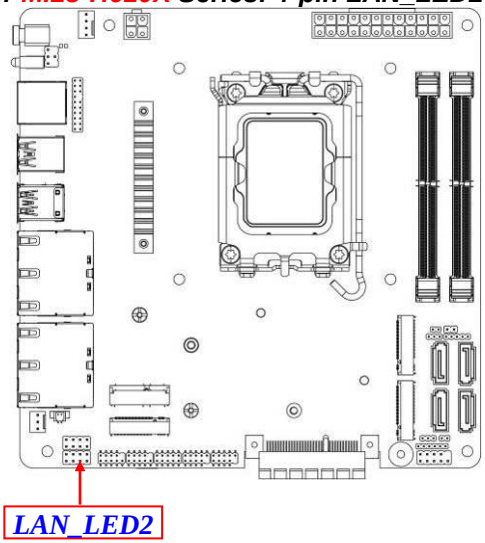


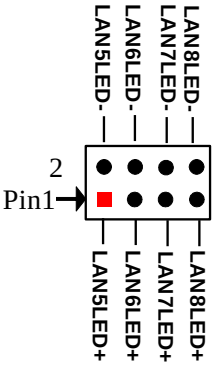
LAN_LED1 Header

LAN_LED2 (8-pin/4-pin): LAN5 & LAN6& LAN7 & LAN8 Activity LED Header

For MI23-Q670X/R680X Series: 8-pin LAN_LED2 Header;

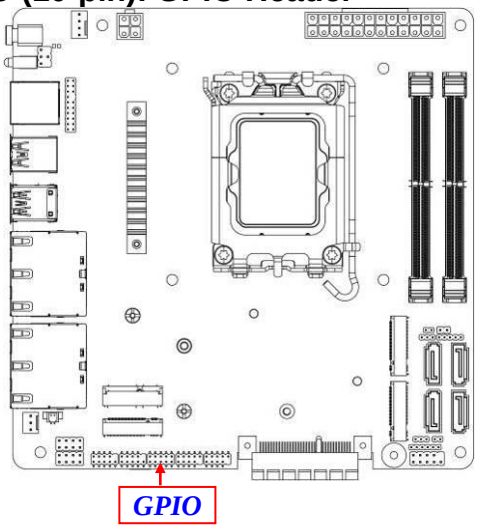
For MI23-H610X Series: 4-pin LAN_LED2 Header (without Pin5/6/7/8 for LAN7/LAN8).

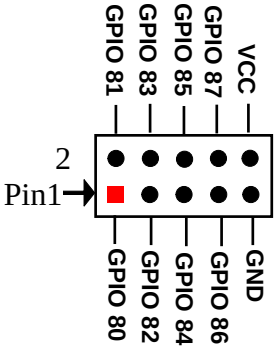




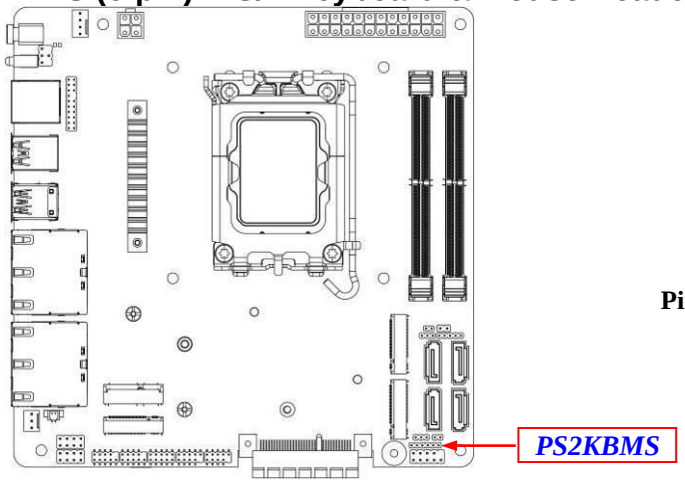
LAN_LED2 Header

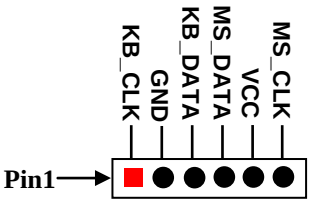
GPIO (10-pin): GPIO Header



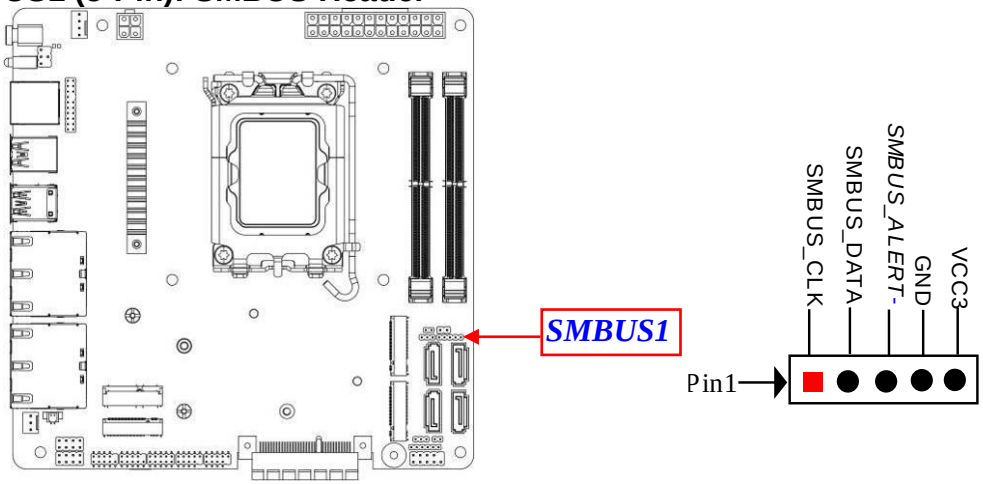


PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header





SMBUS1 (5-Pin): SMBUS Header



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 and headers) for setup reference:

Parts		Working Voltage	Current Support
USB Ports from	***USB31***	5V	1.5A
	USB32	5V	1.5A
	FP_USB21	5V	1.5A
	FP_USB22	5V	1.5A
JW_FP		5V	1A
RJ45_COM1		5V/12V(via jumper setting)	0.5A
FP_COM2/ FP_COM3		5V/12V(via jumper setting)	0.5A
LAN_LED1/LAN_LED2		3.3V	0.3A
GPIO		5V	1A
PS2KBMS		5V	0.5A
SMBUS1		3.3V	0.5A
CPUFAN1/ SYSFAN		12V	1.5A

Chapter 3
Introducing BIOS

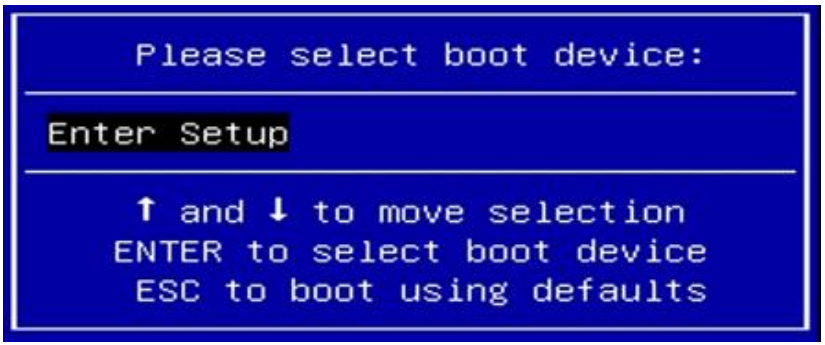
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download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

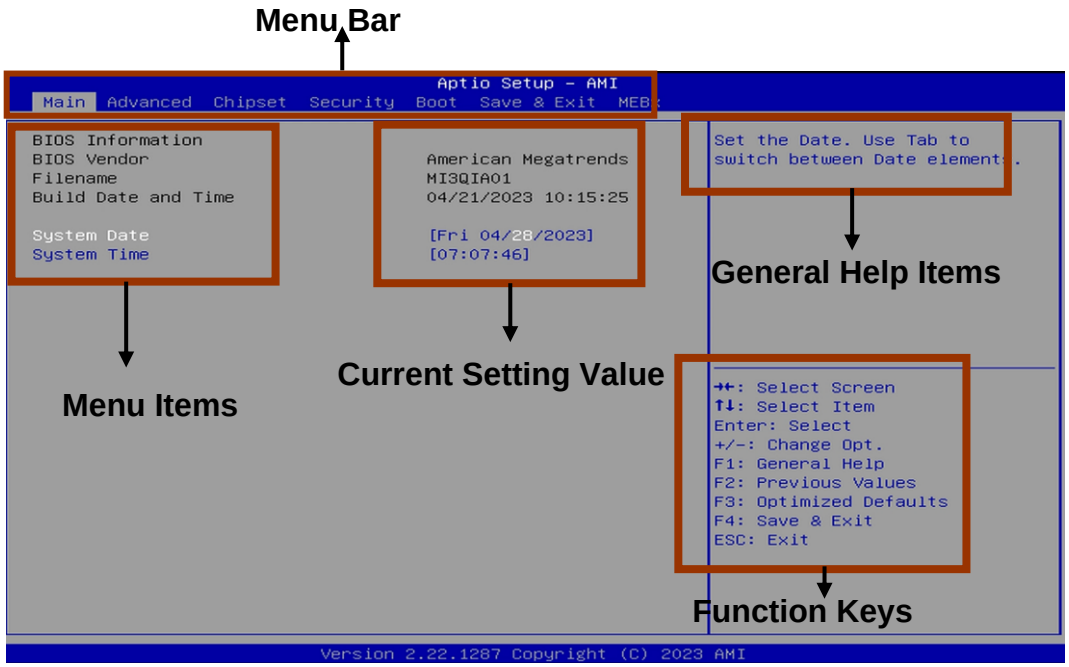
Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously 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



3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



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 value.
- **[F3]:** Optimized defaults.
- **[F4]:** Save & Reset.
- Press **<Esc>** to quit the 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.

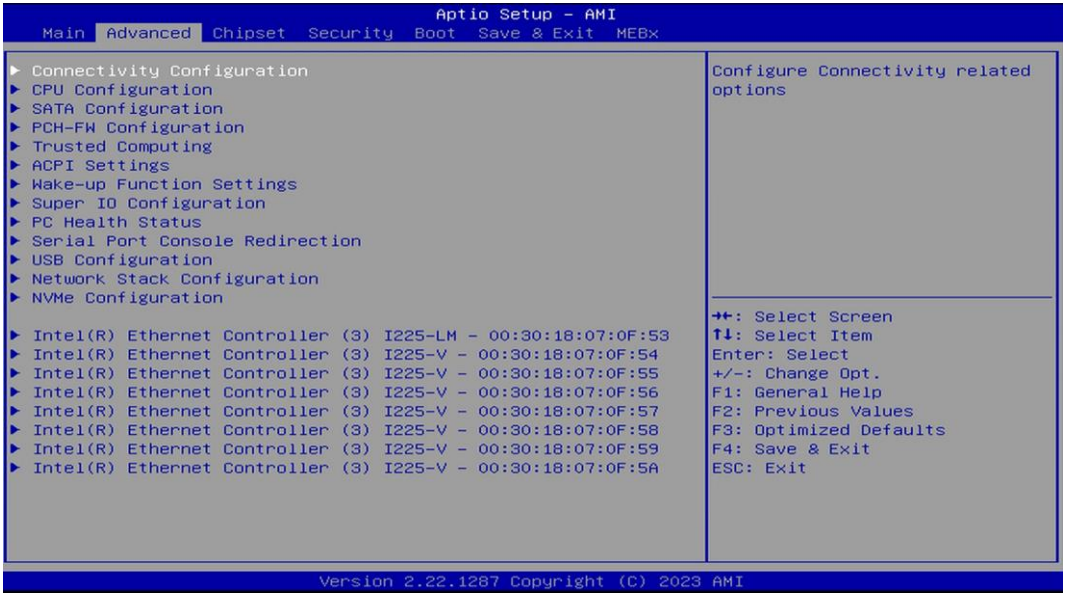
User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

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**
  Press [Enter] to make settings for the following sub-item:
  CNVi Mode
  This option configures connectivity.
  [Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise integrated solution (CNVi) will be enabled；
  [Disable Integrated] disables Integrated solution
  The optional settings are: [Disable Integrated]; [Auto Detection]
- **CPU Configuration**
  Press [Enter] to view current CPU configuration and make settings for the following

sub-items:

Hyper-Threading

Use this item to enable or disable Hyper-Threading Technology

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

Intel (VMX) Virtualization Technology

When enabled, a VHM can utilize the additional hardware capabilities provided by Vanderpool Technology.

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

Intel (R) SpeedStep ™

Use this item to Allows more than two frequency ranges to be supported.

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

C states

Use this item to enable/disable CPU Power management. Allows CPU to go to C states when it's not 100% utilized.

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

Turbo Mode

Use this item to enable/disable processor turbo mode (requires EMTTM enabled too). AUTO means enabled.

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

- **SATA Configuration**

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

SATA Controller(s)

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

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

M.2(M2M2)

Port

Use this item to enable or disable SATA Port

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

SATA1/2/3/4/M.2(M2M1)

Port

Use this item to enable or disable SATA Port

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

Hot Plug

Use this item to designates this port as Hot Pluggable.
The optional settings are: [Enabled]; [Disabled].

- **PCH-FW Configuration**
  Use this item to configure Management engine technology parameters
  Press [Enter] to make settings for the following sub-items:

  TPM Device Selection
  Use this item to selects TPM device: PTT or dTPM. PTT- Enables PTT in SkuMgr dTPM 1.2 – Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost
  The optional settings are: [dTPM]; [PTT].
- **Firmware Update Configuration**
  Use this item to configure management engine technology parameters.

  Me FW Image Re-Flash
  Use this item to enable/disable Me FW Image Re-Flash function
  The optional settings: [Disabled]; [Enabled]
- **Trusted Computing**
  Press [Enter] to view ME information and make settings in the following sub-items:

  Security Device Support
  Use this item to enables or disables BIOS support for security device. O.S will not Show security device. TCG EFI protocol and INT1A interface will not be available.
  The optional settings: [Disabled]; [Enabled].
  When set as [Enabled], user can make settings in the following items that appear:

  Pending operation
  Use this item to schedule an operation for the security device. NOTE: Your computer will reboot during restart in order to change state of security device
  The optional settings: [None]; [TPM Clear].

  TPM Device Selection
  Use this item to selects TPM device: PTT or dTPM. PTT-Enables PTT in SkuMgr dTPM 1.2 – Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost
  The optional settings: [dTPM]; [PTT].
- **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)].

► **Wake-up Function Settings**

Wake-up System With Fixed Time

Use this item to enable or disable system wake on alarm event. When enabled, system will wake on the hr: min: sec specified

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

When set as [Enabled], user can make settings in the following items that 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

This item will only show when* *'Wake-up System With Fixed Time'*** *is set as [Disabled].*

Use this item to enable or disable system wake on alarm event. When enabled, system will wake on the current time + Increase minute(s)

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

Wake-up Minute Increase

Use this item to select 1-60

PS2 KB/MS Wake-up

Use this item to enable or disable PS2 KB/MS Wake-up from (S3/S4/S5) Support only disable ERP function

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

PCIE Wake-up from S3-S5

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

USB S3/S4 Wake-up

Use this item to enable or disable USB S3/S4 Wake-up Support only disable ERP

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

USB S5 Power

Use this item to USB Power after system shutdown support only disable ERP function
The optional settings: [Disabled]; [Enabled].

- **Super IO Configuration**

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

Super IO Configuration

ERP Support

Use this item to energy-related products function. Disable ERP to active all wake-up functions.
The optional settings: [Disabled]; [Auto].

- **Serial Port 1 Configuration**

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

Serial Port

Use this item to enable or disable serial port (COM).
The optional settings: [Disabled]; [Enabled].

Change Settings

Use this item to select an optimal setting for super IO device.
The optional settings are: [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];

- **Serial Port 2 Configuration**

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

Serial Port

Use this item to enable or disable serial port (COM).
The optional settings: [Disabled]; [Enabled].

Change Settings

Use this item to select an optimal setting for super IO device.
The optional settings are: [IO=2F8h; IRQ=3]; [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];

- **Serial Port 3 Configuration**

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

  Serial Port

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

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

  Change Settings

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

  The optional settings are: [IO=3E8h; IRQ=10]; [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]; [IO=3E0h; IRQ=3,4,5,7,10,11]; [IO=2E0h; IRQ=3,4,5,7,10,11];

  WatchDog Reset Timer

  Use this item to support WDT reset function.

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

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

  WatchDog Reset Timer Value

  User can set a value in the range of [4] to [255].

  WatchDog Reset Timer Unit

  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 JAT_ATX jumper setting Pin 1&2 of for ATX Mode & Pin 2&3 of AT Mode Select).

  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* ***COPEN*** *jumper setting for Case Open Detection*); if Pin 1&2 of ***COPEN*** are short, system will show Case Open Message during POST.

- **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/SYSFAN Smart Mode

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

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

CPUFAN/SYSFAN Full-Speed Temperature

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

CPUFAN/SYSFAN Full-Speed Duty

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

CPUFAN/SYSFAN Idle-Speed Temperature

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

CPUFAN/SYSFAN Idle-Speed Duty

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

- **Serial Port Console Redirection**

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

COM1

Console Redirection

Use this item to Console Redirection enable or disable.

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

When set as **[Enabled**], user can make further settings in the '**Console Redirection Settings**' screen:

- **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：

Terminal Type

The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].
[ANSI]: Extended ASCII char set;
[VT100]: ASCII char set;
[VT100Plus]: 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 Function Key and KeyPad on Putty.

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

- **Legacy Console Redirection Settings**

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

Redirection COM Port

Use this item to select a COM port to display redirection of Legacy OS and Legacy OPROM Messages

The optional settings: [COM1]

Resolution

Use this item to on legacy OS, the number of rows and columns supported redirection

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

Redirect After POST

When bootloader is selected, then legacy console redirection is disabled before booting to legacy OS. When always enable is selected, the legacy console redirection is enabled for legacy OS. Default setting for this option is set to always enable.

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

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

Console Redirection EMS

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

When set as **[Enabled]**, user can make further settings in '**Console Redirection Settings**' screen:

- **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.

Terminal Type EMS

The optional settings: [VT100]; [VT100Plus]; [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 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

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.*

- **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].

Port 60/64 Emulation

Use this item to enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes
The optional settings: [Disabled]; [Enabled].

USB hardware delay and time-out

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 PXE

boot option will not be created.
The optional settings: [Disabled]; [Enabled].

Ipv6 PXE Support

Use this item to enable IPv6 PXE Boot Support. When set as [Disabled], IPv6 PXE boot option will not be created.
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.

Media detect count

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

- **NVMe Configuration**

  Use this item to NVMe Device options settings

- **Intel(R) Ethernet Controller(3) I225-LM - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

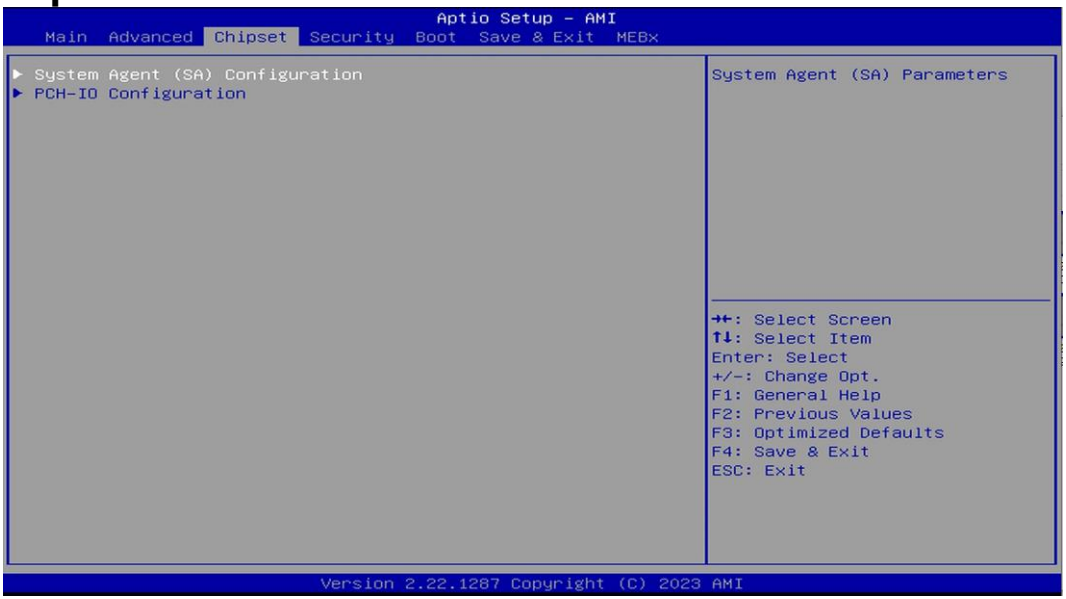
- **Intel(R) Ethernet Controller(3) I225-V - XX:XX:XX:XX:XX:XX**

  This item shows current network brief information.

- **Intel(R) Ethernet Controller(3) I225-V - 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:
- **Memory Configuration**
  Maximum Memory Frequency
  Use this item to maximum memory frequency selections in Mhz
  The optional settings are: [Auto]; [4000]; [4400]; [4800].
- **Graphics Configuration**
  Press [Enter] to make settings for the following sub-items:
  Internal Graphics
  Use this item to keep IGFX enabled based on the setup options.
  The optional settings: [Auto]; [Disabled]; [Enabled]
  Aperture Size
  Use this item to select the aperture size
  Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

The optional settings: [128MB]; [256MB]; [512MB]; [1024MB]

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: [32M]; [64M]; [128M]

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 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:

Enable VMD controller

Use this item to enable/disable to VMD controller

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

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

Enable VMD Global Mapping

Use this item to enable/disable to VMD global mapping

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

When set as [Disabled], 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:

HD Audio

Use this item to control detection of the HD-Audio device.

Disabled= HAD will be unconditionally disabled

Enabled= HAD will be unconditionally enabled

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

Onboard Lan1 Controller

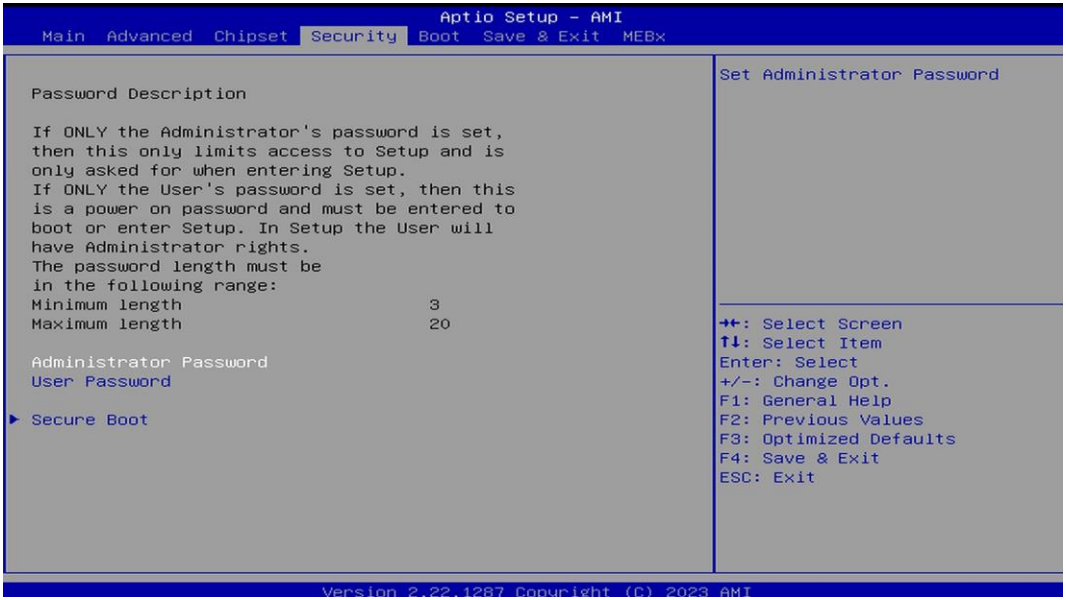
Use this item to enable or disable onboard NIC.

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

Onboard Lan2 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan3 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan4 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan5 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan6 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan7 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].
Onboard Lan8 Controller
Use this item to control the PCI Express root port..
The optional settings: [Disabled]; [Enabled].

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: [Always Off]; [Always On]; [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 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**

Use this item to delete all Secure Boot key databases from NVRAM.

- **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**

Use this item to delete all Secure Boot key databases from NVRAM.

- **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).

- **Export Secure Boot variables**

Use this item to copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

Secure Boot variable/Size/Keys/Key Source

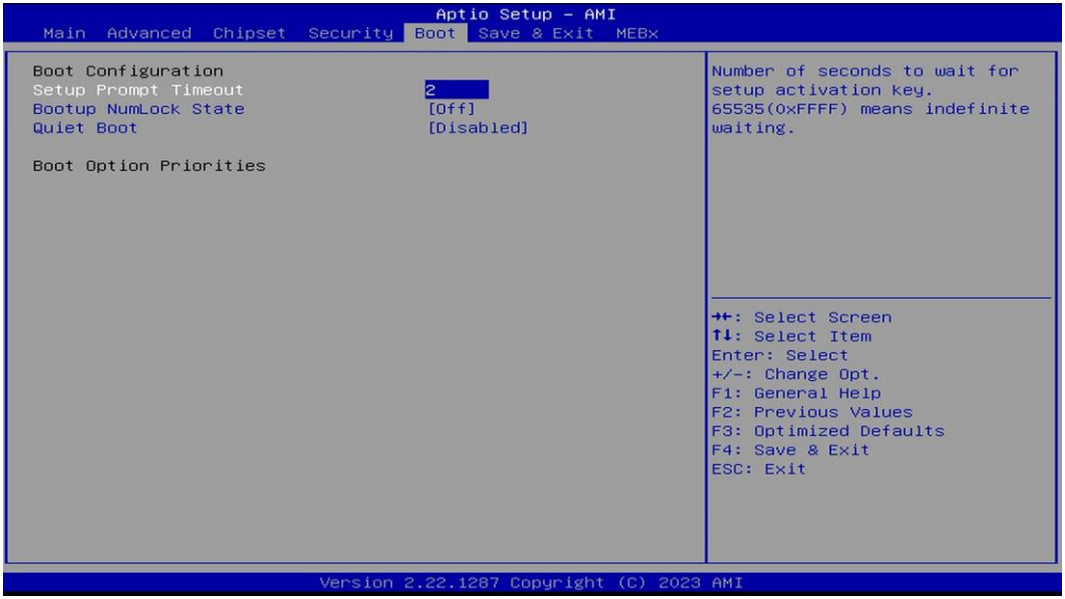
- **Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures**

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

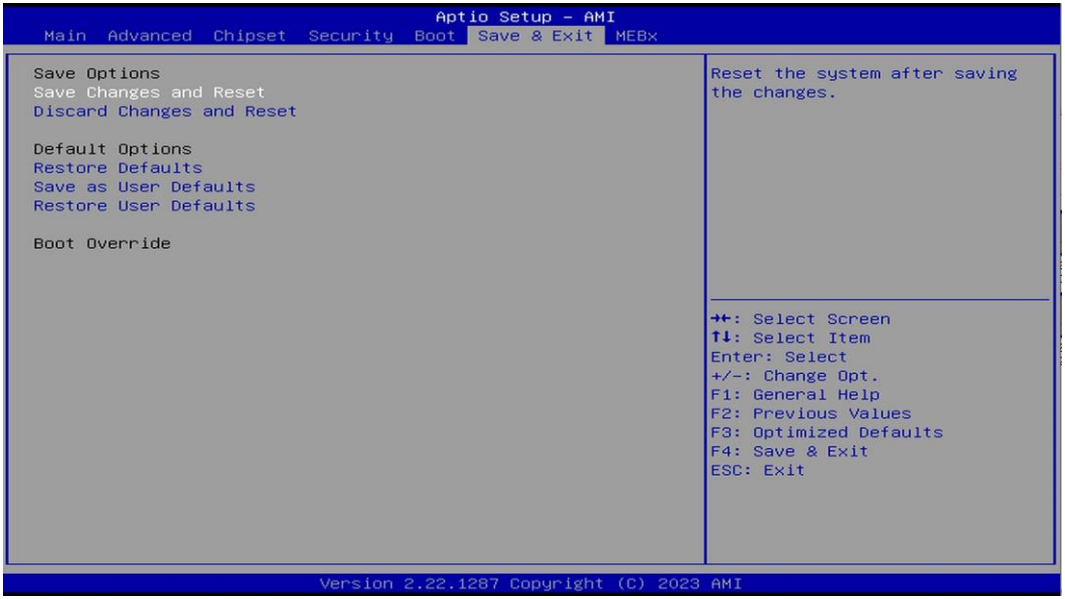


Boot Configuration

- **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 are: [On]; [Off].
- **Quiet Boot**
  The optional settings are: [Disabled]; [Enabled].
  When set as [Enabled], user can make settings in the following items that appear:

Boot Option Priorities

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 defaults to all the setup options.

  Boot Override

3-12 MEBx

- **Intel(R) ME Password**
  Use this item to MEBx Login.